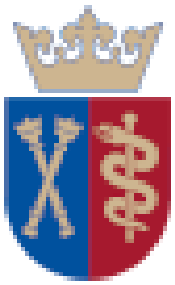

Doctoral School of Medical and Health Sciences
Jagiellonian University Medical College

Dissertation
Submitted in Fulfillment of the Requirements for the Degree:
Doctoral Program in the Discipline of Health Sciences

Doctoral Topic:

"Health Care Provider Payment Schemes – A Comparative Analysis of Reform Trends"

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ACOs	Accountable Care Organizations
AI	Artificial Intelligence
AIDS	Acquired Immunodeficiency Syndrome
AMI	Acute Myocardial Infarction
CEE	Central and Eastern European
CHE	Current Health Expenditure
CHWs	Community Health Workers

COVID-19	Coronavirus Disease 2019
DRG	Diagnosis-related Group
EDPRS	Economic Development and Poverty Reduction Strategy
EMRs	Electronic Medical Records
EU	European Union
FFS	Fee-for-service
GDP	Gross domestic product
GP	General Practitioner
HFG	Health Finance and Governance
HIV	Human Immunodeficiency Virus
HSPM	Health System and Policy Monitor
HSSP	Health Sector Strategic Plan
ICHOM	International Consortium for Health Outcomes Measurement
IF	Impact Factor
IT	Information Technology
LTC	Long-term Care
MDGs	Millennium Development Goals
MEN	Ministry of Education and Science (Ministerstwo Edukacji i Nauki)
MINECOFIN	Ministry of Finance and Economic Planning
MoH	Ministry of Health
NCST	National Council for Science and Technology
NGO	Nongovernmental Organization
NHIF	National Health Insurance Fund
NHIS	National Health Insurance Scheme
OECD	Organization for Economic Cooperation and Development
P4P	Pay-for-performance
PBF	Performance-based Financing
PHC	Primary Health Care
PMTCT	Prevention of Mother-to-child Transmission
PPM TSC	Provider Payment Mechanism Technical Steering Committee
PRISMA-Scr	Preferred Reporting Items for Systematic reviews and Meta-Analyses extended checklist for Scoping reviews
QBS	Quality Bonus Scheme
RBF	Results-based Financing
RESYST	Responsive and Resilient Health Systems
SHA	System of Health Accounts
SPARC	Strategic Purchasing Africa Resource Centre
UHC	Universal Health Coverage
USA	United States of America
WHO	World Health Organization

General Abstract

Background

Healthcare provider payment reforms are critical to improving health system performance, equity, and efficiency. They involve changes to payment methods as well as supporting elements such as contracting rules, administration, and management systems. The general objective of provider payment reforms is to align provider incentives with contemporary health policy objectives. However, success depends on addressing key barriers and leveraging facilitators. This dissertation systematically investigates recent trends in healthcare provider payment reforms and the barriers to and facilitators of these reforms across different contexts, particularly Central and Eastern European (CEE) and African Commonwealth countries.

Methods

The dissertation comprises five interconnected studies employing diverse methodological approaches: 1) a global scoping review of barriers to and facilitators of provider payment reforms; 2) a cross-country comparative analysis of current payment schemes and changes since 2010 in nine CEE countries (Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania); 3) a qualitative thematic analysis of reform factors in these CEE countries using a health policy analysis framework (context, content, process, and actors); 4) a scoping review of payment reforms in 21 African Commonwealth countries; and 5) a qualitative, in-depth interview study examining provider perspectives on the implementation of Rwanda's performance-based financing (PBF) program. The data sources included academic and standardized gray literature, as well as insights from national health policy experts and in-depth interviews with providers. Research ethics approval was obtained from the Research Ethics Committee of Jagiellonian University Medical College (No. 118.0043.1.10.2024) and the National Council for Science and Technology (NCST) of Rwanda (No. NCST/482/0124/2024).

Results

The findings reveal both regional variations and common themes in provider payment reform, particularly in the barriers, facilitators, and recent reform trajectories observed across different contexts. Across all regions, common barriers to reforms include provider resistance, inadequate legal and regulatory frameworks, financial and human resource constraints, and inadequate funding structures. Key facilitators include strong political commitment, stakeholder engagement, robust governance mechanisms, and reform alignment with broader health system priorities.

In the nine analyzed CEE countries, output-based payment models are dominant across all provider types. Since 2010, primary and hospital care have undergone the most notable reforms. The general trend in this region indicates a transition toward blended models, incorporating performance-based incentives, and detailed tariff adjustments.

In African Commonwealth countries, predominant reforms focus on adopting PBF, with a general trend also indicating a shift toward mixed payment models that often blend fee-for-service (FFS) with capitation incentives. Rwanda's PBF system was credited with supplementing provider incomes, improving provider accountability, fostering teamwork, and enhancing patient outcomes. However, challenges such as delayed payments and limited provider involvement in decision-making were noted.

Across all regions, both the content of reforms and their implementation processes proved critical to reform success. Additionally, stakeholder involvement and capacity were found to influence every dimension of the reform cycle. The five individual studies collectively highlight the interdependence of reform content, processes, context, and actors.

Conclusions

This dissertation advances the understanding of provider payment reforms by synthesizing evidence across diverse settings and applying rigorous analytical frameworks. The findings emphasize the need for tailored strategies that incorporate stakeholder input, strengthen governance, and align with national health priorities. Policymakers should take a holistic approach, addressing challenges while capitalizing on enabling factors to ensure effective and sustainable reforms.

By identifying regional trends and common challenges, this dissertation fosters cross-country learning and offers actionable insights for designing and implementing provider payment systems. The results contribute to policy discussions and provide a valuable resource for future research on healthcare financing mechanisms.

Keywords: Healthcare providers; Payment systems; Healthcare reform; Performance-based financing; Central and Eastern Europe; African Commonwealth Countries; Rwanda

Tytuł: Systemy finansowania świadczeniodawców usług zdrowotnych – międzynarodowa analiza porównawcza trendów reformatorskich

Streszczenie

Wprowadzenie

Reformy systemów finansowania świadczeniodawców usług zdrowotnych są kluczowe dla poprawy wydajności, równości i efektywności systemów opieki zdrowotnej. Obejmują one zmiany w metodach finansowania, a także elementach wspierających, takich jak zasady kontraktowania, administracja i systemy zarządzania. Ogólnym celem reform systemów finansowania świadczeniodawców usług zdrowotnych jest stworzenie zestawu bodźców/ zachęt dla sterowania zachowaniem świadczeniodawców, tak by dążyć do realizacji wyznaczonych celów polityki zdrowotnej. Jednak sukces takich reform zależeć może od różnych czynników (barier i czynników wspierajacych) wpływających na przebieg reform. Niniejsza rozprawa systematycznie bada najnowsze trendy w reformach finansowania świadczeniodawców usług zdrowotnych oraz bariery i czynniki wspierające sukces tych reform w różnych kontekstach, szczególnie w krajach Europy Środkowo-Wschodniej (*Central and Eastern Europe* - CEE) i afrykańskich krajach Wspólnoty Narodów (*African Commonwealth Countries*).

Metody

Rozprawa składa się z pięciu powiązanych ze sobą badań, wykorzystujących różnorodne podejścia metodologiczne: 1) przegląd zakresu literatury globalnej (*scoping review*) nt. barier i czynników wspierających przebieg reform systemów finansowania świadczeniodawców; 2) porównawcza analiza przekrojowa obecnych systemów finansowania świadczeniodawców i ich zmian od 2010 roku w dziewięciu krajach CEE (Bułgarii, Chorwacji, Czechach, Estonii, Łotwie, Litwie, Węgrzech, Polsce i Rumunii); 3) jakościowa analiza tematyczna czynników wpływających na reformy systemów finansowania świadczeniodawców w krajach CEE, z wykorzystaniem matrycy analizy polityki zdrowotnej (kontekst, zawartość, proces i aktorzy); 4) przegląd zakresu literatury nt. reform systemów finansowania świadczeniodawców w 21 krajach afrykańskiej Wspólnoty Narodów; oraz 5) oparte na wywiadach badania jakościowe, analizujące perspektywę świadczeniodawców dotyczącą wdrożenia programu finansowania opartego na wynikach (*performance based financing* - PBF) w Rwandzie. Źródła danych obejmowały literaturę naukową i standaryzowaną szarą literaturę, opinie krajowych ekspertów ds. polityki zdrowotnej oraz wywiady pogłębione ze świadczeniodawcami. Zgoda etyczna na realizację badań została uzyskana od Komisji Etyki Badań Naukowych Collegium Medicum Uniwersytetu Jagiellońskiego (nr 118.0043.1.10.2024) oraz Narodowej Rady ds. Nauki i Technologii (NCST) Rwandy (nr NCST/482/0124/2024).

Wyniki

Wyniki wskazują na występowanie zarówno regionalnych różnic, jak i wspólnych obszarów tematycznych w reformach systemów finansowania świadczeniodawców usług zdrowotnych. Liczne podobieństwa występują szczególnie w kontekście barier i czynników wspierających reformy oraz najnowszych trendów tych reform, które są obserwowane w różnych kontekstach. We wszystkich regionach do wspólnych barier w reformach należą opór świadczeniodawców, nieodpowiednie ramy prawne i regulacyjne, ograniczenia finansowe i kadrowe oraz nieadekwatne struktury finansowania. Kluczowe czynniki wspierające obejmują silne wsparcie polityczne, zaangażowanie interesariuszy, solidne mechanizmy zarządzania oraz dostosowanie reform do szerszych priorytetów systemu opieki zdrowotnej.

W dziewięciu analizowanych krajach CEE dominują modele finansowania oparte na wynikach produkcji (*output based*) dla wszystkich rodzajów świadczeniodawców. Począwszy od roku 2010 najczęściej reformowane były systemy finansowania podstawowej opieki zdrowotnej i szpitali. Ogólny trend w tym regionie wskazuje na przejście w kierunku systemów finansowania obejmujących różnorodne metody, wprowadzanie programów płatności za rezultat oraz liczne zmiany w obszarze metod taryfikacji świadczeń.

W krajach Afryki Wspólnoty Narodów reformy najczęściej koncentrują się na przyjęciu PBF, a ogólny trend wskazuje również na przejście w kierunku mieszanych metod finansowania, które często łączą płatność za usługę (*fee for service* - FFS) z metodą kapitacyjną. Świadczeniodawcy usług zdrowotnych w Rwandzie pozytywnie oceniają wprowadzenie PBF w kontekście uzupełniania dochodów świadczeniodawców, zdefiniowania ich odpowiedzialności, wspierania pracy zespołowej i poprawy wyników leczenia pacjentów. Zauważono jednak również wyzwania, takie jak opóźnienia w płatnościach i ograniczone zaangażowanie świadczeniodawców w podejmowanie decyzji.

We wszystkich regionach zarówno treść/zawartość reform, jak i procesy ich wdrażania okazały się kluczowe dla powodzenia reform. Ponadto stwierdzono, że zaangażowanie i zasoby interesariuszy systemu wpływają na każdy wymiar przebiegu reform. Pięć indywidualnych badań zbiorowo podkreśla współzależność zawartości reform, ich procesów, kontekstu i roli aktorów/interesariuszy.

Wnioski

Niniejsza rozprawa pogłębia zrozumienie reform systemów finansowania świadczeniodawców usług zdrowotnych poprzez syntezę dowodów z różnych kontekstów i zastosowanie rzetelnych ram analitycznych. Wyniki podkreślają potrzebę dostosowanych strategii wdrażania reform, które uwzględniają perspektywę interesariuszy, wzmacniają procesy zarządcze i są zgodne z krajowymi priorytetami zdrowotnymi. Decydenci polityczni powinni przyjąć holistyczne podejście do reform systemów finansowania świadczeniodawców usług zdrowotnych. Powinno ono bazować na wcześniej zidentyfikowanych, potencjalnych czynnikach wspierających, aby zapewnić skuteczne i zrównoważone reformy.

Identyfikując regionalne trendy i wspólne wyzwania, niniejsza rozprawa może stanowić wsparcie w procesie uczenia się, dzielenia doświadczeniami pomiędzy krajami i oferuje praktyczne spostrzeżenia dotyczące projektowania i wdrażania systemów finansowania świadczeniodawców usług zdrowotnych. Wyniki niniejszej dysertacji stanowią ważny wkład do literatury przedmiotu oraz bazę dla przyszłych badań nad mechanizmami finansowania świadczeniodawców opieki zdrowotnej.

Słowa kluczowe:

Świadczeniodawcy opieki zdrowotnej; Systemy finansowania; Reforma opieki zdrowotnej; Finansowanie oparte na wynikach; Europa Środkowo-Wschodnia; Kraje Afryki Wspólnoty Narodów; Rwanda

Dissertation Structure

This dissertation presents a systematic investigation of healthcare provider payment reforms, structured as a collection of five individual studies (four of which have been published in peer-reviewed journals), each exploring various aspects of the topic across different geographical regions. The thesis follows a logical progression, beginning with a global perspective and gradually narrowing its focus to specific regions—CEE and the African Commonwealth countries—where each study examines distinct but related thematic issues (see Table 1).

Table 1. Summary of individual studies comprising the dissertation

<table>
<tr><th colspan="2">Global approach</th></tr>
<tr><td colspan="2">Chapter 2
Scoping review
Tittle: Barriers and Facilitators to Health-Care Provider Payment Reform – A Scoping Literature Review
Objectives: to identify, systematize, and map the literature on factors influencing health care provider payment reforms worldwide.

<u>Status</u>: <u>Published in Risk Management and Healthcare Policy; Impact Factor (IF)=2.7, Ministry of Education and Science (Ministerstwo Edukacji i Nauki, or MEN) points=70</u></td></tr>
<tr><th>Central and Eastern European countries</th><th>African Commonwealth countries</th></tr>
<tr><td>Chapter 3
Original research paper
Tittle: Health care provider payment schemes and their changes since 2010 across nine Central and Eastern Europe countries–a comparative analysis
Objectives: 1) to provide a structured overview of current payment methods in selected CEE countries for different health care providers; 2) to analyze and compare major changes conducted in this field since 2010 and identify common trends.

<u>Status</u>: <u>Published in Health Policy; IF=3.6, MEN points=100</u></td><td>Chapter 5
Scoping review
Tittle: Health care providers payment reforms in African countries of the Commonwealth- a scoping review
Objectives: To identify and map the evidence on reforms in healthcare provider payment methods undertaken in African Commonwealth Countries.

<u>Status: the manuscript has been submitted for publication in Frontiers in Public Health - Public Health Policy</u></td></tr>
<tr><td>Chapter 4
Original research paper
Tittle: Factors influencing health care providers payment reforms in Central and Eastern European countries
Objectives: To identify and compare factors (barriers or facilitators) influencing the selected recent payment reforms in nine CEE countries.

<u>Status</u>: <u>Published in INQUIRY: The Journal of Health Care Organization, Provision, and Financing; IF=1.7, MEN points=40</u></td><td>Chapter 6
Original research paper
Tittle: Reforming Healthcare Provider Payment for Strategic Purchasing in Rwanda – a qualitative analysis of the stakeholder perspective
Objectives: Identify and describe the perspectives of various stakeholders on the Rwandan PBF system.

<u>Status: Published in BMC Health Services Research; IF=2.7, MEN points=100</u></td></tr>
</table>

Chapter 1 provides a general background of the PhD topic, setting the context for understanding the dissertation. It introduces the overarching focus of the thesis and outlines the objectives. The chapter presents the existing body of knowledge relevant to the subject, particularly regarding the characteristics and incentives of provider payment models, as well as ongoing efforts to align these payments with contemporary health system goals. This chapter

highlights the importance of healthcare provider payment reforms and justifies the need for the conducted research. While comprehensive, it is abbreviated to avoid repetition, as each subsequent chapter contains a tailored literature review section. Additionally, Chapters 2 and 5 are based on systematic literature reviews, allowing for a focused examination of specific aspects of payment reforms.

Chapter 2 presents a scoping review that investigates and maps the literature on the factors influencing healthcare provider payment reforms worldwide. This review identifies key barriers to and facilitators of these reforms and highlights substantial research gaps, especially in CEE countries and Africa. The global perspective laid out in this chapter sets the stage for a deeper exploration of these under-researched regions, which are the focus of subsequent research articles.

Chapters 3 and 4 shift the focus to CEE countries, as presented in two related studies. The first study (Chapter 3) provides a comparative analysis of current healthcare provider payment schemes across nine CEE countries and the major changes implemented since 2010. It identifies shared trends, such as the gradual shift toward blended payment methods. The second study (Chapter 4) examines the specific factors influencing these recent reforms, employing a mixed methods approach that integrates inductive thematic analysis with a structured deductive framework (context, content, process, and actors). This study refines a detailed framework for evaluating the factors influencing provider payment reforms.

Chapters 5 and 6 extend the analysis to African Commonwealth countries, where strategic purchasing has emerged as a key health financing policy aimed at optimizing resource allocation for universal health coverage (UHC). One of its vital components is provider payment methods. Chapter 5 presents a scoping review of provider payment reforms across 21 African Commonwealth countries, mapping their progress and identifying contextual factors that influence reform success. This review sets the stage for Chapter 6, which conducts a qualitative evaluation of Rwanda's PBF system. Rwanda, identified in the previous chapter as a leading example of provider payment reform, serves as a case study to examine stakeholder perspectives and assess the effectiveness of reform implementation. This study applies the evaluation framework developed in Chapter 4.

Chapter 7 provides a generalized discussion of the findings and a summary. Since each individual study addresses specific issues within distinct regions, with tailored discussions and conclusions, this concluding chapter integrates these insights to highlight overarching themes and lessons for future reforms. It also raises critical questions for future research, including the importance of rethinking provider payment reforms—moving beyond incentives to systemic change—and the need for the contextual adaptability of payment models.

Chapter 1. General introduction

Chapter 1 introduces the dissertation and establishes the context, objectives, and significance of the research on healthcare provider payment reforms. This chapter serves as the foundation for the in-depth analysis and focused discussions presented in the subsequent chapters.

1.1. **Introduction**

Healthcare provider payment mechanisms have become a focal point of research because of their critical role in healthcare financing. They shape the incentives within which health workers operate, directly influencing provider behavior and playing a key role in achieving national health policy objectives (1,2). As health financing policies continue to evolve, there is growing recognition of the impact that different provider payment models have on advancing specific health system goals. Their careful design and implementation through reforms are increasingly recognized as essential policy tools in modern healthcare systems for improving care quality, ensuring equitable access, using resources efficiently, and maintaining financial sustainability (1–3).

1.1.1. Common payment models: Characteristics and incentives

The literature extensively explores various frameworks for classifying healthcare provider payment models (2,4–6). These models are commonly categorized based on their structural characteristics, incentive mechanisms, and impact on provider behavior. A widely used classification distinguishes payment models into three main types: 1) input-based payments (e.g., line-item budgets), 2) output-based payments (e.g., per capita, per episode of care, per service), and 3) outcome-based payments, which reward or penalize providers based on health outcomes (e.g., financial incentives for meeting predefined health indicators) (2,4,5). While this classification framework is applied in Chapter 3 of this dissertation to analyze provider payment models in CEE countries, a broader conceptual perspective is needed to fully understand their design and implications.

In this context, the framework proposed by Ellis and Miller (6) introduces two additional core dimensions: the type of information used for payment and the scope of services covered. Payment models differ in the type of information they rely on, including provider attributes, patient characteristics, and service types. Models that focus on provider characteristics, such as salaried payment systems, primarily consider attributes such as training, experience, and specialty. While these models provide predictable income, studies suggest that they may reduce motivation for productivity and quality improvement (3,6). Models based on patient characteristics are influenced by patient-related factors, often employing a fixed payment per patient, as seen in capitation systems (6). In capitation, providers receive a fixed payment per patient regardless of service volume (1,6). The literature notes that these models promote cost control but can also lead to risk selection and underprovision of care (1). Models based on service characteristics, such as FFS arrangements, compensate providers on the basis of the quantity and nature of the services delivered. While these models encourage service uptake, they can also lead to overutilization and heightened costs (6). FFS models are particularly prevalent in the literature, as they reward providers on the basis of the volume of services rendered, an approach that has drawn criticism for prioritizing quantity over quality (1,3).

On the other hand, hybrid models that integrate multiple of the aforementioned elements are also commonly found in the literature. The diagnosis-related group (DRG), for example,

standardizes payments by considering patient diagnoses, services provided, and provider characteristics (6,7). While DRGs have been credited with reducing healthcare expenditures (2), they have also been associated with negative consequences, such as, premature patient discharge, increased readmission rates, and excessive reduction in service provision (8). The implementation of DRGs is also complex and requires detailed disease classification and coding. Additionally, DRG-based payments create incentives for upcoding, where providers classify cases into higher-paying categories to maximize reimbursement, potentially distorting cost structures and undermining payment fairness (9,10). These models will be analyzed in later chapters, particularly in the context of healthcare reforms seen in different CEE countries.

Provider payment models can also be categorized on the basis of the breadth of services covered. This typically pertains to the degree to which services are consolidated within a single payment structure. Such models can be categorized into "narrow systems," where payments are allocated separately for each individual service (such as laboratory tests and consultations), a structure commonly seen in FFS arrangements, and "broad systems," which integrate multiple services into a single payment model (6,11,12). Broad systems, such as bundled payment models, are often highlighted in the literature as a way to reduce fragmentation, improve coordination, and enhance efficiency in care delivery (11–14). However, these models also introduce complexities in implementation, particularly in episode-based and disease-based payment schemes (12,13).

1.1.2. Aligning provider payments with contemporary health system goals

Globally, health systems are reforming their payment structures to encourage provider behaviors that align with evolving health system needs (2). One major motivation for these reforms is the misalignment of traditional provider payment models—such as the FFS—with contemporary health policy priorities. Traditional models are fundamentally poorly suited to current health system goals aimed at addressing societal needs, such as improving access to healthcare services, reducing costs, and enhancing quality, while also mitigating moral hazards (2,3). For example, in response to the pressing demands of modern hospitals—such as preventing avoidable readmissions, shortening lengths of stay, standardizing care, managing chronic conditions, and averting emergent health issues—payers are increasingly shifting toward value-based patient-centered payment models (15–17). Value-based healthcare has gained traction among purchasers and providers as a strategy to improve patient-centered outcomes while ensuring efficient resource use (16).

There are multiple value-based models, each varying in scope, design, complexity, and financial risk exposure. Examples include pay-for-performance (P4P), bundled payments, shared savings arrangements (such as accountable care organizations (ACOs)), and capitation (15,17). Some models introduce both performance and utilization risks. For example, the P4P and bundled payment models impose performance risk by making providers financially accountable for clinical outcomes and avoidable expenses (17). These models promote coordination and efficiency rather than merely reducing the overall volume of care (15). Other models, such as

shared savings and capitation, introduce utilization risk, incentivizing providers to decrease the total volume of services provided to achieve greater cost savings (17).

Nonetheless, the literature suggests that no single provider payment model fully addresses the multifaceted needs of contemporary health systems, which aim to achieve various objectives simultaneously. Instead, policymakers intentionally implement reforms that often involve the integration of multiple payment models to better align with desired health system outcomes (18). As a result, different models are often tailored to specific provider types or services (2). The details of these reforms will be explored in later chapters. Chapters 3 and 4 focus on the alignment of specific reforms with provider types in the CEE region, whereas Chapters 5 and 6 demonstrate how certain reforms, especially PBF, are strategically employed for the purchase of selected services in lower- and middle-income countries, using experiences from African Commonwealth countries.

1.2. **Dissertation Focus, Aims, and Justification**

1.2.1. Dissertation focus

This dissertation examines provider payment systems as a key component of healthcare financing policy, influencing service delivery, their quality, efficiency, and equity. These systems involve a range of mechanisms for compensating healthcare providers, including different payment methods and supporting structures such as contracting rules, information management systems, and administrative frameworks (4).

The research specifically investigates provider payment reforms in two geographical locations. For selected CEE countries, the study focuses on payment reforms within the public health system, including all types of health care providers. In the analyzed African Commonwealth countries, the focus is on payment reforms within strategic purchasing—an essential health financing approach aimed at optimizing resource allocation to advance UHC, particularly in resource-constrained settings (19,20).

1.2.2. Dissertation aims

Table 2 below shows the dissertation aims along with the corresponding study/chapter that specifically addresses them.

Table 2. Dissertation aims and corresponding studies/chapters

Dissertation aims	**Study/Chapter addressing the aim**
1) Identify common trends in recent payment reforms across different sets of countries to identify patterns, divergences, and common practices.	▪ Health Care Provider Payment Schemes and Their Changes Since 2010 across Nine Central and Eastern European Countries—A Comparative Analysis (Chapter 3) ▪ Health Care Provider Payment Reforms in African States Countries of the Commonwealth—A Scoping Review (Chapter 5)
2) Identify, systematize and map key factors (barriers and facilitators) that influence provider payment reforms, drawing from cross-country experiences.	▪ Barriers and Facilitators to Healthcare Provider Payment Reform—Scoping Literature Review (Chapter 2)

	▪ Factors Influencing Health Care Provider Payment Reforms in Central and Eastern European Countries (Chapter 4)
3) Evaluate a selected provider payment reform using a predefined analytical framework, assessing its determinants and impact.	▪ Performance-Based Financing in Rwanda—Qualitative Analysis of Healthcare Provider Perspectives (Chapter 6)

1.2.3. Justification for the research

Healthcare reforms require robust, evidence-based insights to support decision-making at multiple levels—policy design, implementation, and evaluation (21,22). This doctoral research strengthens the knowledge base for evidence-informed health policy, a principle strongly endorsed by the World Health Organization (WHO) (22). Policymakers continuously seek to refine provider payment systems to improve care quality, enhance patient outcomes, and increase efficiency in response to evolving health system needs. However, designing, implementing, and evaluating effective provider payment models require rigorous research.

Despite ongoing reforms, the existing literature reveals critical gaps in comparative evidence on provider payment reforms, particularly regarding the key factors that determine successful implementation (23). Notably, much of the research on payment reforms originates from Western countries, particularly Western Europe. Major initiatives such as the EuroDRG project—covering Austria, England, Estonia, Finland, France, Germany, Ireland, the Netherlands, Poland, Portugal, Spain, and Sweden (24,25) —and the OECD report on healthcare payments (2) have largely excluded examples from the regions targeted in this dissertation.

This research makes a substantial contribution to health policy discourse by:

1. Providing a comparative analysis of recent payment reforms across under-studied regions.
2. Identifying, systematizing, and mapping key factors that influence the design and implementation of provider payment reforms. The findings highlight major common and region-specific factors. This aligns with the WHO's recommendation to adapt health reforms to regional contexts.

By addressing these gaps, this dissertation offers an evidence-based perspective on improving provider payment reforms, contributes to ongoing policy discussions on healthcare financing, and informs future payment policy adaptations. The findings will be particularly relevant for policymakers, health system administrators, researchers, and international organizations striving to optimize provider payment mechanisms for sustainable health system improvements.

Chapter 2. Barriers and Facilitators to Healthcare Provider Payment Reform—Scoping Literature Review

Published as:
Ndayishimiye, C., Tambor, M., & Dubas-Jakóbczyk, K. (2023). Barriers and Facilitators to Health-Care Provider Payment Reform – A Scoping Literature Review. *Risk Management and Healthcare Policy*, *16*, 1755–1779
https://doi.org/10.2147/RMHP.S420529

2.1. **Abstract**

Changes to provider payment systems are among the most common healthcare reforms and serve as key levers for policymakers to influence healthcare system performance. A scoping review was conducted to identify, systematize, and map the literature on the factors influencing healthcare provider payment reforms. The literature published in English between 2000 and 2022 was systematically searched in five databases, relevant organizations, and journals. Both academic publications and gray literature on provider payment reform and its influencing factors were considered. An inductive thematic analysis was applied to map the barriers and facilitators shaping these reforms.

A total of 51 publications were included, categorized into empirical studies (n=17), literature reviews (n=6), discussion/policy papers (n=18), and technical reports/policy briefs (n=9). Most studies were conducted in high-income countries (n=36). FFS was the most frequently reformed payment method (n=37), whereas newly implemented methods included bundled payments (n=16), P4P (n=15), and DRGs (n=11). The analysis identified 43 subthemes of barriers to provider payment reforms, which were grouped into eight main themes, and 51 subthemes of facilitators, which were grouped into six themes. Barriers included stakeholder opposition, challenges in reform design, hurdles in implementation structures, insufficient resources, market-related constraints, legal barriers, knowledge and information gaps, and negative publicity. Facilitators included stakeholder involvement, complementary reforms or policies, relevant prior experience, strong leadership and change management, sufficient resources, and external pressure to introduce reform.

The factors influencing healthcare provider payment reforms are often contextual and interrelated and reflect diverse perspectives, including those of patients, providers, insurers, and policymakers. Effective reform planning requires anticipating potential barriers and developing appropriate interventions. This research was registered with the Open Science Framework.

Keywords: Barriers; Facilitators; Health care provider; Health reform; Payment reform

2.2. **Introduction**

Health care systems are constantly evolving to better meet the changing health needs of the population and adapt to external pressures. Hence, reforms are an integral part of every health care system. They can be defined as a sustained process of fundamental change in national health policy or institutional arrangements, often led by the government, to improve the functioning and performance of the health sector and ultimately the health status of the population (26,27). Health system reform can be a complex process. Some authors describe it as a cycle that should go through six stages: defining the problem, setting the agenda, developing plans, formulating solutions, implementing them, and evaluating the results (28,29). At the same time, it can be considered a process that operates at different policy levels, including systemic (changing the institutional arrangements for regulating, financing, and delivering services), programmatic (setting system priorities), organizational (concerning service provisions), and instrumental (generating institutional intelligence to improve system performance) (30). The scope of reform may vary depending on how many aspects of the health care system have changed and how much these changes deviate from past practices (31).

Several factors can influence the process of health reform and determine its success (32,33). As stated in institutional theory (34–36) and modified for primary healthcare (PHC) reform (37,38), there are three main pressures and influences for health care reform. These include coercive influences (laws, regulations, and policies), normative factors (professional influences and culture), mimetic factors (presence of trailblazers and successful leaders) and readiness for change in practice (perceptions and attitudes). The empirical evidence from the analysis of health care reforms in 60 countries points to four sets of factors that can influence the success of reforms: the incremental approach ("acorn to oak tree principle"), use of Information technology (IT) and good quality data ("data to information to intelligence principle"), involvement of relevant stakeholders ("many hands principle"), and putting the patient at the center of proposed changes ("patient as preeminent player principle") (32).

Provider payment system reforms are among the most common reforms in health care today (39,40). This involves, first, changes in the mechanisms used to transfer funds to health care providers (provider payment methods), as well as alterations in supporting elements such as contracting, information management, and accountability mechanisms (15). Ideally, payment systems help achieve health policy goals by incentivizing necessary medical services for patients, supporting the quality of care, promoting equity, and enabling the efficient use of resources. To achieve such goals, a variety of payment methods can be used, ranging from those that rely on available/used inputs to methods based on outputs (services provided) and even mechanisms that reward health outcomes (2,4). Each of them creates different incentives for health care providers. Payments, whether determined prospectively or retrospectively, fixed or variable, can also shift the financial risk between providers and payers (4). Thus, policymakers consider them among the most important levers through which they can influence health system performance (2).

The literature is replete with systematic assessments of the impact of specific provider payment methods on health systems and/or patient outcomes (41–43). A recent review focused on factors that influence the design, implementation, and adoption of value-based payment models at the provider level (44). The authors applied Greenhalgh et al.'s (45) framework on the diffusion of innovations in service organizations to classify facilitators and inhibitors into value-based payment models. Unlike previous studies, this study identifies, synthesizes, and maps the literature on barriers to and facilitators of provider payment reforms more broadly. Because there was no restriction to the type of payment method and an inductive approach to mapping factors influencing reform was taken, the study covers a full range of factors that affect various provider payment methods. By following the general goals of scoping reviews (46), it explores the breadth of existing evidence, builds a knowledge base, identifies potential research gaps, and provides implications for further research.

2.3. **Methods**

The scoping review followed the methodological guidelines developed by Peters and colleagues (2015, 2017 &2020) (46–48). The process involved the following five steps: 1) defining specific research questions, 2) identification of relevant documents, 3) study selection, 4) data extraction, and 5) data analysis and presentation of results. The study protocol was registered with the Open Science Framework registries (49).

2.3.1. Defining the review questions

The general research question is as follows: "What are the barriers to and facilitators of health care provider payment reform?" The specific review questions are as follows:

- What types of literature on barriers to and facilitators of provider payment methods can be identified?
- What types of payment reforms have been analyzed (including., i.e., payment method, provider type, scope of reform)?
- What factors (barriers and facilitators) influence health care provider payment reforms?

2.3.2. Identifying relevant literature

Five databases were searched: 1. Medline via PubMed, 2. Web of Science, 3. Scopus, 4. Business Source Complete via EBSCO, 5. Google Engine. The searches were conducted from 08 November 2022 to 24 January 2023. A combination of relevant keywords and synonyms from four main topics was used, namely, "factor" AND "health care provider" AND "payment" AND "reform". These were searched in the titles and abstracts. Table 3 shows the search query for the databases, including all keywords and synonyms used. The search strategy was developed using an iterative approach and tested in advance in Scopus, PubMed, and Web of Science. To complement the search in the databases, a manual search of the gray literature was conducted on the websites of (non) government agencies, organizations, and research institutes that are active in this research field. In addition, the references of the already included

publications were scanned to find additional studies relevant to the research. As part of Supplementary Material File-1, details of the search strategies for Scopus, Web of Science, PubMed, Business Source Complete, and Google Engine Search are presented in Tables S1-5, respectively, whereas the list of manually searched organizations and journals can be found in Tables S6 and S7, respectively.

Table 3. Search strategy and keywords in databases

Factor	factor* OR barrier* OR obstacle* OR hurdle* OR imped* OR difficult* OR challenge* OR facilitat* OR promot* OR aid* OR enabl* OR help* OR reason* OR experienc* OR perception* OR determinant* OR influenc* OR constraint* OR issue*
AND	
Healthcare provider	"healthcare provider*" OR "care provider*" OR "health provider*" OR "health service provider*" OR "health practice*" OR "healthcare practice*" OR "medical practice*" OR "health institution*" OR "healthcare institution*" OR "health care institution*"
AND	
Payment	pay* OR compensat* OR incentive* OR financ* OR reimburs* OR purchas* OR reward* OR bonus*
AND	
Reform	reform* OR polic* OR chang*

2.3.3. Selection of studies

The retrieved records were deduplicated in Mendeley Reference Manager and then imported into Rayyan Desktop (50) for two-stage screening. The first stage involves title and abstract screening, and the second stage involves full-text screening. In each stage, two independent researchers (CN and KDJ) randomly screened 10% of the retrieved records and compared and discussed the results. Since the two researchers achieved a high level of agreement (over 85%), the remaining data were screened by one researcher (CN). The screening of the full texts was conducted on the basis of predefined inclusion and exclusion criteria. Studies that addressed health care provider payment reform and included an analysis of factors (barriers and/or facilitators) were considered. These were peer-reviewed empirical publications, policy briefs, theoretical papers, technical reports, books, chapters, or dissertations published in full text in English between 2000 and 2022. Conversely, studies were excluded from the analysis if they focused on other types of health care reform (e.g., evaluating other aspects of purchasing without analyzing payment methods), if they did not provide information on factors that influence provider payment reform, if they were not the appropriate types of publications (e.g., conference abstracts, commentaries, letters to the editor, erratum, etc.), or if the full texts were in a different language.

2.3.4. Data extraction

The data were extracted using an Excel template. It consists of three main parts related to the three specific questions of the review: 1. information on the included publication (reference, year, country, objective, and type of publication); 2. data on provider payment method reform

(objective of reform, year, provider concerned, payment method, scope of reform, and reform phase in which the factor assessment was conducted); and 3. information on the factors identified as influencing payment reform, either as facilitators, barriers, or both. The included publications were classified into four main categories: empirical studies (original, on the basis of primary data published in peer-reviewed journals); discussion/policy papers (published in peer-reviewed journals); literature reviews (published in peer-reviewed journals); and technical reports/policy briefs (e.g., briefs published by advocacy organizations). For the classification of payment methods, the authors utilized two parameters: whether the payment rate was determined retrospectively or prospectively and whether it was based on input (resources used or available), output (service provided), or outcome (health outcomes) (4,51). For the classification of reforms, the authors adapted the Organization for Economic Cooperation and Development (OECD) classification (2) by coding whether the reform modified the existing payment method, introduced an additional payment method to the existing method, or replaced the existing method with a new method. Three reform phases were applied: 1. planning, 2. implementation, and 3. assessment. Data mining involved randomly extracting a 10% sample of the studies by two independent investigators, CN and KDJ, who are the authors of this study. The results were compared, and any discrepancies were discussed to ensure consistency. The two independent investigators achieved a high level of agreement, surpassing 85%. The remaining data were processed by one researcher (CN).

2.3.5. Data analysis, summary and presentation of results

Both quantitative and qualitative (thematic analysis) methods were used for data analysis. Data on factors influencing reform were thematically analyzed and grouped inductively (manually). This was done in six steps: 1) the data were read and reread, and initial ideas were noted (familiarization with the data); 2) initial features of interest were coded (initial codes); 3) the codes were grouped into potential themes; 4) these themes were reviewed; 5) the specifics of each theme were refined; and 6) the report was produced in relation to the question under investigation (52). The inductive, data-driven approach resulted in mapping the factors described as barriers or facilitators to provider payment methods on the basis of the most prevalent themes/subthemes. Naturally, the same factor (e.g., providers' attitudes) may act as a barrier (provider opposition) or facilitator (provider support). However, the approach was to map the existing evidence on the basis of the descriptions provided by the authors of the included studies. The overall presentation of the results follows the Preferred Reporting Items for Systematic reviews and Meta-Analyses extended checklist for scoping reviews—PRISMA-Scr (Supplementary File-1 Table S8) (53)—supported by appropriate tabular and graphical presentations.

2.4. **Results**

2.4.1. Search results

The search results from the five databases yielded 10,835 publications. Deduplication in Mendeley resulted in 5,690 articles, 128 of which remained after a screening process based on titles and abstracts. A total of 42 publications were included after a full-text evaluation on the basis of the predefined inclusion criteria. Of the 89 excluded articles, 41 analyzed factors affecting other types of health care reforms, 29 studies were excluded because they did not analyze factors impeding and/or facilitating health care provider payment reform, 14 studies were excluded because they were the wrong publication types (mainly commentaries and conference abstracts), and five studies were excluded because the full text was not accessible (requests for full texts were made to the authors, but no response was received). The results of manual searches of selected organizations and journals yielded three studies, whereas reference checks yielded nine additional studies. A total of 51 publications were included in the final synthesis (refer to Figure 1). The information on all the included studies is presented in Table 4.

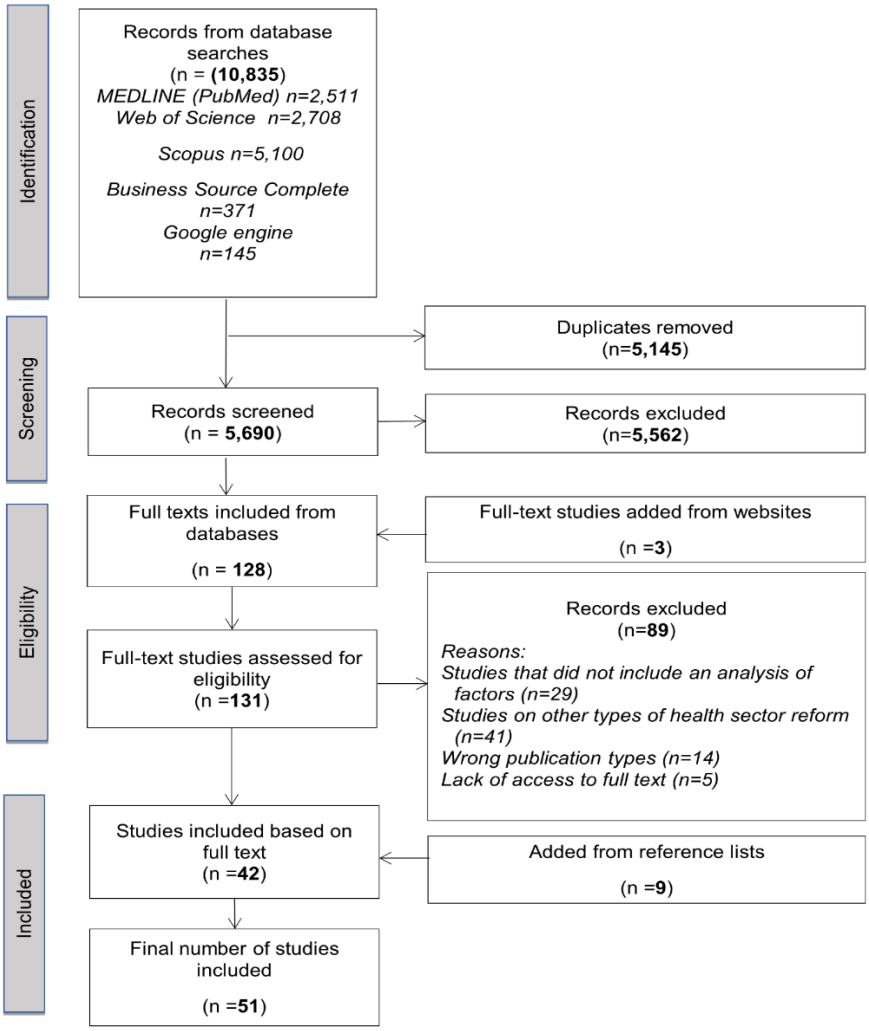

Figure 1. PRISMA flowchart of the study selection process

2.4.2. Overview of the included publications

Most studies were published from 2010 onward (n=43/51, 84.3%). In terms of publication type, the number of discussion/policy papers was consistently high (n=18/51), followed by empirical studies (n=17/51), technical reports/policy briefs (n=9), and literature reviews (n=6/51) (Figure 2).

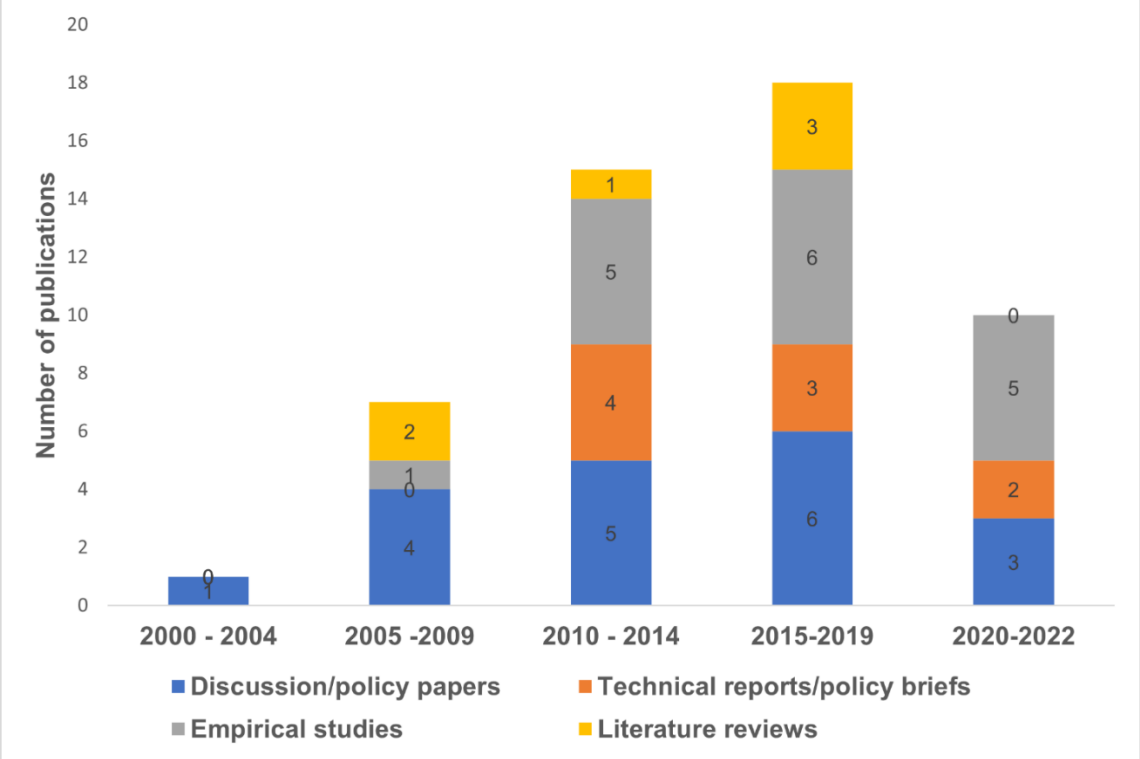

Figure 2. Types of included studies and publication periods in 5-year intervals.

In terms of geographic distribution (Figure 3), 47/51 studies were conducted in individual countries, with the United States of America (USA) accounting for more than half of them (n=26/47). Consequently, most studies (n=27/47) were from North America, followed by nine from Europe, seven from Asia, and four from Africa. Thus, the majority of studies were from developed economies (n=36/47), whereas a few (n=11/47) were from developing economies.

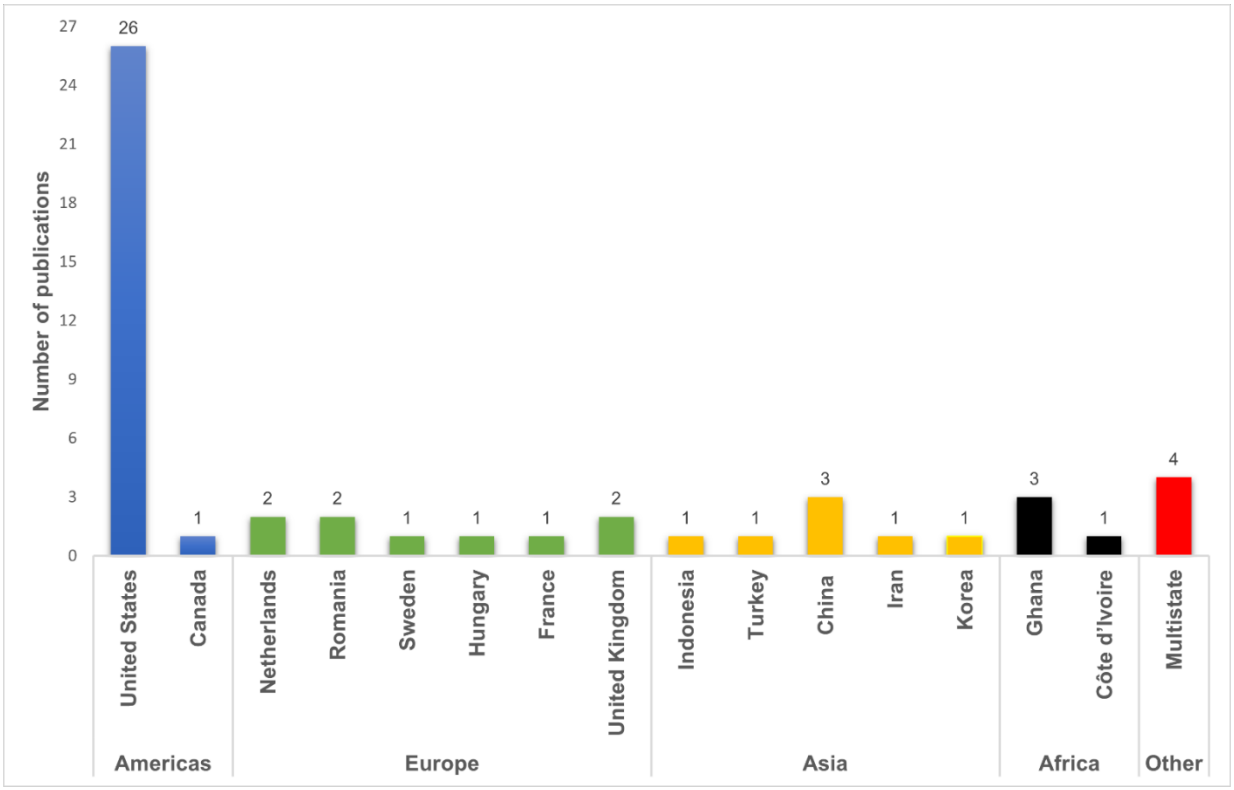

Figure 3. Countries of origin of included publications.

The four studies (54–57) covered more than one country. The first (54) included Austria, France, England, the Netherlands, and Germany. The aim was to provide an overview of payment systems implemented to promote chronic disease integration. This was done by identifying facilitators and barriers to their implementation and assessing how stakeholders perceived their success. A second cross-national study (55) examined the use of DRGs in three Asian countries: Japan, Korea, and Thailand. The study focused on technical issues and implementation challenges. Another study (56) looked at the experiences and factors of performance-based payments in Southeastern European countries, whereas the last study (57) provided a comprehensive overview of DRG-based hospital payment systems in low- and middle-income countries. It examined design and implementation issues as well as related challenges in these countries.

In the vast majority of studies (44/51), the focus was on analyzing the factors (barriers and/or facilitators) that influence provider payment reform. In the remaining seven studies, the focus was more on the perspective of providers and/or other stakeholders regarding payment. These studies also included an analysis of barriers and/or facilitators. Among the 17 empirical studies, the majority (9/17) used a qualitative approach, primarily conducting interviews with various stakeholders involved in provider payment reform. For discussion/policy papers (18/51), the authors often relied on desk research and/or described experiences/opinions regarding a specific reform. However, in many cases, the methods used were not clearly presented or were only vaguely mentioned.

Regarding payment methods that were modified or implemented, almost one-third of the studies reported adopting bundled payments (n=16/51). These methods were more commonly used for multiple providers (n=8/16) and specialties (n=7/16), such as surgery and chronic conditions. P4P programs were the second most commonly implemented schemes (n=15/51) and were used in a variety of provider settings (multiple n=6, PHC n=4, specialists n=4, hospitals n=1). Twenty-two percent (n=11/51) of the studies focused on DRGs, which were mostly used for hospitals (n=7/11). Additionally, 18% (n=9/51) of the studies reported capitation payments, which were more commonly associated with PHC (n=6/9).

The majority of studies (35/51) focused on reforms where existing payment methods were completely replaced by new methods, whereas in 13 studies, the new methods were added to the existing methods. FFS was the most frequently changed payment method (72%, n=37/51). With respect to the scope and stage of reforms, the majority of studies focused on national-level provider payment reforms (n=30/51). Most of the included publications focused on the design and/or implementation of the reform (n=49/51), with more than one-third of them also including an evaluation (n=20/51).

Of the 51 publications included, only 47 provided details on the type of payment method implemented. Twenty-seven of these 47 methods were prospective, 13 were retrospective, and the remaining seven were combinations of both retrospective and prospective methods. There was also wide variety in the classification of methods based on input, output, and outcome measures. Eight of the 47 publications used methods that were based on inputs, outputs, and outcomes. Additionally, 14 publications used methods that were based solely on output, whereas seven used methods that were solely based on outcome. In general, outcome measures were used in more than half of the publications (n=24/47).

Table 4. General overview of included publications

Study reference	Country	Publication year	Focus of the publication	Publication type[a*]	Payment method modified/implemented as additional/implemented to replace	Care provider	Modified/implemented payment method classification	Reform classification[b*]	Reform scope	Reform stage[c*]
Wojtak and Purbhoo (58)	Canada	2015	barriers and facilitators	lit rev	unstated method → bundled methods	multiple	prospective, input, output, outcome	rep	regional	1, 2
Zhang and Sun (59)	China	2021	provider perspectives	emp-QN	FFS → DRG	multiple	prospective, output	rep	pilot	2
Jin et al. (60)	China	2015	barriers	lit rev	FFS → DRG	hospitals	prospective, output	rep	national	2
Zhao et al. (61)	China	2018	facilitators	dis/pp	FF → DRG- case-mix	hospitals	prospective, input, output	rep	national	2
Duran et al. (62)	Cote d'Ivoire	2020	barriers and facilitators	emp-QL	unstated method + P4P	PHC	retrospective, outcome	add	pilot	1, 2
Or (63)	France	2014	barriers	dis/pp	unstated method → DGR	multiple	prospective, output	rep	national	2
Issahaku et al.(64)	Ghana	2021	stakeholder perspectives	emp-QL	FFS, DRG, capitation → unstated value-based payment	multiple	prospective, output	rep	national	1
Takyi and Danquah (65)	Ghana	2015	barriers	dis/pp	FFS, DRG → capitation	PHC	prospective, input	rep	pilot	2
Andoh-Adjei et al. (66)	Ghana	2019	provider perspectives	emp-QN	FFS, DRG → capitation	PHC	prospective, output	rep	pilot	2
Nagy and Brandtmüller (67)	Hungary	2008	barriers	dis/pp	capitation/adjusted capitation	multiple	prospective, input	mod	national	1
Tan (68)	Indonesia	2019	barriers and facilitators	emp-mix	unstated method → capitation	PHC	prospective, input	rep	national	2
Babashahy et al. (69)	Iran	2017	analyze barriers	emp-QL	unstated method/adjusted capitation + DRG	multiple	prospective, output, retrospective, output	mod, add	national	1
Kwon (70)	Korea	2003	barriers	dis/pp	FFS → DRG	multiple	prospective, input, output, outcome	rep	pilot	2, 3
de Vries et al.(71)	Netherlands	2019	barriers	emp-QL	FFS → bundled methods	multiple	prospective, output	rep	national	3
Tummers and Van de Walle (72)	Netherlands	2012	barriers	emp-QN	unstated method → DRG	mental health	prospective, output	rep	national	2
Chukwuma et al. (73)	Romania	2021	barriers and facilitators.	tec/pb	Capitation/adjusted capitation, FFS → bundled methods	PHC	prospective, retrospective, input, outputs, outcome	mod, rep	national	3
Radu and Haraga (74)	Romania	2008	barriers and facilitators	lit rev	unstated method → DRG	hospitals	prospective, input, output	rep	national	1, 2, 3
Eriksson et al. (75)	Sweden	2022	provider perspectives	emp-QL	unstated method → bundled method +P4P	spine surgery	prospective, output, outcome	rep, add	national	1, 2

Aktas (76)	Turkey	2022	provider perspectives	emp-QL	FFS →mixed DRG, global budget	hospitals	prospective, output	rep	national	1, 2, 3
Dredge (77)	UK	2008	barriers and facilitators	dis/pp	Global budget → DRG	hospitals	prospective, input, output, outcome	rep	national	2
Doran (78)	UK	2008	facilitators and barriers	dis/pp	unstated method +P4P	PHC	retrospective, outcome	add	national	1, 2
Conrad et al. (39)	USA	2014	barriers and facilitators	emp-QL	FFS/global + bundled methods	multiple	prospective, input, retrospective, outputs	mod, add	regional	1, 2
Hussey et al. (79)	USA	2011	barriers	emp-QL	FFS → bundled methods	multiple	prospective, output	rep	pilot	1, 2, 3
Bokhour et al. (80)	USA	2006	stakeholder perspectives	emp-QL	unstated method +P4P	multiple	retrospective, outcome	add	national	2
Kamath et al. (81)	USA	2015	provider experience	emp-QN	FFS → bundled methods	arthroplasty surgery	prospective, input	rep	pilot	1, 2
Whitcomb et al. (82),	USA	2015	barriers and facilitators	emp-QN	FFS → bundled methods	joint replacement	prospective, output, outcomes	rep	pilot	2, 3
Blustein et al. (83)	USA	2011	barriers	emp-mix	unstated method +P4P	hospitals	retrospective, input, output, outcome	add	regional	1, 2, 3
Miller (84)	USA	2012	barriers	tec/pb	FFS → bundled methods, Global payment	multiple	prospective, input, output	rep	*national*	1,2,3
University of Washington (85)	USA	2015	barriers and facilitators.	tec/pb	FFS → capitation	multiple	prospective, input, outcome	rep	pilot	1,2,3
Hilary et al. (86)	USA	2011	barriers and facilitators.	tec/pb	FFS → unstated value-based payment	multiple	not stated	rep	national	1, 2
University of Washington (87)	USA	2015	barriers and facilitators.	tec/pb	per visit method → capitation	PHC	prospective, output	rep	regional	1, 2, 3
Bencic et al. (88)	USA	2016	barriers	tec/pb	FFS → bundled methods	PHC	retrospective, output	rep	regional	1, 2, 3
Crook et al. (89)	USA	2021	barriers and facilitators	tec/pb	FFS → unstated value-based payment	multiple	not stated	rep	national	1, 2, 3
Damberg et al. (90)	USA	2014	barriers and facilitators	tec/pb	FFS → P4P, ACOs, bundled methods	multiple	prospective, retrospective, input, outputs, outcome	, rep	national	1, 2, 3
Dummit (91)	USA	2011	barriers and facilitators	tec/pb	FFS → bundled methods	postacute care	prospective, output, outcome	rep	pilot	2, 3

Voinea-Griffin et al. (92)	USA	2010	barriers and facilitators.	dis/pp	FFS +P4P	dentistry	retrospective, outcome	add	national	1, 2
Bozic et al. (93)	USA	2007	barriers	dis/pp	FFS +P4P	orthopedics	retrospective, outcome	add	national	2
Randazzo and Brown (94)	USA	2016	facilitators	dis/pp	FFS → bundled methods	chronic care	not stated	rep	regional	1, 2
Lowder et al. (95)	USA	2021	barriers	dis/pp	FFS → bundled methods, P4P	multiple	retrospective, outcome	rep	national	1
Mcclellan et al. (96)	USA	2017	barriers and facilitators.	dis/pp	FFS → unstated value-based payment	multiple	not stated	rep	national	1, 2, 3
Bertko and Effros (97)	USA	2011	barriers and facilitators	dis/pp	FFS → capitation	PHC	retrospective, output	rep	pilot	1
Antonova et al. (98)	USA	2015	barriers	dis/pp	FFS, DRGs → bundled methods	hip fracture care	prospective, input, output, outcome	rep	regional	1.2
Mcclellan (99)	USA	2011	barriers and facilitators	dis/pp	FFS + P4P, FFS → bundled methods	multiple	retrospective, prospective, output, outcome	add, rep	national	1, 2, 3
Voinea-Griffin et al. (100)	USA	2010	barriers and facilitators	dis/pp	unstated method +P4P	dentistry	retrospective, output, outcome	add	national	1, 2, 3
Seth Greenwald. et al. (101)	USA	2016	facilitators	dis/pp	FFS → bundled methods	multiple	prospective, retrospective, input, output, outcome	rep	pilot	1, 2, 3
Hobbs Knutson et al. (102)	USA	2021	barriers and facilitators	dis/pp	FFS → P4P	behavioral health	retrospective, output, outcome	rep	regional	1, 2
Tanenbaum (103)	USA	2009	facilitators	lit rev	unstated method +P4P	multiple	retrospective, outcome	add	national	1, 2
Tsiachristas et al. (54)	Multicountry	2013	barriers and facilitators	emp-mix	FFS + P4P, Salary + pay-for-coordination (PFC), FFS → bundled methods	integrated chronic care	prospective, output, retrospective, outcome	add, rep	national	1, 2
Annear et al. (55)	Multicounty	2018	barriers	lit rev	FFS → DRG	hospitals	prospective, input, output	rep	national	1, 2
Donev (56)	Multicountry	2022	barrier and facilitators.	dis/pp	unstated method +P4P	multiple	retrospective, output, outcome	add	national	1, 2, 3
Mathauer and Wittenbecher (57)	Multicounty	2013	barriers	lit rev	unstated method → DGRs	hospitals	prospective, output	rep	pilot, national	1, 2

2.4.3. Mapping of the barriers and facilitators

The mapping of factors influencing provider payment reforms in the 51 studies included in the review revealed a variety of themes, which were sometimes interrelated or overlapping. The factors identified were often contextual and presented from a variety of perspectives, including patients, providers, insurers, and policymakers. Forty-three subthemes related to barriers were identified, which were grouped into eight main themes (Table 5), and 51 subthemes related to facilitators, which were grouped into six themes (Table 6).

The first major theme of barriers to provider payment reforms was stakeholder opposition or reluctance, as reported in 27 out of the 51 included studies. Most examples (96.29%, n=26/27) related to provider opposition, although the reasons for opposition varied. A total of 51.85% (n=14/27) of the studies indicated that provider resistance was related to unsatisfactory incentives (e.g., insufficient or misaligned incentives), whereas 37.03% (n=10/27) attributed provider resistance to being held accountable for outcomes they cannot control (e.g., health outcomes that are more dependent on patient behavior). The latter was evident in payment systems that focused on meeting specific performance metrics, for which providers were rewarded or penalized. Examples of such systems include P4P programs and bundled payments. Provider resistance or reluctance was also evident when a payment method challenged their professional values (i.e., professional ethics/clinical autonomy, cited by 37.03%, n=10/27), or they were reluctant to adopt new payment models because they were more familiar with the existing payment model (cited by 18.51%, n=5/27). Similarly, but generally across a wide range of stakeholders, 22.22% of the studies (n=6/27) mentioned hesitancy when a new payment initiative was proposed, whereas previous attempts at reform had failed. An example of this can be seen in the Netherlands, where multiple stakeholders, such as insurers, PHC providers and hospitals, expressed a lack of trust due to the failure of a previous shared savings program (71).

Thirty-three studies mentioned obstacles related to the design features of the reform (second major theme). Many barriers were related to specific payment reforms, such as implementing P4P and bundled payments. The majority of design problems arose because standards and/or benchmarks (quality, cost, risk balance, etc.) were not available (48.48%, n=16/33) or because there were numerous, ambiguous, or unreconciled indicators/measures (e.g., performance/outcomes) (24.24%, n=8/33). Reform initiatives that were administratively and operationally complex and not tailored to the local context (e.g., social, cultural, or political) were also less likely to succeed (21.21%, n=7/33), as evidenced in different countries, including the USA (82), Côte d'Ivoire (62), and Iran (69). Some challenges were noted when the proposed reform required partial or complete transformation of health care delivery (n=3/33). One example is bundled payment for hip fractures in the USA, which required a change in the care delivery process (98). Other barriers also occurred when payment reforms differed between health plans and providers (n=3/33). An evaluation of episodes of care for low-volume Medicaid providers in Tennessee revealed that different design features, such as practice qualification standards and reporting measures, resulted in significant variations among payers. These differences discouraged many providers from participating (88).

In 18 studies, the obstacles were related to the implementation structure of the payment system. These issues were related to confusion caused by conflicts and/or administrative mismatches among the main actors (mentioned in 50%, n=9/18) or to the fragmented structure of the implementation system (in 33.33%, n=6/18). The aforementioned barriers were documented in various instances, such as the implementation of value-based payment in health care in Ghana (64), capitation systems in PHC in Indonesia (68), PBF in Côte d'Ivoire (62), and bundled payments in the home care system in Ontario (58). One-third of the papers (n=6/18) also

mentioned challenges that arose when implementation structures needed to be adapted to the unique characteristics of payment reform initiatives (e.g., to address racial and ethnic disparities, equity, and language barriers). An example of this was when the state of Massachusetts revised its implementation structures to introduce a new approach that used P4P specifically to address racial and ethnic disparities in hospital care for Medicaid patients (83). Some payment reforms have also been hampered by delays caused by lengthy regulatory, administrative, and/or bureaucratic processes (mentioned in 5 papers).

Barriers related to insufficient resources and capacity were cited in 16 studies. In more than half of these studies (n=9/16), the barriers were associated with the need for new infrastructure (e.g., IT and multistakeholder friendly systems). Many papers (n=7/16) also linked this to limited funding/budgetary constraints (e.g., extra resources for new costs for data, indicators, staff training, additional payments, etc.), whereas approximately one-third of the papers (n=5/16) mentioned the need to hire new human resources (service providers, additional staff, IT personnel, etc.). The latter was worse in reform areas where human resources were already unevenly distributed, e.g., rural areas more so than urban areas. Regional inequities were reported, for example, in Indonesia, when policies were developed to introduce capitation payments for PHC (68).

Sixteen studies mentioned challenges related to the structure of the health market. A total of 43.75% (n=7/16) mentioned barriers that arose because the market environment was unable to engage different stakeholders. Such barriers occurred when the market structure for certain payment reforms, such as the bundled method, was unable to handle multiple stakeholders from both the public and private sectors (e.g., because public and private markets operated under different systems). Approximately one-third of the studies (n=5/16) reported barriers related to participating providers having too few populations (i.e., low-volume providers). A quarter of the studies (n=4/16) reported barriers related to competing stakeholder priorities in the market (n=4/16). Additionally, a few papers identified barriers related to market structure that gave advantages to the largest payers, ultimately limiting the efforts of smaller plans with smaller market shares (mentioned by two studies).

Challenges related to the legal/regulatory framework were mentioned in 11 studies. In approximately half of the studies (n=5/11), the implementation of provider payment reform was hindered by a mismatch between the level of autonomy of central and decentralized entities (e.g., a lack of decentralized fiscal autonomy). For example, the lack of autonomy of decentralized entities has hindered the design and implementation of PBF in Côte d'Ivoire (62). In more than one third (n=4/11), the obstacles arose from competing health policy and political priorities. In the USA, for example, the implementation of payment reforms to improve the quality of care and political efforts to contain the rise in health care costs were at odds. This was evident in certain laws, such as the "Patient Referral Law," also known as the "Stark Act," which restricts financial relationships between hospitals and physicians (99). Some legal and regulatory hurdles also restricted the right to collect and share data (e.g., personal data). Such laws interfered with the implementation of value-based payments to address social determinants of health in the USA (89). Other payment reforms have been hampered by the need for substantial amendments to national health care legislation. In Romania, for example, the introduction of a new payment method for PHC providers necessitates an amendment to the health reform law. This law permits only capitation and FFS as acceptable payment methods under the social security system (73).

The last two major themes of barriers included knowledge/information gaps and negative publicity (mentioned in 11 and 4 studies, respectively). The knowledge or information gaps

were mostly (72.72%, n=8/11) due to insufficient knowledge about the payment reform initiative (e.g., among providers), different levels of information (i.e., information asymmetry among stakeholders, mentioned by 36.36%, n=4/11) or a lack of specific knowledge among stakeholders, e.g., IT/data illiteracy (mentioned by two studies). Some payment reforms were also affected by negative media coverage and advertising. For example, negative media coverage increased opposition among some providers to the capitation reform introduced by the Ghana National Health Insurance Scheme (66). Similarly, in the Netherlands, it amplified providers' voices opposing DRGs, ultimately leading to significant opposition to the introduction of this payment method (72).

Table 5. Barriers to provider payment reforms

Major themes	***Subthemes***	***References***
Opposition/reluctance by providers or other stakeholders	Provider reluctance due to dissatisfactory incentives (insufficient provider's incentives, misaligned incentives, financial instability, etc.).	(54,58,62,64,65,70–72,76,78,80,84,88,102)
	Provider opposition to being held accountable for outcomes they cannot control.	(64,66,71,72,78,80,84,88,93,102)
	Provider reluctancy or opposition to reform initiatives seeming to compromise their professional/clinical autonomy or ethics.	(54,56,60,62,75,76,78,80,92,103)
	Distrust due to previously failed reform attempts or between stakeholders (e.g., care providers and government).	(56,64,66,70,71,85)
	Reluctance due to difficulty/the inertia of providers to adjust to the new structure in healthcare.	(39,70,75,84,97)
	Providers reluctancy to adopt new payment models because they feel better familiar with the current one.	(39,54,64,84,88)
	Provider opposition to reform initiatives developed without evidence-based facts (clinical, cost, quality, etc.).	(56,66,72,100)
	Provider reluctance due to finding a method as confusing e.g., because of the varieties of benchmarks being used for performance programs.	(63,69,75,92)
	Provider opposition to reform initiatives intending to expose client's privacy/seen as causing negative patient physician relationship.	(39,56,60)
	Provider opposition to reform initiatives they are not involved in arrangement.	(56)
Challenges related to the reform design features	Unavailability of standards/benchmarks (quality, cost, risk-adjustment, etc.).	(57,62,65,79,83,84,86,88–92,95,96,98,100)
	Numerous or ambiguous or unaligned indicators/measures (e.g., performance/outcomes).	(39,54,62,68,81,84,92,100)
	Administratively and operationally complex reform initiatives that do not fit the local context (e.g., social, cultural or political).	(56,62,69,73,82,86,90)
	Reform initiative requiring substantial administrative tasks/burden.	(54,62,73,75,82)
	Reform initiative requiring partial/complete redesign of healthcare service delivery.	(39,98,102)
	Differing payment reform design across health plans and providers.	(39,84,88)
	If the design affects too small of a patient population because of its narrow scope.	(78,86,102)
	Other design (technical) challenges: defining a bundle, determining accountability, tariffs, evaluation criteria, outliers, gaming, etc.	(39,54–56,63,74,76,78,79,81,82,90–93,97,98)
Hurdles in implementation	Confusion due to conflicting/administrative incongruence between major actors.	(39,56,64,68,70,78,98,99)
	Fragmented implementation structure of the payment system.	(58,62–64,85,92)

structure of the payment system	The need to adapt implementation structures to reflect new reform specifics (e.g., racial and ethnic disparities, equity, language barriers, etc.).	(58,67,83,86,89,92)
	Lengthy implementing or administrative structures/bureaucratic process or regulatory delays).	(39,68,82,85,86)
Insufficient resource and capacity	Need for new infrastructure (IT, multistakeholder friendly systems, etc.).	(39,55,63,68,86,88–90,102)
	Limited funding/budget constraints (new costs of data, indicators, staff training, additional payments, etc.).	(55,62,74,86,89,92,93)
	Need for new human resource recruitments (care providers, additional staff, IT personnel, etc.).	(55,57,62,86,88)
	Unequal distribution of human resources (urban Vs. rural areas).	(68,91)
	Instability for hospital budgets following reform (e.g., due to lack of hospital autonomy in spending).	(55,57,76)
	Having multiple initiatives under way deduce the resources and dilute the effort of any given reform.	(39)
Challenges related to the market structure	Market environments unable to incorporate diverse public and private stakeholders (e.g., public and private markets operating under different IT/reporting systems).	(57,63,84,89,96,97,102)
	Market giving participating providers too small number of population (low-volume providers)	(78,86,88,91,102)
	Competing stakeholder priorities at the market.	(39,54,56,70)
	Market split among multipayers can slow the progress of reform.	(39,86,92,102)
	Attention on the largest payer can limit the valiant efforts of smaller plans with less market share.	(86,89)
Challenges related to legal/regulatory framework	Autonomy mismatch at the central level vs. for decentralized entities (e.g., lack of fiscal autonomy for decentralized entities).	(56,57,62,68,71)
	Competing health policy and political priorities in legislation.	(56,85,96,99)
	Legal and privacy issues regarding data collection and sharing.	(39,89)
	Requirement for substantial amendments to the national law on health care.	(73)
	Intense political and judicial controversy.	(99)
Knowledge/information gap	Insufficient knowledge/Unfamiliar payment initiative for providers.	(39,56,59,62,66,81,83,96)
	Information asymmetry between stakeholders.	(56,64,66,71)
	IT/Data illiteracy (e.g., inability to inputting data into the database; inability to use electronic medical records (EMRs), etc.).	(39,57)
Negative publicity/reputation	Worsening reputation of stakeholders (e.g., insurers).	(64,71)
	Negative media reportage and publicity (fueling negative provider perceptions to accept reform initiative).	(66,72)

In terms of factors facilitating health care provider payment reforms, the first major theme is stakeholder support and engagement (mentioned in 31 studies). In 58.06% (or n=18/31) of these studies, great emphasis was placed on actions aimed at engaging various stakeholders. Support from larger stakeholders (e.g., the Ministry of Health (MoH) and provider associations) was one of the principal factors mentioned in 11 studies. In 35.48% (n=11/35) and 32.25% (n=10/35) of the studies, respectively, reforms were enabled by high-level engagement of politicians/political parties and policymakers, as well as government interest in creating a sense of urgency for payment reform. For example, the Dutch government exerted more pressure on bundled payments for birth care and provided subsidies through its MoH for knowledge and tool development as well as for specific payment (infra)structures (71). A number of studies (n=10/35) also revealed that clear mechanisms related to factors such as leadership, alignment of goals and incentives, shared norms and values, and relationships among stakeholders

facilitated the success of payment reforms. Some studies reported that trust among actors and the achievement of a consensus on reform, as well as communication among them, were particularly beneficial for the successful implementation of reforms. In addition, reforms were facilitated by a coherent alliance structure between local and central actors during implementation, and others were enabled by the involvement of trusted neutral bodies that facilitated both the design process and the implementation process. Despite previous barriers focused on provider resistance, the willingness of providers to accept the new payment system was identified as a key factor in the success of some reforms (n=5/31). In addition, transparency in reform negotiations was also cited as crucial for the success of payment reforms.

Seventeen studies reported that the availability of complementary measures/policies facilitated payment reforms. In 41.17% of these studies (n=7/17), payment reforms were facilitated by favorable market, social, legislative, and regulatory environments that aligned with the reform goals. In 35.29% (n=6/17) of the studies, reforms were facilitated by complementary changes in other health policies or simultaneous efforts in the healthcare marketplace. Another 35.29% of studies pointed to specific and meaningful policies addressing ethical issues related to professionalism, the patient–physician relationship, access to care, and patient autonomy. In 29.41% (n=5/17) of the cases, reforms were supported by federal or state legislation encouraging payment innovation. Other facilitators included preexisting measures and policies, such as antitrust measures to prevent the exercise of health care market power, measures against anticompetitive behavior by large providers, and regulatory mechanisms for robust competition between payers and providers. Typical examples can be found in some countries, such as the USA, where there have been many complementary policies and measures. These include the Patient Protection and Affordable Care Act, commonly known as Obamacare, as well as various measures to prevent anticompetitive behavior and the exercise of market power (84). In Hungary, the health sector has long prioritized equity in all health reform proposals. This has subsequently proven helpful in enabling related payment reform, for example, the introduction of the risk-adjusted capitation system (67). Other areas of health policy have also facilitated payment reform for providers in other countries, such as the introduction of case-based DRGs in hospitals in Romania (74).

Another major theme of facilitators for payment reforms is prior relevant experience and know-how, as highlighted in 14 studies. Approximately half of the studies (n=6/14) indicated that conducting a pilot project/feasibility study before full implementation of the actual reform facilitated reform initiatives. For example, in the Netherlands, bundled payments for integrated chronic disease care were initially piloted for type 2 diabetes, which proved successful. It was later approved for nationwide implementation for diabetes, asthma, chronic obstructive pulmonary disease, and vascular disease (71). Similarly, 42.85% of the studies reported building reforms on existing lessons learned or infrastructure, whereas 35.71% related to a long history of progressive health reform innovations. For example, the implementation of P4P in Massachusetts was successful because of its long history of health policy innovation and collaboration among different stakeholders. A system was already in place with hospitals, government payers, experts, and various committees (e.g., quality and cost advisory boards) (83). More than a third of the studies (n=5/14) reported that reform was facilitated by the fact that there was already an existing team and staff (i.e., stability of the workforce), that the participating organizations had relevant experience, that they built on the early partnership already in place or that they built on and learned from best practices (i.e., benchmarking). Additionally, previous experience with legal, social, and regulatory conditions was found to be helpful in implementing payment reforms, as reported in some studies (21.42%, or n=3). For

example, a study of value-based reforms in six states across three regions of the USA revealed that prior experience in dealing with federal and state laws, such as the Patient Protection and Affordable Care Act, guided reform initiatives in many contexts, particularly in response to local market requirements (39).

In 14 studies, the availability of sufficient resources was indicated as a facilitator of payment reform. In 50.0% of these studies (n=7/14), sufficient resources were cited as adequate infrastructure, 42.85% (n=6/14) related to software/IT systems (e.g., electronic health records, data tools (cost, outcome measures)), 35.71% related to adequately trained IT staff, and 28.57% (n=5/14) related to data sharing and privacy mechanisms. In several other studies, it was related purely to financial factors, such as additional reform funding (grants, sponsorship, loans, etc.) and external investment, which enabled an increase in needed resources (35.71%, n=5/14 and 28.57%, n=4/14 of studies, respectively).

Good-quality leadership and the management of change at the provider level were described as important facilitators of payment reforms in 14 studies. The top five subthemes for this factor included 1) having a leader who is instrumental in building and maintaining cohesive stakeholder relationships (cited in 50% of studies, n=7/14), 2) flexibility and stable leadership that is able to analyze market conditions and stakeholder engagement and change priorities over time (cited in 35.71%, n=5/14), 3) appropriate leadership across reform initiatives to share best practices and find solutions to challenges (cited in 28.57%, n=4/14), 4) timely and consistent feedback management (cited in 28.57%, n=4/14), and 5) the ability to retain key staff or replace departing staff in a timely manner (e.g., physician attrition) (21.42%, n=3/14).

A few payment reforms were adopted and implemented due to external pressures, as mentioned by two studies. For example, the Macedonian MoH introduced P4P for hospitals despite opposition from physicians. This decision was influenced by the growing international debate and interest in this payment mechanism (56). The adoption of reform was also related to shifts in political interests in favor of health reform due to upcoming presidential elections, parliamentary votes, etc. One example is the Medicare P4P program, which received massive support from the 2008 presidential candidates and their parties (103).

Table 6. Facilitators to provider payment reforms

Support & engagement of stakeholders	High participatory efforts to engage diverse stakeholders (insurers, care providers, pharmacies, municipalities, citizen representative organizations, etc.)	(39,55,58,64,66,68,69,74,78,82,84, 85,87,89,93,94,96,101)
	Support by larger shareholders	(39,56,61,71,74,86,87,96,99,101,10 3)
	Government interests to create a sense of urgency for a payment reform initiative.	(39,54,64,68,71,74,76,83,86,103)
	High level of commitment by politics/political parties or policymakers' rationales	(39,54,56,61,64,68,74,86,87,99,103)
	Clear mechanisms at play related to factors such as leadership, alignment of goals and incentives, shared norms and values as well as the relations between the actors	(56,71,74,77,86,87,94,96,101,103)
	Trust between stakeholders	(39,71,74,85,86,89,94,101,103)
	Reaching reform consensus among stakeholders	(39,64,74,78,96,101,103)
	Communications among stakeholders in coordinating the implementation of the payment system	(39,74,75,89,94,96,103)
	Robust support from provider and consumer organizations, major purchasers and health plans.	(64,74,86,87,96,101,103)
	Cohesive alliance structure among local and central actors in the reform implementation.	(39,68,74,89,96,101)

	Transparency in reform negotiations	(63,71,78,83,87,103)
	Involving trusted neutral entities that facilitate the design and implementation of payment reform.	(71,74,83,86,96)
	Willingness of providers to accept the new payment system.	(74,84,87,101,103)
	Supportive community and social networks	(39,74,87,96,103)
	Community involvement	(62,83,89,101)
	Media information about the reform (publicity).	(85,103)
	High doctors' voices and strikes in a favor of a reform that influenced policymaker/political views and priorities	(56)
Availability of complementary measures/policies	Favorable market, social, legislative, and regulatory environments aligned with the reform goals.	(39,55,56,64,85,87,103)
	Complementary changes in other healthcare policies/simultaneous in efforts in the healthcare marketplace.	(39,67,74,96,99,103)
	Specific and worthy policies on ethical issues related to professionalism, patient–physician relationship, access to care and patient autonomy.	(55,56,59–61,78)
	Federal or state legislation encouraging payment innovation.	(39,55,87,99,103)
	Presence of regulatory mechanism for robust competition among payers and providers.	(39,87,99)
	Already existing regulatory systems and continuous assessments for reform health initiatives.	(85,86)
	Antitrust policies designed to prevent the exercise of market power.	(84,99)
	Clear policies and their enforcement to counteract anti-competitive behaviors by large providers.	(84)
Having prior experience & 'know-how'	Having run pilot project/feasibility study before full adoption/implementation of the real reform initiative.	(39,61,74,76,98,100)
	When the reform builds upon existing infrastructure or lessons learned.	(61,74,77,83,85,86)
	Already existing team and workforce (stability of the team)	(39,54,74,83,86)
	Long history of progressive health reform innovation	(39,74,83,85)
	Relevant experiences of participating organizations	(39,71,74,87)
	Prior experience with legislative, social and regulatory conditions for payment reforms.	(39,64,87)
	Building on the established early partnership	(74,77)
	Benchmarking - Build on and learn from best practices.	(74,77,83)
Sufficient resources	Proper infrastructure	(55,61,71,74,85,94,102)
	Preestablished software/IT systems (e.g., electronic health record, data tools (cost, outcome measures)).	(55,57,61,74,94,102)
	Sufficient and trained IT staff	(55,57,74,86,94)
	Data sharing mechanisms and protection (privacy, etc.)	(71,74,98,101)
	Outside investment that enables increased needed resources	(39,74,86,89)
	Supplementary reform funding (grant, sponsorship, loan, etc.)	(39,74,85,87,89)
Good quality leadership & management of change at the providers level	Leader who is instrumental in building and maintaining cohesive relations between the stakeholders.	(39,55,74,85–87,94)
	Flexibility and stable leadership able to analyze market conditions and stakeholder engagement and priorities shift over time.	(39,55,71,74,94)
	Having trusted leadership.	(39,71,86,87,101)
	Timely and consistent feedback management	(55,69,75,86)
	Opportune leadership across reform initiatives to share best practices with one another and explore solutions to challenges.	(39,69,74,101)
	Ability to retain major employees/or timely replacing crucially departing workers (e.g., exodus of doctors).	(39,56,94)
	Senior executives' delegation of decision making to others in their organizations.	(39,54,94)

	Ability to timely handle negative staff attitudes and resistance (conflict resolution).	(55,56,74)
	Timely response to changes (e.g., replacing the outdated guidelines/practice)	(74)
	Explicit internal and external supervision	(74)
External pressures toward reform adoption	International interest in healthcare changes	(56)
	Political interests shifted in favor of health reforms due to political cycle	(103)

2.5. **Discussion**

2.5.1. Summary of results

This study identified, synthesized, and mapped the literature on barriers to and facilitators of health care provider payment reform. Fifty-one studies published between 2000 and 2022 were reviewed, mostly from developed economies, with strong representation from the USA (50.98%, n=26/51). FFS was the most commonly replaced and/or supplemented method (72%, n=37/51), whereas newly introduced methods included bundled payments (n=16), P4P (n=15), and DRGs (n=11). Forty-seven of the 51 publications that provided details on the type of payment method implemented, the majority were prospective (n=27/47) and generally based on outcome measures (n=24/47).

The barriers to provider payment reform can be categorized into eight main themes: stakeholder opposition, challenges related to reform design, hurdles in implementation structures, insufficient resources, challenges related to market structure, legal barriers, knowledge and information gaps, and negative publicity. The facilitators are grouped into six main themes: stakeholder involvement, complementary reforms/policies, relevant prior experience, good leadership and management of change, sufficient resources, and external pressure to introduce reform. The factors influencing payment reforms (barriers and facilitators) are often interconnected and can be context dependent.

2.5.2. Comparison with the literature

The study's findings, while narrowly focused on health care provider payment reform, are consistent with the majority of the literature on facilitators and barriers to health care reform in general (32–37). The findings underscore the enormous importance of stakeholder engagement. This is consistent with previous studies (32,44), particularly the 'principle of many hands', which has been cited as one of the key success factors of health reforms (7).

The key stakeholders in payment reforms are the providers themselves, payers, insurers, government agencies (e.g., the MoH), physicians' associations, and patients/citizens. The study revealed that the literature on barriers has focused mainly on the reluctance or resistance of providers and physician associations to reform. The strategy of involving stakeholders (e.g., providers) early on in understanding the objectives of a reform programme and their role in planning and implementation has proven successful in a number of health reform initiatives in avoiding individual and institutional resistance (64,94). Stakeholder involvement and greater participation can help establish consensus and ultimately facilitate the successful implementation of reforms.

The study revealed that patients are the least involved stakeholders in healthcare provider payment reforms. This is consistent with previous research indicating a lack of community and patient involvement in health reforms in general (37). In particular, this finding is

consistent with the findings of researchers such as Doran, who reported that patient involvement in the development of P4P systems was extremely limited (78). On the other hand, the literature discusses the recognition of patients as important stakeholders in health reform (104–106), particularly the successful reform principle of placing patients at the center of proposed changes (32). Some researchers suggest that patient participation in today's health care decision-making processes could be strengthened at both the individual and collective levels (104,105).

Many of the themes and subthemes in this review align with the literature on three types of influences and pressures modeled in previous research on institutional change theory in health care reform (37,38). The first is coercive pressure, which originally stems from political influence and associated legitimacy (34,37). It includes laws, regulations, and policies as determinants of change. In line with this, the study revealed that government support, political commitment from politicians, or their political parties are important for a successful payment reform process. It was also found that reform is more likely to succeed if there are already well-established, complementary laws, regulations, and policies in place in the health sector. In addition, it was found that political influence on reform can also come from outside the health system, e.g., when political interests shift to support the reform. This is consistent with coercive influences, according to which both formal and nonformal pressures can be external or imposed directly by organizations on which one depends and/or by cultural expectations in society (34).

The second category of factors falls under normative influences, which are due mainly to professionalization (34,38). It is defined as the collective struggle of members of a profession to define and control the conditions and methods of their work, as well as to establish a cognitive basis and legitimacy for their professional autonomy (34). In this study, several factors are associated with this category, particularly barriers to remuneration reform that arise when the proposed reform conflicts with health care providers' professional values, such as ethics, autonomy, and traditional or habitual ways of practicing health care. As mentioned earlier, some of these factors can lead to resistance or reluctance among health care providers.

Importantly, the normative nature of influences highlights two aspects of professionalization. The first is education (e.g., in-service training programs), and the second is the establishment and development of professional networks (34). The first aspect can help close the knowledge gap that hinders the proper implementation of payment reform, as indicated by this study. It found that stakeholders may face knowledge gaps, e.g., IT/data illiteracy (e.g., inability to enter data into the database, inability to use EMRs, etc.). Therefore, the first aspect is particularly helpful in acquiring the specific skills needed to implement payment reform. The second aspect, building networks, is one of the most crucial factors, as professional networks can help share information, including best practices, and learn from each other, all of which contribute to the success of payment reform. However, it was found that stakeholders' interests can compete and conflict. This is consistent with the findings of previous studies on barriers to and facilitators of health care reform, e.g., Levesque et al. (37), who reported that network members may clash with their priorities, e.g., when the goals of some stakeholders in networks (e.g., the government) and medical professional associations clash. These associations always strive to preserve the professional autonomy of their members.

The third category is mimetic influences, under which researchers such as Levesque et al. (37) contend that the presence of innovators and champions (i.e., successful leaders), who can play a key role in a multidisciplinary team, significantly contributes to the success of health reform. The authors suggest that including providers in this role helps reduce physician resistance to

reform by giving more weight to the voice of their medical profession. These findings are consistent with the results of the study. For example, it was found that health care providers may resist reform initiatives in which they are not involved in organizing. Moreover, this overall perspective on the presence of successful leaders aligns with the research findings, which indicate that good-quality leadership and change management at the provider level are crucial in enabling payment reform. Proactive change management is particularly important because change can occur at any time and at any level. When payment reform is introduced, it is essential for everyone on the team to understand the reasons behind the change, the expected benefits, and how it will impact their respective roles. They also need to be aware of the impact that their interactions with others on the team can have. This means rethinking workflows, developing customized communication plans for each stakeholder, and carefully monitoring and managing team dynamics (such as addressing negative employee attitudes and resolving conflicts).Apart from innovators and champions, which are considered crucial factors, uncertainty is also recognized as a powerful force in mimetic processes, often stimulating imitation (34). This is broadly consistent with the finding that the adoption of payment reforms can be influenced by international interest in health care change (i.e., imitation of what is being done abroad). The mimetic process also suggests modeling organizations on others when there is a poor understanding of a change, when goals are ambiguous, or when the environment creates symbolic uncertainty (34). The study also found that the success of payment reforms is enhanced by building on and learning from best practices (i.e., benchmarking). This is also consistent with other findings on the many barriers to payment reform that stem from hurdles in the design of reforms and implementation structures (e.g., goals that are not embedded in the local context, ambiguous metrics, etc.). Benchmarking is thus a crucial factor in overcoming such challenges.

Like previous studies (37), this study indicated that healthcare reforms are more effectively implemented when providers are more receptive to the reform, meaning that they have positive perceptions and attitudes. However, this is rarely the case due to their inertia in changing their past practices (87). It also revealed that providers resist payment reform not only because they are unwilling to change their usual practices but also because they believe that they will be exposed to risks they cannot control (e.g., certain quality metrics and outcomes). Strong resistance can arise when the risks they are held accountable for lead to unsatisfactory incentives (e.g., misaligned incentives, financial penalties). This is the case with most P4P systems, which have their roots in economic theory and behavioral psychology (107). These systems require providers to align their behavior with specific performance indicators, particularly in terms of quality. Some providers complain that quality is highly dependent on patients' adherence to physician recommendations (screening, treatment, lifestyle, etc.). They argue that they are unfairly penalized for patient behavior that is beyond their control (78,80,84,88). Similar concerns may arise with other payment arrangements, such as bundled payments, because they often involve financial risks for providers.

Finally, but largely consistent with previous studies (39,44,85,108), it was found that sufficient resources (e.g., additional funding, infrastructure, etc.) are an undeniable factor in facilitating provider payment reform. Previous researchers, such as Leao et al. (44), have reported that sufficient infrastructure and advanced health information technology are key factors in the design, implementation, and applicability of value-based payment models. This is consistent with most of the findings, which indicated that payment reforms require adequate health information system infrastructure and associated costs (e.g., IT tools, data, etc.). It is also emphasized in the "principle of data to information to intelligence" described by Braithwaite et al. (32). However, the increasing need for health information technology may also pose

challenges for implementing provider payment reform, such as the introduction of complex metrics and standards.

Overall, this study has shown that despite some country- and/or region-specific characteristics of health system organization (e.g., Europe vs. the USA) and resulting payment policies, the issue of factors influencing provider payment reforms is to some extent universal in nature. For example, the issue of stakeholder involvement was mentioned (either as a barrier or facilitator) in studies from 20 different countries across all regions represented in the included publications (i.e., North America, Europe, Asia, Africa).

2.5.3. Strengths and limitations

To the best of the authors' knowledge, this study is the first to identify and map the factors that have influenced diverse provider payment method reforms worldwide. Using an inductive, data-driven approach to map barriers and facilitators allowed for the inclusion of a variety of perspectives and provided a comprehensive overview of the existing evidence. Because all methods of paying providers (including P4P programs), specifics of reform or implementation of a particular method were not captured well. In addition, the focus was on payment methods rather than solely on changes related to payment systems. This includes supporting elements such as contracting, information management, and accountability. Some factors may be context specific, e.g., specific to systems with many payers. Furthermore, only English-language publications were considered, and the quality of the studies was not assessed. The latter is consistent with the methodological guidelines for conducting scoping reviews (47).

2.5.4. Implications of the study

The findings suggest that there is a paucity of empirical research focused on identifying the barriers to and facilitators of provider payment reforms, especially outside the context of the USA. This is consistent with issues raised by other authors (71) about the need to plan and conduct primary data research on factors that can support the successful implementation of reforms in various health care settings. Further research could focus more on analyzing specific types of factors, such as stakeholder involvement, including patient/citizen participation in the design of provider payment reforms, or on the implementation of specific payment methods. Further research is also needed on integrating these types of reforms into the broader context of the health care system and addressing significant current challenges (e.g., health care workforce shortages (109,110); digitalization (109,111,112); and changing models of care (110,113)). Future research on the factors that influence the success of reform may help in developing guidelines for a more evidence-based approach. The identified and mapped major themes of factors influencing reforms can serve as a starting point for research aimed at ranking the importance and level of priority of various types of determinants. This can lead to the development of a tool for evaluating reforms in health care provider payments. This tool can assist policymakers in assessing potential barriers and devising suitable strategies to mitigate their negative impacts on the reform process.

2.6. **Conclusions**

The main barriers to and facilitators of payment reform are interrelated. The same factor can act as a barrier or facilitator, depending on its characteristics. Although the specific factors can be highly contextual, there are many commonalities in payment reforms worldwide. High levels of stakeholder engagement and support, government commitment and political support, existing complementary health reform, sufficient resources and capacity, proactive change

management, and previous experience in implementing reforms are all examples of facilitators. Barriers include strong resistance (usually from health care providers); political unwillingness to reform; lack of appropriate IT systems and infrastructure; knowledge gaps; and legal, regulatory, and ethical challenges. These factors may affect different stages of reform—design, implementation, evaluation, or multiple stages—simultaneously. More research on the specific factors that influence health care provider payment reforms is needed. A research gap exists, particularly in developing economies.

Chapter 3. Health Care Provider Payment Schemes and Their Changes Since 2010 across Nine Central and Eastern European Countries—A Comparative Analysis

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3.1. **Abstract**

Health care provider payment schemes comprise a complex set of arrangements utilized to align provider behavior with specific health policy objectives. This study aimed to provide a structured, comparative overview of current payment schemes in the public health systems of selected CEE countries across different provider types and to identify and compare major changes in payment schemes since 2010. A four-step methodological approach was applied, including the development of a data collection form, desk research, consultations with national experts, and comparative analysis. The findings indicate that the nine analyzed CEE countries—Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania—exhibit significant similarities in their mix of provider payment methods and the overall direction of recent reforms. Output-based payment mechanisms are dominant across all countries and provider types, with PHC providers demonstrating the most diverse mix of payment methods. PHC and hospital inpatient care have undergone the most frequent payment scheme modifications in the past 13 years, primarily focusing on refining existing payment methods, such as detailing payment categories, and introducing additional approaches to remunerate specific services or incentivize performance, including FFS and bonus payments. The objectives of these changes are often similar, highlighting considerable potential for shared, cross-country learning.

Key words
provider payment scheme, provider payment method, health care provider, Central and Eastern Europe

3.2. **Introduction**

CEE countries share many common characteristics in terms of the financial and organizational aspects of their health systems (114–116). This is related both to the common historical background, especially health system transformation during the post-Soviet period (114,117,118), and more recent common reform trends (119–121). Currently, among the 11 CEE countries that are European Union (EU) members (Bulgaria, Czechia, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia, Slovakia), public health expenditures predominate, with the main role of social health insurance schemes, although out-of-pocket payments are still high in some countries (122). In most countries, a single, centralized public payer operates. CEE countries often face similar structural challenges within their health systems, including overcapacity in hospital care (120) with simultaneous deficits in long-term care (LTC) provision (123) and fragmented PHC (119). Many recent common health reform trends focused on these challenges and included diverse efforts to improve hospital governance (120,124), strengthen PHC provisions and implement coordinated and/or integrated care provision models (119,121,125). Important elements of these reforms were changes to health care provider payment schemes.

The generic objective of health care provider payment schemes is to compensate providers for the services rendered. They consist of a complex and multidimensional set of arrangements. Payment schemes include payment methods (mechanisms for transferring funds from payers to health care providers) together with all supporting elements, such as contracting rules, management information systems, and administrative and liability mechanisms (4). A variety of provider payment methods exist, each of which has its own strengths and weaknesses in different contexts (4,126). To counter the weaknesses of single methods, policymakers pursue an optimal payment method mix (127) that must be strategically aligned with the remaining payment system elements as well as other health system capacities and objectives (126). Depending on its design, the payment scheme creates a set of specific incentives that can influence provider behavior toward the realization of predefined policy objectives (e.g., more efficient use of resources, enhancing the provision of specified services, better quality of care, or responsiveness to patient needs) (126).

There are some previous studies that include elements of comparison of provider payment schemes and their reforms in different CEE countries (2,120,128–130). However, these studies focused exclusively on specific sectors, e.g., hospitals (120,129), pharmaceuticals (128) or specific situations, e.g., payment adjustments during the Coronavirus disease 2019 (COVID-19) pandemic (130). The objectives of the present study were 1) to provide a structured, comparative overview of current payment schemes within the public health system in selected CEE countries for different health care providers and 2) to identify and compare major changes conducted in this field since 2010. The study focuses on arrangements between public payers and providers' institutions (legal entities) and excludes issues related to the employment and remuneration of individual medical workers by health care institutions. Following the general objectives of cross-country comparative studies, this study aimed to map relevant, recent evidence for future health care provider payment reforms in CEE countries to indicate common trends and potential areas for shared learning and future collaborative studies.

3.3. **Materials and Methods**

The methods used comprised four consecutive phases: 1) a data collection form was developed based on the existing literature; 2) desk research was conducted to map existing provider

payment schemes and recent payment reforms in 11 CEE countries (EU members); 3) national health policy experts were identified and asked to validate and update the findings of the desk research; and 4) a comparative analysis was performed.

3.3.1. Data collection form

The literature provides examples of theoretical frameworks for both the classification of provider payment methods (2,4,131) and provider payment reforms (2). For the former, inspired by Langenbrunner et al. (4), a distinction was made between payment methods on the basis of: 1) inputs – available or used; 2) outputs – referring to the services provided; and 3) outcomes – rewarding or penalizing on the basis of health outcomes. Within the output-based category, a further distinction was made between payments per capita, per case, and per unit of service (Table 7).

Table 7. Overview of payment method classification

Category	Method examples
Input-based	• Line-item budget e.g. fixed payments for salaries, global budget based on inputs
Output-based	• Per capita e.g. capitation in PHC • Per case e.g. DRGs, other case-based payments, pay for performance (P4P) elements when indicators include cases treated items; global budget based on cases treated • Per unit of service e.g. FFS, per diem, per visit, P4P elements when indicators include services provided items, global budget based on units of services provided
Outcome-based	• P4P elements when indicators include health outcomes

Source: Based on the work of Langenbrunner et al. (4)

To map the provider payment method reforms, a simple classification was developed that distinguishes between three types of changes: 1) replacing the existing payment method with a new method ('REP'); 2) modifying the existing method (e.g., by changing the number or content of reporting/coding groups, changing tariff valuation rules, and changing the scope of services covered by a given method) ('MOD'); and 3) adding a new (additional) method to the existing method ('ADD'). A distinction was also made between direct changes to the payment method and all related and/or complementary changes within the payment systems, including for example, changes in the payer structure and contracting principles (e.g., contract timeframe, volume limits).

The data collection form was developed in accordance with the two predefined research questions. The first part focused on the current (as of May 2023) payment schemes for the four types of care providers: 1) PHC (general practitioners (GPs) family doctor practices, including other medical professionals working within the practice); 2) specialized ambulatory care (focused on providers with medical specialties outside general practice); 3) hospitals (focused on curative care); and 4) LTC provided within the health care sector (focused on care for people dependent on an extended period of time, including e.g., nursing and palliative care). For both hospitals and LTC providers, distinctions were made between outpatient services (including day and home care) and inpatient care (patient stay minimum of 24 hours). When possible, the aim was to indicate the dominant payment method for each provider type, i.e., one that covers the majority of providers or services or the value of the public payer budget. The second part aimed to map the major changes since 2010 (listed in chronological order according to the four types of providers). COVID-19-related payment solutions/reforms that did not continue after

the pandemic were excluded. The study focused on payments for health services (capital investments were excluded). Payments for pharmaceuticals, medical products and dental services were also excluded.

3.3.2. Desk research

A desk research of standardized data sources was conducted between March and May 2023. The objective was to complete the data collection forms for the 11 CEE countries (EU members). The sources included the following report series: Health System Reviews and Health Systems Summaries (132), Health System and Policy Monitor (133) and Country Health Profiles - State of Health in the EU, available through the European Observatory on Health System and Policies website (134). These reports are based on standardized methodologies, have a publication format that allows cross-country comparisons, and are regularly updated and available for all EU Member States. In addition, basic indicators characterizing health system funding and provider capacities in the analyzed countries were retrieved from the Eurostat database (122).

3.3.3. National expert consultations

The partially completed data collection forms for each country were sent to national experts selected on the basis of purposive sampling. The experts contacted were national representatives of the Health System and Policy Monitor Network (135), the vast majority of whom are also the authors of the reports screened during the desk research. These experts have in-depth knowledge of the organization and policy processes in their national health systems (135). Each expert was invited to participate in the study or to indicate another national informant with relevant expertise (snowballing method). The national experts were asked to validate and update the findings of the desk research and to provide appropriate references if needed. The experts have been included as coauthors of this paper.

3.3.4. Comparative analysis

The validated and updated data collection forms were analyzed by two researchers (CN and KDJ) in August 2023. Dedicated classifications (see section data collection form) were used for both the current payment methods and their reforms. The draft comparative results were shared with all the national experts, with a request for further validation and clarification. Additional questions and ambiguities were clarified iteratively through further correspondence.

3.4. **Results**

During the desk research, basic data were collected for all 11 CEE countries (EU members). However, much more relevant information was available for some of the countries than for others. Additionally, not all national experts responded to the invitation to participate in the study and/or provided adequate inputs. Consequently, nine countries were included in the final analysis of the results: Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland and Romania.

3.4.1. General comparison of national health systems

Table 8 presents some general characteristics of the health systems of the nine countries in relation to the funding model and providers' capacities. In the majority of the included

countries, an insurance-based health care funding model dominated with a single, centralized public payer. Latvia is the only country with a tax-based system, whereas Czechia is the only country with a multiple public payer structure. In the case of the latter, although multiple payers exist, there is limited competition between them, and they all follow the same reimbursement regulation issued by the MoH (136).

Regardless of the funding model, in all nine countries, the share of total current health expenditure (CHE) in gross domestic product (GDP) in 2021 was below the EU-27 average of 10.88%. In the same year, the share of public expenditures in total CHE ranged from 64.95% in Bulgaria to 86.42% in Czechia, with an EU-27 average of 81.19%. Public payers play a dominant role in the purchase of health services in the vast majority of countries. In 2021, Bulgaria was the only country where the share of social health insurance payer expenditures in total CHE was slightly below the EU-27 average of 50.69% (i.e., 49.14% for Bulgaria). The values of indicators characterizing providers' capacities vary significantly across countries. For example, in 2021, the number of generalist medical practitioners per 100,000 inhabitants ranged from 59.67 in Bulgaria to 233.31 in Estonia. The majority of countries seem to have overcapacity in hospital care. In 2021, the number of available hospital beds per 100,000 inhabitants was above the EU-27 average of 524.76 in seven countries. At the same time, there was high diversity in the availability of LTC beds per 100,000 inhabitants, from only 28.81 in Bulgaria to 866.86 in Hungary (Table 8).

Table 8. Selected health system characteristics of the analyzed countries

Feature	Bulgaria	Croatia	Czechia	Estonia	Hungary	Latvia	Lithuania	Poland	Romania
Dominant funding model	insurance based	insurance based	insurance based	insurance based	insurance based	tax based	insurance based	insurance based	insurance based
Main public payer structure	single payer, centralized (with 28 regional branches)	single payer, centralized	multiple payers, with limited competition	single payer, centralized	single payer, centralized	single payer, centralized	single payer, centralized	single payer, centralized (with 16 regional branches)	single payer, centralized
Total CHE as a share of GDP* (2021)	8.62%	8.01%	9.49%	7.54%	7.38%	9.11%	7.76%	6.44%	6.47%
Share of public expenditures** in total CHE (2021)	64.95%	85.50%	86.42%	76.12%	72.45%	69.47%	68.78%	72.46%	78.33%
Share of the main public payer/s expenditure*** in total CHE (2021)	49.14%	76.07%	70.97%	63.41%	57.93%	69.47%	56.62%	57.33%	60.11%
Rate of generalist medical practitioners per 100,000 pop. (2021)	59.67	82.17	71.82	233.31	66.82	76.84	102.50	88.51	79.21
Rate of specialist medical practitioners per 100,000 pop. (2021)	396.87	288.94	337.43	256.36	262.09	258.96	344.97	255.61	271.63
Rate of available hospital beds per 100,000 pop. (2021)	792.28	567.54	665.51	439.44	678.56	516.43	605.43	627.18	720.56
Rate of available beds in nursing and other residential LTC facilities per 100,000 pop. (2021)	28.81	233.96	716.98	259.33	866.86	259.33	766.31	201.40	211.92

*CHE – current health expenditures, GDP – gross domestic product, **government schemes and compulsory contributory health care financing schemes (system of health accounts (SHA) 2011 – HF1); *** main financing scheme (SHA 2011 – government scheme (HF11) for Latvia and compulsory contributory health insurance (HF12) for remaining countries). Source: Country Health Profiles 2021 and the Eurostat database (2024).

3.4.2. Mapping the current provider payment methods

Table 9 presents the results of mapping current payment methods for each provider type, while Supplementary File-2 Table S9 shows the classification overview of these methods.

Primary health care

PHC providers are characterized by the most diverse payment method mix. In some countries, the methods used include those from all classification categories: 1) input-based, 2) output-based per capita, per case and per service, and 3) outcome-based (Supplementary File-2 Table S9). Two common methods are capitation and FFS. In most countries, these two methods are used together, and their proportions can vary. For example, Czech GPs are paid on the basis of a combination of capitation and FFS, with the share of each method at 63% and 37%, respectively (137), whereas in Romania, the proportions are 35% and 65%, respectively. In the majority of countries, these are supplemented by diverse P4P programs covering both output- and outcome-based indicators, with the former being prevalent (see next paragraph). Some countries also use input-based methods. These include, for example, different forms of fixed payments for salaries in Hungary and Latvia, office maintenance expenses in Croatia, and payments for newcomers (for establishing a new practice) in Romania or distance care provision in Estonia.

In relation to P4P programs within the PHC, financial rewards can take a different form. For example, in Czechia, PHC physicians receive a greater capitation payment if they perform a complex examination of at least 30% of registered patients aged 40 -80 years (136). In Bulgaria, higher FFS rates are offered to PHC units that report a higher proportion of adult patients (above 60%) covered by prophylactic examinations (138). In Romania, an additional fixed payment is offered for achieving a defined yearly target of the number of patients assessed for particular health risks. In Croatia, the bonus payment includes, i.e., a fixed payment for salaries and office maintenance as well as increased capitation (139). The indicators used within P4P in PHC can be calculated differently and apply different thresholds; however, patterns are similar across countries. In general, in many existing P4P programs, the measured indicators often relate to 1) vaccination rates (e.g., the share of the elderly population vaccinated against influenza in Hungary and Lithuania or child immunization rates in Latvia and Estonia); 2) cancer screening intensity (e.g., three predefined cancer type early diagnosis indicators in Lithuania or the mammography rate in Hungary); and 3) chronic disease monitoring (e.g., the share of patients with hypertension, diabetes, and asthma tested for predefined clinical indicators in Latvia or indicators related to correct medicine prescriptions in chronic illnesses in Estonia and Hungary). For the latter dimension, some countries also apply outcome-based indicators. For example, in patients with diabetes mellitus, the level of glycosylated hemoglobin is monitored (with the rate set at equal to or below 7% on two occasions during the reporting period in both Hungary and Lithuania and below 7.5% in 60% of patients in Latvia). Additionally, in relation to the chronic disease management dimension, some countries apply indicators that can be classified as both output- and outcome-based, e.g., the share of avoidable hospital admissions for a group of predefined chronic conditions in Croatia and Lithuania.

Table 9. Payment methods by country and provider type (valid as of May 2023)

Type of care & provider/ Country	PRIMARY HEALTH CARE	OUTPATIENT SPECIALIZED CARE (outside hospitals)	HOSPITALS		LONG TERM CARE (within health sector)	
			Outpatient specialized care (inside hospitals)	Inpatient hospital care	Inpatient LTC	Outpatient/day/home LTC
Bulgaria	Capitation + FFS, P4P	FFS	Case payment	Case payment	Case payments (for acute episodes), Per diem (for psychiatric care)	Not covered
Croatia	Capitation + FFS, P4P, Fixed payment	FFS	FFS, Case payments	Global budget, DRGs, Case payment	Per diem	FFS
Czechia	Capitation + FFS, P4P, Fixed payments (for emergency care shifts)	FFS + case payments (day surgeries), P4P elements (dialysis providers)	FFS + Case payments (day surgeries), P4P elements (dialysis providers)	Global budget (based on DRGs), DRGs, Fixed payment (for palliative care)	Per diem	FFS
Estonia	Capitation, FFS, P4P, Fixed payments (e.g. for distance, second nurse)	FFS + P4P elements (video consultations)	FFS + P4P elements (video consultations)	DRGs, FFS, Per diem, Fixed payments, Bundled payments (for stroke patients)	Per diem, FFS	FFS
Hungary	Capitation, Case payment, P4P, Fixed payments (for salaries and group practices)	FFS + Fixed payment (for salaries)	FFS + Fixed payment (for salaries)	DRGs + Fixed payment (for salaries)	Per diem + Fixed payment (for salaries)	Per diem (hospice home care), Per visit (specialist home care)
Latvia	Capitation, FFS, Fixed payment (for salaries), P4P	FFS, Case payment, Fixed payment (for salaries)	FFS, Case payment	DRGs, Case payment, Per diem, Fixed payment (for emergency care), FFS	Fixed budget, Per diem	Case payment, FFS
Lithuania	Capitation, FFS, P4P, Fixed payment (for special need patients)	Case payment	Case payment, FFS (for expensive procedures and examinations)	DRGs, FFS	Per diem, Case payment (palliative care)	Per diem, FFS, Fixed payment (nursing at home), Case payment (palliative care)
Poland	Capitation + Per visit/consultation, FFS (for diagnostic tests and within coordinated care), Fixed payment (for rural/low density population)	Per visit payment (groups adjusted for number and type of services provided) + FFS	Per visit payments (groups adjusted for number and type of services provided) + FFS, P4P elements (oncological network)	Global budget (based on DRGs) for hospital included in network + DRGs, P4P elements (for stroke patients), FFS, per diem	Per diem (differentiated based on health and care needs)	Per diem (differentiated based on health and care needs)
Romania	FFS + Capitation, P4P, Fixed payment (for newcomers)	FFS	FFS	DRGs + Case payment, Fixed payment (for salaries)	Per diem	FFS, Case payment

Note: if a dominant payment method exists (one that covers the majority of providers or services or the value of the public payer budget), it is listed first, followed by other, additionally used methods after the '+' sign. If a no dominant payment method can be defined, all methods applied for a given type of provider are listed.

Outpatient specialized care

In all analyzed countries, specialized outpatient care relies on activity-based payment methods, mostly FFS and case payments (Table 9). In most countries, there are no major differences in payment methods for services provided outside or within hospital settings. FFS is used in all countries. In three countries, P4P elements are used for video consultations in Estonia, for dialysis providers in Czechia, and for meeting diagnostic time targets for oncological patients in Poland. In Hungary and Latvia, the FFS is supplemented by an additional fixed salary budget.

Hospital inpatient care

DRGs are the most commonly used payment method for hospital inpatient care. Bulgaria is the only country without a dedicated DRG scheme; instead, case payments based on clinical pathways are used (140). In most of the remaining eight countries, DRGs are supplemented by other output-based payments (e.g., per diem, FFS) and/or fixed payments (Table 9 and Supplementary File-2 Table S9). In the latter case, for example, in both Romania and Hungary, fixed payments for salaries are used. In Hungary, they constitute approximately 40% of the total income of providers (141). In Czechia, a fixed payment is used for palliative care provision in hospitals (calculated on the basis of the number of insured individuals) (142), whereas in Latvia, it covers emergency care (calculated on the basis of the number of emergency care doctors). In Poland, P4P elements are used within the coordinated care model for patients with acute myocardial infection (AMI). Hospitals that decide to participate receive financial bonuses that take the form of an increased refund from the payer (depending on the share of patients included in the program) or an additional bonus payment for each patient who is able to return to work within four months of discharge from the hospital (143,144). Estonia also introduced a coordinated care program for stroke patients, with bundled payments covering the entire course of treatment and related complications for a period of 365 days. The covered services include acute treatment, rehabilitation, follow-up visits, and nursing care (145).

Long-term care

In the case of LTC services provided within the health care system, the vast majority of countries rely on simple output-based methods, mostly per diem and FFS (Table 9). Bulgaria is the only country where outpatient LTC is not exclusively covered by public payers. All nine countries use per diem for LTC inpatient care (either as a solo method or in combination with case payments in Bulgaria and Lithuania, FFS in Estonia and fixed payments in Hungary and Latvia). The same type of method is common for LTC outpatient, day and home care. In general, specific LTC payment methods are often chosen according to the specific scope of services and disease categories. For example, in Latvia, home palliative care for oncological patients is covered by case payments, whereas inpatient care for patients with mental disorders is financed via fixed budgets.

3.4.3. Changes in provider payment schemes since 2010

Table 10 presents an overview of the main changes in payment methods conducted since 2010 by country and provider type (Supplementary File-2 Table S10 presents an extended version of this table, with a description of the main motivations behind each change). Table 11 shows a clustered overview of the motivations behind the changes in payment methods, whereas Table 12 lists the major changes to other payment system elements.

Primary health care

In the case of PHC providers, the majority of countries modified existing payment methods and/or added new (additional) methods (Table 10). In the former case, changes often focus on adjusting costing items (e.g., capitation and FFS) and changing tariff valuation rules to better reflect actual costs. Increasing tariff valuation and expanding the scope of services financed via FFS are usually aimed at encouraging more PHC service provisions. Six countries added P4P schemes, while in two countries, these schemes were already in place prior to 2010. P4P programs often focus on enhancing disease prevention activities and/or improving care coordination (for chronic conditions). These two objectives were also pursued by expanding the list of services financed via FFS (e.g., in Poland). Several countries have introduced additional fixed payments, yet often with different objectives (e.g., Poland to encourage the provision of services for rural/low population density areas; Hungary and Estonia to encourage the establishment of group GP practices; Czechia to encourage PHC doctors to take emergency department shifts) (Table 11 and Supplementary File-2 Table S10).

Table 10. Main changes to payment methods by country and provider type since 2010

Type of care & provider/Country	PRIMARY HEALTH CARE	OUTPATIENT SPECIALIZED CARE (outside hospitals)	HOSPITALS		LONG TERM CARE (within health sector)	
			Outpatient specialized care (inside hospitals)	Inpatient hospital care	Inpatient LTC	Outpatient/day/home LTC
Bulgaria	**'MOD'** (ongoing: new capitation tariffs, age adjusted FFS, FFS tariff modification) + **'ADD'** (2022: P4P elements for prophylaxis)	**'MOD'** (new tariffs valuation)	**'MOD'** (2016: new ambulatory procedures, new tariffs)	**'MOD'** (increased no of clinical pathways)	'NO CHANGES'	'NO CHANGES'
Croatia	**'ADD'** (2013: P4P)	'NO CHANGES'	**'MOD'** (2015: introducing diagnostic procedures)	**'MOD'** (2015: refined DRGs)	'NO CHANGES'	'NO CHANGES'
Czechia	**'MOD'** (ongoing: increasing capitation, expanding the scope of services financed via FFS) + **'ADD'** (2016: fixed bonus/payment for emergency care shifts)	**'MOD'** (ongoing: new FFS tariffs, expanding the scope of services financed via FFS) + **'ADD'** (2019-2020: P4P for dialyzes providers, 2023: case payment for day surgery)	**'MOD'** (ongoing: changes in reimbursement formula, expanding the scope of services financed via FFS) + '**ADD'** (2019-2020: P4P for dialyzes providers, 2023: case payment for day surgery)	**'MOD'** (2012: activity based global budgets, 2019: DRGs modifications) + **'ADD'** (2023: fixed payment based on number of insured for palliative care) + **'REP'** (2021: CZ-DRGs)	**'MOD'** (2016: ongoing tariffs differentiation, new reimbursement rules)	**'MOD'** (2018-2019: expanding scope of services financed via FFS)
Estonia	**'MOD'** (2012: new capitation groups,	**'ADD'** (2021: video consultations P4P)	**'ADD'** (2021: video consultations P4P)	**'ADD'** (2020: fixed payment for emergency care; 2021: bundled	**'MOD'** (ongoing tariffs differentiation)	**'MOD'** (ongoing tariffs differentiation)

	ongoing: tariff valuation changes) + **'ADD'** (2013: FFS for e-consultations; 2015: P4P, 2017: fixed payment for group practice)			payment for stroke patients)		
Hungary	**'ADD'** (2021: fixed payment to encourage group practices, 2021: fixed payment for salaries)	**'ADD'**(2021: fixed payment for salaries)	**'ADD'** (2021: fixed payment for salaries)	**'MOD'** (ongoing tariffs adjustments) + **'ADD'** (2021: fixed payment for salaries)	**'ADD'**(2021: fixed payment for salaries)	'NO CHANGES'
Latvia	**'ADD'** (2013: FFS and P4P)	**'MOD'** (ongoing tariffs adjustments)	**'MOD'** (ongoing tariffs adjustments)	**'REP'** (2011: DRGs) + **'MOD'** (DRGs modifications)	**'MOD'** (ongoing: changes in the scope of services financed via given method)	**'MOD'** (ongoing: changes in the scope of services financed via given method)
Lithuania	**'MOD'** (expanding the scope of services financed via FFS and P4P)	**'MOD'**(new tariffs, expanding the list of services financed via case payments; 2016: extended consultations)	**'MOD'**(new tariffs, expanding the list of services financed via given methods; 2016: extended consultations)	**'REP'** (2012: DRGs) + **'MOD'** (2015: country specific DRGs weights)	**'MOD'** (2018-2022: ongoing tariffs differentiation)	**'MOD'** (2019: new tariffs for palliative care)

Poland	**'MOD'** (adjusted capitation groups, expanding scope of services financed via FFS) + **'ADD'** (2019: fixed payment for rural areas)	**'REP'** (2011: per visit) + **'MOD'** (new tariff valuation rules, new rules for reimbursement calculation)	**'REP'** (2011: per visit) + **'MOD'**(new tariff valuation rules, new rules for reimbursement calculation) + **'ADD'**(2017-2022: global budget, 2015: P4P elements within oncological network, FFS for oncological coordinated care)	**'MOD'** (new tariff valuation rules, new rules for reimbursement calculation) + **'ADD'** (2017: global budget; 2015: P4P elements within oncological pathways, FFS and per diem for oncological coordinated care, 2022: P4P elements within stroke program)	**'MOD'**(2015: gradual tariffication of services, differentiation of per diem payment depending on health needs)	**'MOD'**(2015: gradual tariffication of services; differentiation of per diem depending on health needs)
Romania	**'MOD'** (expanding the scope of services financed via FFS) + **'ADD'** (2023: P4P)	**'MOD'** (ongoing changes to the tariff valuation rules)	**'MOD'** (extending the list of services financed via FFS, ongoing changes to the tariff valuation rules)	**'MOD'** (new tariff rules for DRGs in Romanian context 2020) + **'ADD'** (2017: additional, fixed payment for salaries increase)	'NO CHANGES'	**'MOD'** (2014: changes to tariffs calculation methods for home care) + **'ADD'**(2018: payment for outpatient palliative care)

These are major changes to payment methods, including four options: 'NO CHANGES' (no change in the payment methods since 2010 as well as no major modification to its content); REP' – replacing the previous method with a new method; 'MOD' – modifying the existing method (e.g., by changing the number of DRGs/capitation groups, modifying costing groups by making them more detailed, changing tariff valuation rules, expanding the scope of services financed via the given method); 'ADD' – adding a new method (additional method) to the existing method)

Table 11. Motivations behind changes to payment methods by provider type since 2010

Type of care & provider		Motivations → examples of payment method changes
PRIMARY HEALTH CARE		• Better reflection of actual costs → MOD: age adjusted capitation and FFS; capitation and FFS tariffs increase • Expanding the scope of PHC services → MOD: capitation/FFS tariffs increase; expanding scope of services financed via FFS; ADD: P4P • Enhancing disease prevention activities → MOD: expanding scope of services financed via FFS; expanding scope of services included in P4P; ADD: P4P • Encouraging setting up group/multidisciplinary practices → ADD: fixed payment • Encouraging provision of services for rural populations → ADD: fixed payment • Encouraging PHC doctors to work in emergency care → ADD: fixed payment • Better care coordination (for chronic conditions) → MOD: expanding scope of services financed via FFS; ADD: P4P • Covering regulatory wages increase → ADD: fixed payment
OUTPATIENT SPECIALIZED CARE (outside hospitals)		• Better reflection of actual costs → MOD: FFS and case payment tariffs' modification; REP: introduction of adjusted per visit payments • Encouraging more services being provided in outpatient settings → MOD: expanding scope of services financed via FFS and/or case payments and updating their tariffs, ADD: P4P, case payment • Improving access and quality of care → ADD: P4P • Covering regulatory wages increase → ADD: fixed payment
HOSPITALS	**Outpatient specialized care (inside hospitals)**	• Better reflection of actual costs → MOD: FFS and Case payment tariffs modifications; REP: introduction of adjusted per visit payments • Encouraging more services being provided in outpatient settings → MOD: expanding scope of services financed via FFS and/or case payments and updating their tariffs; ADD: P4P, case payment, global budget • Improving access and quality of care → ADD: P4P • Covering regulatory wages increase → ADD: fixed payment • Better care coordination: ADD → P4P, FFS, bundled payment
	Inpatient hospital care	• Better reflection of actual costs → MOD: DRGs' and tariffs' modification, case payments groups and tariffs' modification • More effective resources use → REP: introducing DRGs; MOD: DRGs' modification • Better flexibility of the types of services provided → MOD: activity-based budgets; ADD: global budget • Better care coordination: ADD → P4P, FFS, bundled payment • Encouraging provision of specific services → ADD: fixed payment • Covering regulatory wages increase → ADD: fixed payment; MOD: adjusting tariffs valuation
LONG TERM	**Inpatient LTC**	• Better reflection of actual costs → MOD: FFS, per diem, case payment tariffs' modification • Covering regulatory wages increase → ADD: fixed payment

CARE (within health sector)	**Outpatient/day/home LTC**	• Better reflection of actual costs → MOD: FFS, per diem, case payments tariffs modifications • Encouraging more services being provided in outpatient/day/home settings → MOD: expanding the scope of services financed via activity-based payments (FFS, per diem, case payments); ADD: case payments

'REP' – replacing the previous method with the new one; 'MOD' – modifying the existing method; 'ADD' – adding a new method (additional method) to the existing method

Table 12. Additional main changes in the payment system by provider type since 2010

PRIMARY HEALTH CARE	OUTPATIENT SPECIALIZED CARE (outside hospitals)	HOSPITALS		LONG TERM CARE (within health sector)	
		Outpatient specialized care (inside hospitals)	Inpatient hospital care	Inpatient LTC	Outpatient/day/home LTC
• new contract rules to support multidisciplinary care/group practices (Estonia, Hungary) or coordinated care (Poland) • new rules for P4P (Lithuania)	• ongoing changes to volume limits settings (Estonia, Hungary, Poland) • capped total reimbursement (since 2016 in Czechia)	• ongoing changes to volume limits settings (Estonia, Hungary, Poland) • expanding contracts timeframe (Lithuania, Poland) • new administration system, shifting from fragmented to comprehensive contracts (Lithuania)	• ongoing changes to volume limits settings (Estonia, Hungary, Poland); caps on admissions (Bulgaria) or expenditure (Croatia) • expanding contracts timeframe (Estonia, Lithuania, Poland) • new administration system, shifting from fragmented to comprehensive contracts (Lithuania)	• no major changes	• ongoing changes to volume limits to home care (Romania)

Outpatient specialized care

The main motivations behind the changes in payment methods for outpatient specialized care (provided both inside and outside hospitals) were focused on better reflecting actual costs and encouraging more services to be provided in outpatient settings (Table 11 and Supplementary File-2 Table S10). The majority of countries modified existing payment schemes by adjusting tariff valuation rules and/or expanding the list of procedures provided in outpatient or daycare settings. Some countries added new payment methods. For example, in 2021, Hungary introduced an additional fixed payment for salary increases, whereas Estonia introduced additional performance payments (within the P4P program) for video consultations. In both countries, additional payments covered all publicly funded outpatient specialist visits, both outside and inside hospitals. Improving access to and quality of care was pursued by implementing P4P elements in Czechia (for dialyzes providers) and Poland (within the oncological network). In the case of outpatient specialized care provided in hospitals, the objective of better care coordination was pursued by introducing bundled payments for stroke patients in Estonia, P4P elements and new FFS for oncological and stroke patients in Poland (Table 10 and Table 11). Changes in payment methods were complemented by changes to other payment scheme principles (Table 12). For example, Estonia, Hungary, and Poland changed the rules for calculating the volume limits that covered outpatient services provided both inside and outside hospitals. In Poland, volume caps were initially removed in 2019 for selected ambulatory procedures, whereas in 2021, volume caps for both specialist consultations and diagnostic procedures were completely removed with the objective of encouraging service provision in the outpatient setting and mitigating the problem of long waiting times. In Hungary, the methods for calculating output volume limits for specialist care providers have been changed several times (in 2011, 2014, and 2021). From 2023 onward, the following parameters are used to plan the annual performance limit: the historical performance in the two years prior to the COVID-19 outbreak, the health needs of the local population, and the structure of medical specialties in the hospital.

Hospital inpatient care

Payment schemes for hospital inpatient care appeared to have undergone the most substantial reforms since 2010. Three countries replaced the dominant method: Latvia introduced DRGs (based on the Nordic system) in 2011, Lithuania a year later (based on the Australian system), and Czechia implemented its new version 'CZ-DRG' (under the DRG restart program) in 2021 (Table 10). In all three countries, the main objective was to improve the efficiency of hospitals (more effective use of resources) and the transparency of the payment scheme. The majority of countries modified the existing payment method by expanding and/or changing the reporting group categories (e.g., by making them more detailed) with the objective of ensuring a better reflection of the actual costs of services. Additionally, most countries have made efforts to improve tariff valuation methodologies (e.g., by changing the DRG cost base and/or adjusting tariffs to the national/local context). For example, in Romania, these were preceded by dedicated research projects (146), whereas in Poland, a dedicated Tariffication Agency was launched in 2015 (147). The issue of increasing salaries for medical staff has had a strong effect on changes in payment schemes in some countries. In Poland, the new central regulation on annual increases in medical staff wages was passed in 2017 (148), but these wage increases have been included in the new tariff valuation methodology since 2022. In Romania and Hungary, additional fixed payments for salary increases were introduced (in 2017 and 2021, respectively). The objectives of greater flexibility in the types of services provided were

pursued by modifying (in Czechia) or introducing (in Poland) hospital global budgets, whereas better care coordination (especially with outpatient care) was pursued by bundled payments in Estonia and P4P elements and new FFS for oncological and stroke patients in Poland (Table 11).

Changes in payment methods for inpatient hospital care were often accompanied by changes to other payment principles (Table 12). In both Poland and Lithuania, the timeframe of hospital contracts with public payers was extended (from one year to four and three years, respectively). In Estonia, the contract period is five years (and the previously existing timeframe difference between private and public hospitals was eliminated). In Poland, the change was part of the broader hospital network reform implemented in 2017, which aimed to improve the organization of hospital services (149). In Lithuania, the shift from annual to three-year contracts was accompanied by updating the rules for contracting procedures. In most countries, the issue of hospital care volume limits was an important element of the reforms, often focused on limiting hospital expenditures and/or more effective resource use. In Bulgaria, for example, there were formal ceilings on hospital admissions per hospital and for each clinical care pathway between 2015 and 2018, whereas in 2018, a ban was introduced for public payer contracting with new hospitals and for new hospital activities (150). In Croatia, a ceiling for hospital expenditure has existed since 2015 (hospitals started to be paid upfront and report subsequent care episodes) (139). In Poland, one of the indirect objectives of the 2017 hospital network reform was to eliminate the problem of hospitals providing services above their contracted limits. Under the new payment model (global budget), a hospital can only receive limited reimbursement for services provided above the budget value on the condition that other hospitals in the region have not utilized their budgets (149). Similarly, in Hungary, degressive zones were introduced in 2010 with the aim of more efficient resource allocation and improved access to care (services provided above the limits were reimbursed but covered only part of their costs).

Long-term care

Changes in payment schemes for LTC services (provided in the health sector) were the least common. Countries that introduced changes often focused on modifying or recalibrating tariffs aimed at better reflecting actual costs and/or expanding the scope of services financed via a given method, often to incentivize the provision of LTC services in outpatient, day or home settings.

3.5. **Discussion**

This study shows numerous similarities between the nine CEE countries, both in terms of current payment methods per provider type and the main changes implemented in this field since 2010. Capitation is used for paying PHC providers in all nine countries yet constitutes the dominant method in only four of them. For the remaining providers, output-based payment methods, which are calculated per unit of service (e.g., FFS, per diem) and per case treated (e.g., case payment), prevail across all countries (Table 9 and Supplementary File-2 Table S9). Payments based on available inputs usually take the form of dedicated fixed payments (e.g., for salaries), whereas outcome-based methods can be partially embedded into existing P4P programs in PHC (when reported indicators refer to health status).

All nine countries have implemented changes in healthcare provider payment schemes since 2010. Reforms seemed to occur more frequently in PHC and hospital inpatient care than in the remaining types of providers. The most frequently conducted changes to payment methods focused on modifying existing methods ('MOD'), followed by adding a new (additional) method to the existing methods ('ADD') (Table 10). The main motivations behind conducted changes were often similar, e.g., better reflection of actual costs (common objective across all provider types); expanding the scope of PHC services (often focusing on disease prevention, care coordination, and multidisciplinary care); shifting emphasis from in- to outpatient care provision (for both hospitals and LTC units); and improving the efficiency of hospital care (Table 11). In some countries, changes to payment methods were accompanied by changes to other elements of the payment scheme. These often included introducing, changing, or removing volume limits for specific types of services, as well as changing contracting principles (Table 12).

The findings are consistent with those of previous studies showing that output-based payment methods (per case and per unit of service) are prevalent across all types of healthcare providers worldwide (126) and, specifically, in the CEE region (126,127). This was related to a common trend of strategically moving away from paying for resources (input-oriented methods) to paying for outputs, which could better reflect the actual costs of services (126). Although output-based methods prevail, some of the analyzed countries have quite recently reintroduced input-based payments in the form of fixed budgets for salaries. In most cases, this was related to the growing pressure of health workforce deficits and the need to secure continuous health service provisions. The results show that outcome-based payment models are rarely used in practice (mainly as single indicators in P4P programs in PHC). This is also in line with the findings of previous studies, which claim that although outcome-based payment models have gained traction in recent years, they are used with limited scope (151,152), often narrowly focusing on specific diseases or conditions (44,151,153). This is usually preferred when clear and unambiguous indicators are available to avoid penalizing providers on the basis of (outcome) indicators beyond their control. The latter has been shown to be one of the most common reasons why healthcare providers resist such payment methods, although a number of other barriers, such as the complexity of measurements, data availability and infrastructure, and lack of standardization, pose additional challenges (44,153,154).

Owing to different payment methods providing different sets of incentives for providers, policymakers strive to balance diverse, often conflicting incentives within provider payment schemes to achieve some predefined health system goals. The study revealed that CEE countries follow international trends by using mixed health care provider payment methods. They often combine input-based fixed payments with a variety of output-based methods and usually single outcome (health) indicators within P4P programs. The literature indicates that blended payment methods are necessary to optimally balance the multiple objectives of "pure" provider payment methods, such as cost and quality (18,127,155–157). Evidently, not all provider payment methods are combinable. For example, when output-based payments (e.g., capitation, per case) are combined with a line-item budget, there may be conflicting incentives. The provider might want to use staff more efficiently under capitation (or case-based) but also want to scale up the number of higher-paid staff to obtain a higher supplemental pay (i.e., salary allowance) in their budget (126). Studies provide evidence of better ways to blend provider payment methods (2,126,155,158). Consistent incentives are crucial both within individual payment schemes and in the relationships between all payment schemes in use (126,155). Typical examples in the literature include capitation payments for PHC plus FFS for priority interventions. For episodic

care, for example, FFS is used in combination with P4P, and DRGs are used in combination with the global budget (159). Finally, bundled payments are used to keep track of the interface and continuity of care (i.e., the continuum between primary, secondary, and/or tertiary care), especially for continuous and coordinated care for chronic conditions (155,159). While using blended payment methods for health care provision is a common practice, it also contributes to significant administrative and evaluation challenges (e.g., assessing the impact of a given payment method while controlling for the incentives driven by other methods) (158).

The results indicate that P4P has been adopted in practically every country, particularly in PHC. While these programs focus on similar areas (e.g., supporting preventative interventions, cancer screening, and chronic illness surveillance) and most often apply output-based indicators, the choices of specific objectives, metrics (and/or their thresholds) and financial incentives vary across countries. This is in line with previous studies indicating that P4P programs in PHC often focus on the process-of-care dimension but can be very heterogeneous in terms of specific priorities, indicator choices, and financial reward design (160). Although in the case of this analyzed group of countries, evaluations of P4P programs are scarce, the available international evidence highlights their limited effectiveness in achieving the defined objectives, especially in the long term (153,160–163). The design of P4P programs and administrative capacity in the health care system play crucial roles in the success of these reforms (162,163). The choice of monitored indicators should allow for objective and comprehensive performance measurement (that would, for example, not discriminate against specific providers), whereas the financial incentive should provide adequate motivation (too low would not motivate desired behavior, whereas too high might lead to wasteful spending). Finally, the administrative burden of the program must also be taken into consideration (162). Consequently, decision-makers should regularly evaluate P4P programs, monitor providers' behaviors and introduce adequate revisions, which are optimally agreed upon in cooperation with providers.

For a given payment method to provide the expected incentives, service tariff/pricing must be correct (reflecting actual costs) (131). This study indicated that the modification of tariffs/price-setting principles to better reflect actual costs was common across all provider types as well as across all types of payment methods. These processes require, i.e., access to a reliable data infrastructure, adequate institutional capacities, and rigorous and transparent methodologies (131). CEE countries follow international trends in this field (164) by launching dedicated research projects and pilot studies supervised by dedicated institutions. Moreover, although the trends are similar, countries can choose diverse approaches and be at different levels of advancement. For example, in Poland, dedicated cost accounting standards for hospitals providing services under contract with public payers were implemented by the government in 2021 (165), whereas in Estonia, the first initiatives on activity-based costing were implemented by hospital associations almost two decades ago. This finding is in line with the literature indicating that the regulatory frameworks for health service price setting can vary significantly across countries and within the same country for different types of providers or payers (131). Available international evidence also indicates that while initiating reforms aimed at improving the price-setting process, policymakers should carefully balance the trade-off between cost-data accuracy and the available infrastructure/system feasibility constraints (166).

Payment schemes are used to influence provider behavior toward the realization of predefined health policy objectives (126). The study revealed that although policymakers across the nine CEE countries might have introduced different changes to the payment methods, the general objectives of these changes were often similar. Efforts have focused, i.e., on strengthening PHC

provision by supporting disease prevention activities (via dedicated P4P programs and/or expanding the scope of FFS), shifting emphasis from inpatient to outpatient care (by expanding the scope of services financed via FFS, case payments and modifying their tariffication process, modifying or introducing global budgets, adding P4P) and implementing coordinated care models (by adding P4P, FFS or bundled payments). These findings are in line with those of previous studies on general trends in health reforms in CEE countries (119,120,125). Additionally, although the study focused mostly on changes in payment methods, it also mapped complementary, additional changes in the payment system. These focused on volume limits and contracting principles (e.g., extending the contact time for hospital providers). Volume limit changes could have provided an additional set of incentives to steer provider behavior. For example, in Poland, removing volume limits for day care procedures in connection with increasing tariff valuations for these procedures led to a significant shift in the procedure settings (e.g., the share of cataract surgeries performed in day care settings in the total number of these procedures increased from 24.5% in 2011 to 93.6% in 2021 (122)). The policy objective of the reform—shortening waiting time and limiting inpatient care for defined procedures—was achieved; however, in the long run, the payer was unable to secure regular reimbursements (the payments for unlimited services were delayed) (167). This strongly impacted providers' financial security and limited their willingness to offer outpatient procedures. The Polish example emphasizes the importance of properly planning payment reforms (i.e., securing payers' budgets), monitoring and adequate adjustments.

The study has several limitations. The first is the potential influence of arbitrary and/or subjective factors while updating the data collection forms by the national experts. This risk was mitigated by referring to relevant literature whenever available, but it could not be entirely eliminated. Second, it was limited to mapping changes in provider payment schemes since 2010. Consequently, similar payment reforms that might have taken place in some countries prior to 2010 (e.g., the introduction of P4P in PHC in Hungary and DRGs in hospital care in Poland) were excluded. It also covered only the public health system and payment schemes between public payers and providers' institutions (legal entities) and thus exclude issues related, e.g., to payments within voluntary health insurance systems as well as direct salary payments for medical staff (relations between health care institutions and their employees). This limitation indicates that only part of the picture was analyzed in terms of the interplay between economic incentives provided by different payment methods (i.e., those used by public payers vs. those used by health care institutions to pay their medical staff vs those used in the private sector). In addition, it excluded issues related to payments for pharmaceuticals, medical products, and dental services, which could have resulted in an even more complex picture of the existing payment methods mix. Finally, although during the data validation process, efforts were made to identify literature references related to specific reforms, evaluation studies were scarce. As a consequence, mostly narrative descriptions of the changes are provided, without details of their impact assessment.

Despite these limitations, this study constitutes a unique, structured comparison of provider payment schemes in the public health system across nine CEE countries and provides implications for both policy and research. Health policymakers in CEE countries can learn from international experience. However, the prerequisite is the availability of specific reform evaluations, including reform impact assessment studies and analyses of factors that influence the success or failure of a given reform. This finding has strong implications for future research. Although evaluations of payment reform effectiveness (especially blended payment schemes) are extremely difficult to conduct (18,155,158), they constitute the basis of evidence-informed

health policy processes. A description of the evaluation process can be included as part of the reform plan. Regardless of whether it is designed prior to or after reform implementation, the evaluation must be based on a rigorous methodological approach, including the assurance of appropriate data availability and an adequate timeframe for the impact assessment. Research-based knowledge on barriers to and facilitators of specific payment reforms can also help in planning adequate mitigating or supporting actions (71,154). While the study covered only part of the existing health care providers' payment schemes, future studies could focus on the interplay between the economic motivations of specific payment methods for providers at two levels (organizations and individual health workers) as well as those between public and private payers. Future collaborative, cross-country studies can concentrate on the identified similar reform trends, e.g., economic incentives to enhance disease prevention in PHC, reforms aimed at shifting from in- to outpatient care provision or best practices in developing activity-based costing standards for tariffication purposes.

3.6. **Conclusions**

The nine CEE countries, Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania, show numerous similarities in terms of the current healthcare provider payment methods mix as well as the general objectives of the changes conducted in this field since 2010. Output-based payment methods prevail across all countries and types of providers. PHC providers are characterized by the most diverse payment method mix. PHC and hospital inpatient care have experienced the most frequent changes in their payment schemes within the last 13 years. Although the changes varied across countries, the general objectives of the conducted reforms were often similar. They focused on improving tariffication processes to better reflect actual costs; expanding the scope of PHC services (with a focus on disease prevention, care coordination, and multidisciplinary approaches); shifting emphasis from inpatient to outpatient care (for both hospitals and LTC institutions); and improving the efficiency of hospital care. There is considerable potential for shared learning between CEE countries in terms of provider payment scheme reforms, yet the prerequisite is the availability of robust evaluation studies.

Chapter 4. Factors Influencing Health Care Provider Payment Reforms in Central and Eastern European Countries

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4.1. **Abstract**

CEE countries have recently implemented reforms to health care provider payment systems, including changing payment methods and related systems such as contracting, management information systems, and accountability mechanisms. This study examines factors influencing provider payment reforms implemented since 2010 in Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania. A four-stage mixed methods approach was used, involving the development of a theoretical framework and data collection form on the basis of existing literature, mapping payment reforms, consulting national health policy experts, and conducting a comparative analysis. Qualitative analysis included inductive thematic analysis and deductive approaches based on an existing health policy model, distinguishing context, content, process, and actors. A total of 27 payment reforms were analyzed, primarily focusing on hospitals and PHC. Fourteen major factors influencing these reforms were identified. Most factors fell under the policy process (pilot study, coordination of implementation systems, availability of funds, IT systems, training for providers, reform management) and policy content (availability of performance indicators, use of clinical guidelines, favorability of the payment system for providers, tariff valuation). Two factors concerned the reform context (political willingness or support, regulatory framework, and bureaucracy), and two fell within the actors' dimension (engagement of stakeholders, capacity of stakeholders). The findings suggest that the content and manner of implementation (process) of a reform are crucial. Stakeholder involvement and capacity can influence every dimension of the reform cycle. The nine countries analyzed share common barriers and facilitators, underscoring the potential for cross-country learning.

Keywords: Healthcare providers; Payment systems; Health care reform; Hospitals; Primary health care; Eastern Europe

4.2. **Introduction**

Healthcare reforms are commonplace and are driven by changing health needs and the goal of increasing accessibility, affordability, and patient-centeredness (168–170). They can be defined as efforts or activities aimed at improving the performance of the healthcare system by making changes in the way healthcare is organized and financed and how legal mechanisms regulate care (171,172). One of the most critical focuses of current healthcare reform efforts concerns changing payment systems for healthcare providers (2,170). In a broader sense, a provider's payment system includes the payment method (a mechanism for transferring funds to providers) as well as ancillary elements such as contracting, management information systems, and accountability mechanisms, which form an integral complement to the payment method (173,174). They can help steer providers' behaviors toward the realization of predefined health policy objectives (2,173).

CEE countries have been actively implementing reforms in their health care provider payment systems (125,174–178). Recent research has identified both similarities in the current payment methods across various types of health care providers and similar trends in reforms conducted in this field in recent years(174). CEE countries are following international trends in payment reforms: they are increasingly using blended payment methods with a prevailing scope of activity-based payments, whereas add-on payments are often used for priority interventions. PHC and hospital inpatient care have experienced the most frequent changes in their payment schemes in recent years (174). The reforms have often aimed to expand PHC services—particularly in disease prevention, care coordination, and multidisciplinary care (125,174)—and improve hospital care efficiency(175–178).

There is little original research on the factors that influence the successful implementation of such reforms. Two recent literature reviews focused on identifying factors that may influence the success of provider payment reforms in general (44,179). The results revealed that these factors span multiple dimensions. Both reviews included studies from around the world, but only a limited number of research results came from Europe, with only a few examples from CEE. The aim of the present study was to identify and map, using a preexisting framework, factors influencing provider payment reforms conducted since 2010 in nine CEE countries: Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania.

4.3. **Methods**

A mixed-methods approach was employed. Initially, a data collection form was developed, and a desk research phase utilized standardized data sources to identify and describe recent payment reforms across nine CEE countries. In the third phase, consultations with national health policy experts from these nine countries were conducted to validate and enhance the compiled data. The final phase involved a qualitative analysis of the gathered data using a thematic analysis approach. The specific details of each step are described below.

4.3.1. Data collection form

The data collection form was developed on the basis of the Health Reform Monitor guide (180), which provides a structured way to describe and compare health reform initiatives. For each country, the data form included the following sections: the payment reform timeline, official objectives, categories of care providers, the reform content (including changes in payment schemes), attained or anticipated results, and the factors—barriers and facilitators—that impacted the reform.

4.3.2. Desk research of standardized sources

The objective of the desk study, which spanned from March to May 2023, was to enter available information into data collection forms. A focus was on selected healthcare provider payment reforms in the public health system implemented from 2010 onward. The criteria for choosing the reforms were as follows: 1) the most relevant reforms with significant impact and 2) reforms for which evaluations are available. A minimum of two and a maximum of four reforms per country were considered, depending on data availability. COVID-19-related payment reforms that were halted after the pandemic were excluded.

The key sources of information included the following report series: Health System Reviews and Health Systems Summaries (132), Health System and Policy Monitor (133), and Country Health Profiles – State of Health in the EU, available on the website of the European Observatory on Health Systems and Policies (134). These reports, which apply to all EU Member States, follow a defined methodology, standardized structures for cross-country comparisons, and undergo regular updates.

4.3.3. National expert consultations

Experts from nine countries were purposefully selected and sent prefilled data collection forms via email. These experts, who had largely authored the included country reports and were members of the Health Systems and Policy Monitoring Network, possessed in-depth knowledge of their countries' health systems (133). In cases of nonparticipation, they were asked to recommend another qualified informant (snowball method). The instructions focused on validating and/or updating details of up to four recent and key provider payment reforms, with special emphasis on factors that contributed to the reform’s implementation and success. The experts were specifically asked to provide relevant references where available. Three rounds of contact occurred. If necessary, additional questions and ambiguities were addressed iteratively through further correspondence. The national experts are listed as coauthors of this work.

4.3.4. Thematic analysis

Two researchers (CN and KDJ) analyzed the data via inductive thematic analysis with a manual coding strategy (52) and identified major themes related to factors influencing payment reforms. For each theme, specific examples of reform cases were matched. The identified themes were then analyzed deductively via a preexisting analytical framework known as the health policy analysis model or "health policy triangle." This framework includes "context," "content" and “process" as the three sides of the triangle, with "actors” at the center (181–184) (Figure 4). A recent review demonstrated that this framework is widely used in the literature and is employed to rigorously analyze health-related policy decisions from multiple perspectives at all stages (184)

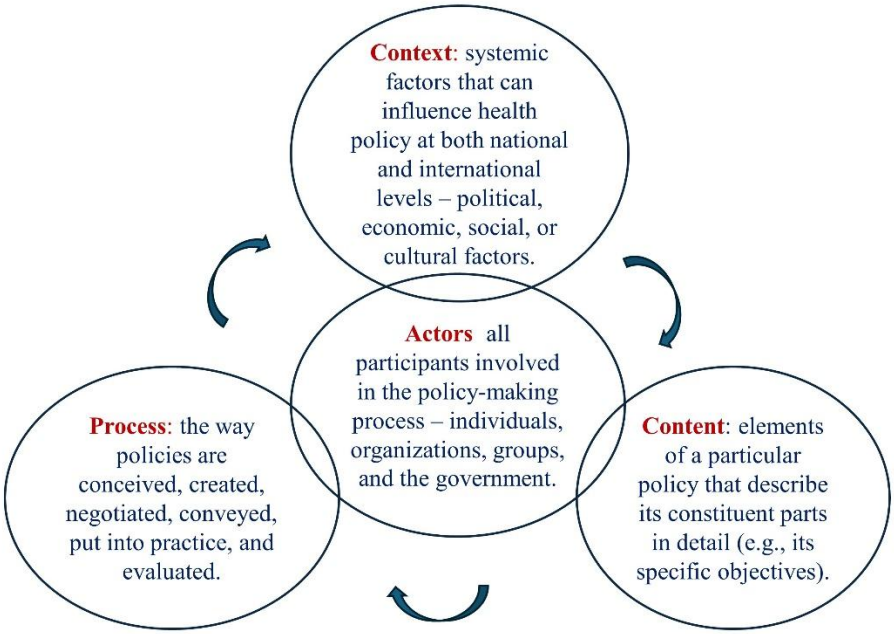

Figure 4. Health policy triangle (own illustration based on the literature (181–184).

The outcomes derived from the deductive analysis were also reviewed and finalized by reaching a consensus among all coauthors.

4.1. **Results**

4.1.1. Overview of the analyzed payment reforms

A total of 27 payment reforms were analyzed. The reforms targeted different healthcare providers: hospitals (i.e., inpatient and outpatient care provided by hospitals, n=13), PHC (n=9), specialized care outside of hospitals (n=4), and multiple providers (n=1). In hospitals, reforms often aim to incentivize collaboration and coordination between healthcare providers, reduce unnecessary hospitalizations, and improve the quality and efficiency of healthcare services. In PHC, the focus was primarily on specific preventive services and, in some cases, on encouraging the establishment of multidisciplinary practices. The reform content included changes in payment methods of varying scope (e.g., introducing a new method or modifying an existing method), often accompanied by complementary changes within the other elements of the purchasing system (e.g., contracting rules). Supplementary File-3 Table S11 provides an overview of the analyzed payment reforms.

4.1.2. Inductive thematic analysis of factors influencing payment reforms

By applying inductive thematic analysis, 14 major thematic factors were identified. The number of payment reforms affected by each factor, where it was identified as either a barrier or a facilitator, ranged from two to seven, coming from a minimum of two and a maximum of six CEE countries (see Table 13). These factors share common characteristics and are often interlinked or overlapping.

Table 13. Factors influencing selected provider payment reforms in CEE since 2010

Factor	Example of reform where factor worked as barrier	Example of reform where factor worked as facilitator
• **Availability of clear performance indicators within payment scheme (n=6 examples, 4 countries)**	• **Czechia**: 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (lack of uniform DRG groups/codes led to nonstandardized reporting of services, inequalities in treatment, unrealistic/unpredictable costs). • **Estonia:** 2015/16 – Upgrade of the Quality Bonus Scheme (QBS) for PHC (key dimensions performance such as clinical outcomes or patient experience were of limited use).	• **Croatia**: 2015 – Refined hospital payment parameters (clear and regularly published parameters for all hospitals enabled benchmarking and reporting). • **Estonia**: 2020/21 – Bundled payment for stroke patient (used international stroke metric to evaluate quality and outcomes). • **Lithuania**: 2012 – Introduction of DRGs for hospital care (surveillance and control on coding mechanisms were well developed). • **Lithuania**: 2022 – Revised methodology of calculating P4P indicators for PHC.
• **Availability/use of clinical guidelines on reporting parameters (n=2 examples, 2 countries)**	• **Latvia**: 2011 – Pay for quality (P4P) for PHC (lacked officially endorsed clinical guidelines or pathways).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (used standardized guidelines for stroke embedded in the international standards; these enabled reporting and comparability of stroke metrics).
• **Motivation/favorability of payment system for providers (n= 7 examples, 5 countries)**	• **Czechia:** 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (the previous DRG system was not motivating e.g., it was very unfavorable reimbursement for some healthcare). • **Estonia:** 2015/16 – Upgrade of the QBS for PHC (QBs offers fewer opportunities to exempt patients from inclusion in the scheme, which penalize family doctors caring for patients with unusually complex needs). • **Latvia:** 2011 – Implementation of the Nord-DRG system (compliance with the DRG system in the purchasing process was low, leading to frustration among providers). • **Lithuania:** 2012 – Introduction of DRGs for hospital care (deemed unfavorable due to unreasonable variance of payments among some hospitals and/or clinical areas).	• **Estonia:** 2020/21 – Bundled payment for Stroke Patient (it was made favorable by carefully identifying high-risk providers and helping them identify opportunities to reduce costs and improve outcomes). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with AMI (financial incentives were clear and strong enough to encourage providers participation). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (high financial benefits motivated providers).
• **Support/engagement of stakeholders (n=7 examples, 4 countries)**	• **Bulgaria**: 2018/19 – Ban on public payer contracting with new hospitals/activities/medicines (lack of stakeholder involvement provoked criticism and protests). • **Estonia**: 2017 – New contracts to support multidisciplinary PHC reform – (solo practices and potential integration with hospitals led to resistance). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lack of involvement of key stakeholders impacted planning and implementation). • **Romania**:2008-2012 – General health reform (failure to reach an agreement among stakeholders led to the dismissal of a reform).	• **Estonia**:2020/21 – introducing bundled payment under coordinated care for stroke patients (different stakeholder engagement and balancing their interests). • **Poland**: 2017 – Introduction of P4P elements in a coordinated care model for patients with AMI (strong support from cardiology experts, involved in reform planning). • **Poland**: 2022 – New payment model within coordinated PHC (support of the largest association of PHC providers).

• **Capacity of stakeholders (n=7 examples, 4 countries)**	• **Croatia**: 2013 – Performance based payment for PHC (physicians and nurse shortage). • **Croatia:** 2015 – Changes in hospital payment model (lack of quality improvement programs; over-or-under capacity of some hospitals to meet service limits). • **Latvia:** 2011 – Implementation of the Nord-DRG system (incapacity of assigned "wrong" strategic purchaser). • **Lithuania:** 2012 – Introduction of DRGs in hospital care (lack of capacity for costing and economic evaluations among hospitals). • **Lithuania:** 2010–2023 – Gradual development of combination of payment methods in PHC (lack of: capacity to provide cost-effective, high-quality health care, measures to strengthen the "gatekeeping" role of GPs). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (medical personnel shortage; heavy physician workload; and lack of capacity to undertake additional tasks)**.**	• **Lithuania**: 2010–2023 – Gradual development of combination of payment methods in PHC (the expansion of the PHC team members facilitated the implementation).
• **Political willingness/support (n=7 examples, 7 countries)**	• **Romania**: 2008-2012 – General health reform (was considered politically unfeasible and withdrawn). • **Bulgaria:** 2015-2022 – Diverse hospital payment reforms (lack of political will and government stability hindered changes proposed by the health policy experts).	• **Hungary:** 2016 – Cost weight adjustments of the Hungarian DRGs (the government established a committee to plan and oversee the process). • **Latvia:** 2011 – Implementation of the Nord-DRG system (to facilitate the implementation the Latvian MoH sought technical assistance from external experts and provided strong leadership for the reform). • **Lithuania**: 2010–2023 – Gradual development of combination of payment methods (government provided strong leadership to enhance performance payment). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (majority government strongly pushed toward reform implementation). • **Czechia**: 2023 – Introducing case payment for day surgery (the MoH supported the reform).
• **Piloting/feasibility study (n=6 examples, 4 countries)**		• **Estonia:** 2020/21 – Bundled payment for Stroke Patient (piloted before system wide implementation). • **Estonia:** 2013 – Remunerating new innovative e-consultations between GPs and medical specialists (piloted in ophthalmology). • **Lithuania:** 2012 – Introduction of DRGs for hospital care (pilots in selected hospitals before national implementation). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with AMI (initial program was evaluated and adjusted).

		• **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (a pilot for PHC tested some solutions). • **Romania:** 2020-2023 – Improving Romania's DRG system for hospital inpatient services (piloted in 50 hospitals).
• **Comprehensive approach/coordination of implementation systems (n=4 examples, 3 countries)**	• **Croatia**: 2013 – Performance based payment **(**lack of coordination and integration with secondary care). • **Croatia**: 2015 – Changes in hospital payment model (fragmentation of care, i.e., inside hospitals and between primary and secondary care, lack of adequate reforms in LTC). **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lack of coordination with other ongoing reforms).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (combination of centralized and local implementation was functional and well-coordinated, contributing to the successful piloting and system-wide implementation).
• **Availability of funds/investments (n=3 examples, 2 countries)**	• **Hungary**: 2011-2014, 2021 – Changing the method of setting the output volume limit for Specialist care providers (insufficient funding to complete the reform process).	• **Estonia:** 2017 – New contracts to support multidisciplinary PHC reform (long-term funding security; access to capital investment and lowering its costs helped overcome barriers faced by small, risk-averse providers). • **Estonia:** 2020/21 – Bundled payment for Stroke Patient (an innovation fund was established).
• **IT systems/tools (n=3 examples, 2 countries)**	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (challenges stemmed from lack of documentation systems/tools capable of incorporating multiple providers).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (strong IT systems to collect data, measure outcome/performance, benchmarking). • **Estonia**: 2015/16 – Upgrade of the QBS **(**electronic billing data collection system ensured proper monitoring of GPs' activities). A prerequisite for e-consultation was also an e-health system (data exchange between PHC and specialists)
• **Regulatory framework/bureaucracy (n=3 examples, 2 countries)**	• **Poland**: 2017 – Changes to hospital payment under the hospital network reform (there were legal barriers for hospitals to open new ambulatory clinics and thus follow the reform financial incentives). • **Poland:** 2022 – Implementing coordinated care model with services financed with FFS (bureaucratic barriers – the need to submit a complex application to participate in the model). • **Estonia**: 2017 – New contracts to support multidisciplinary PHC reform (hindered by the lack of the revision of the regulatory framework and formalization of the expanded scope of PHC).	
• **Trainings for providers (n=3 examples, 3 countries)**		• **Lithuania**: 2012 – Introduction of DRGs for hospital care (facilitated by training/teaching materials for hospitals). • **Estonia**: 2020/2021 – Bundled payment for stroke patients (stakeholder workshop helped develop and refine metrics).

		• **Poland:** 2022 – Implementing coordinated care model with new services financed with FFS method (enabled by training of healthcare providers).
• **Determining base rates/tariff valuation (n=6 examples, 4 countries)**	• **Czechia**: 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (discrepancy in base rates e.g., individually negotiated with insurers). • **Latvia:** 2011 – Implementation of the Nord-DRG system (limited by reliance on historic case-mix volumes and cost weights per DRG). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (insufficient valuation of tariffs to cover actual hospital costs).	**Estonia:** 2010 onward (all payment reforms) – Existence of dedicated costing methodology (defined by regulations) used for regular tariff adjustments. **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (beneficial financing for providers: FFS, relatively high fee levels, that results from the negotiations). • **Czechia**: 2021 – Replacing IR DRG with CZ DR ensured the use of newly recalculated DRG tariffs after a DRG restart project launched in 2015.
• **Reform management/evaluation (n=5 examples, 3 countries)**	• **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lacked formally defined indicators to measure its realization). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with AMI (lacked better reporting data needed to evaluate clinical success of the program). • **Croatia**: 2015 – Changes in hospital payment model (affected by lack of reform management and evaluation). • **Croatia**: 2013 – Performance based payment (affected by lack of the reform management and evaluation). • **Lithuania**: 2012 – Introduction of DRGs for hospital care (affected by lack of sound evaluation of implementation/outcomes/impacts).	

Six reform examples from Czechia, Estonia, Croatia, and Lithuania highlight the importance of **clear performance/measurement indicators within the payment system**. For example, in Lithuania and Croatia, the introduction of DRGs for inpatient hospital care was facilitated by well-developed monitoring and control mechanisms for coding. Lithuania further improved its PHC reform by revising the methodology P4P indicators. This revision helped establish a median value for each performance measure and included calculating the total number of national units for each indicator, with adjustments for the target age group (patients/enrollees) (185). On the other hand, Czechia introduced internationally refined DRGs (IR DRGs) as the base payment mechanism in acute inpatient hospitals in 2012 but faced challenges due to the lack of clear indicators and a standardized definition of DRG groups and codes in both clinical and economic terms. This led to inconsistencies in performance reporting, treatment disparities, and unpredictable costs (i.e., actual costs did not reflect the diagnosis classification and could not be predicted with sufficient accuracy) (142).

The **availability and use of clinical guidelines for reporting parameters** were mentioned in two reform examples from Latvia and Estonia. In Latvia, the lack of such guidelines impeded the implementation of a pay-for-quality programme in PHC in 2011. In Estonia, adherence to standardized guidelines set by the International Consortium for Health Outcomes Measurement (ICHOM) was essential for implementing bundled payments for stroke patients in 2020/21. These guidelines were designed to assess and report the quality and outcomes of stroke interventions. They include measurements from administrative and clinical data, as well as patient-reported information (186).

Seven reform examples from Czechia, Estonia, Latvia, Lithuania, and Poland reported on the **motivation and favorability of the payment system for healthcare providers**. In most cases, obstacles arose due to the perception of the payment system as demotivating or disadvantageous for healthcare providers. However, in Estonia and Poland, incentives within the payment system were perceived as rewarding by providers, facilitating reform. For example, in Poland, the implementation of a coordinated care model with FFS financing in 2022 rewarded providers with relatively high fees (187). Additionally, the introduction of P4P elements in 2017 provided clear financial incentives, effectively motivating healthcare providers (143,144).

A further seven reform examples from Bulgaria, Estonia, Poland and Romania demonstrated factors stemming from **stakeholder support and engagement**. Notably, the inadequate involvement of relevant stakeholders impeded reforms in these countries. In Bulgaria, for example, the ban on public payer contracting with new hospitals, activities, and medicines in 2018 -2019 triggered strong criticism from stakeholders. This law incited numerous protests, particularly against the ban on medicines led by patients and supported by nongovernmental organizations (NGOs) and various political parties (188). Similarly, in Romania, a reform initiative within the broader healthcare reform framework of 2008 -2012 faltered primarily because stakeholders failed to reach a consensus for technical reasons. Additionally, the lack of a structured campaign for public consultations, coupled with general public discontent in response to austerity measures, contributed to the initiative's failure (189). In contrast, successful reform cases demonstrated inclusive stakeholder involvement and fair consideration of their interests. Estonia's 2020 - 2021 implementation of bundled payments under coordinated care for stroke patients involved various stakeholders (186), whereas Poland’s 2017 introduction of P4P elements in a coordinated care model for patients with AMI was strongly supported by cardiology experts, who were fully engaged in reform planning (143,144).

Stakeholder capacity was noted as another critical factor, as evidenced by seven reform examples in Croatia, Latvia, Lithuania, and Poland. The reforms were hindered by the insufficient capacity of some stakeholders. For example, in Lithuania, the introduction of DRGs in inpatient hospital care (2012) was affected by a lack of capacity among stakeholders in costing and economic evaluations (190), whereas stakeholders lacked capacity in terms of the workforce (e.g., physician and nurse shortages) during the implementation of performance-based payments for PHC in Croatia in 2013 (139,191). In Poland, barriers to implementing a coordinated care model with new services financed with the FFS method included shortages of medical personnel, heavy physician workloads, and insufficient capacity to take on additional tasks (144,192).

Factors related to **political willingness and support** were reported in seven reform examples from Romania, Bulgaria, Hungary, Latvia, Lithuania, Poland, and Czechia. In most cases, strong political support served as a facilitator. This was evident in instances where a majority of the government actively pushed for the adoption of reforms (e.g., the Polish hospital network reforms (149)) or where the government took a proactive approach to planning and demonstrated strong leadership during implementation (e.g., the implementation of DRGs in Latvia and Hungary). Conversely, a lack of political willingness and government stability impeded the implementation of recent hospital payment reforms in Bulgaria, despite support from health policy experts. In Latvia, it is acknowledged that while the payment system should promote service efficiency, the introduction of P4P and value-based healthcare models requires greater political support and a long-term strategy.

Piloting/feasibility studies (reported in six reform examples) proved to be crucial reform facilitators in Estonia, Lithuania, Poland, and Romania. In all the cases, conducting reform pilots before nationwide implementation supported reform efforts. For example, in Poland, the introduction of P4P elements within a coordinated care model for patients with AMI underwent a regional pilot in 2017. The initial pilot was subsequently evaluated, leading to program adjustments, including an increase in financial incentives for hospitals' participation (143,144). Romania conducted a pilot study in 2020 to refine the methodology for hospital cost collection and analysis, aiming to enhance the DRG system (146). Lithuania piloted DRGs for inpatient hospital care in selected hospitals in 2012 (193). Estonia also piloted bundled payments for stroke patients from 2020 to June 2021, before the full-scale implementation of the system in mid-2021 (186,194).

Four reform examples of factors associated with a **comprehensive approach and the coordination of implementation systems** were mentioned in reforms in Croatia, Poland, and Estonia. In Estonia, the successful implementation of bundled payments for stroke patients in 2020/21 was facilitated by a well-coordinated combination of centralized and local implementation. This effective coordination contributed to successful piloting and system-wide implementation (194). Conversely, in Croatia, the fragmentation of care, both within hospitals and between primary and secondary care, impeded changes to the hospital payment model in 2015 (139). In Poland, changes to hospital payments under the 2017 hospital network reform were adversely affected by a lack of coordination with other ongoing reforms (149).

Factors related to the **availability of funds/investment** were mentioned in three reform examples from Estonia and Hungary. For example, in Estonia, it facilitated the implementation of bundled payments for stroke patients (2020/21). The Estonian Health Insurance Fund (EHIF) launched an innovative service delivery fund through a two-part solicitation process. Initially,

hospitals applied for 15,000 euro planning grants to develop demonstration concepts, form provider teams, and create detailed plans, including IT solutions. The second round involved competitive bidding for higher grants (up to 300,000 euros) to implement and refine the proposed solutions. This grant system played a pivotal role in establishing infrastructure, facilitating collaboration, and measuring outcomes across the project team. In contrast, in Hungary, changing the method of setting the output volume limit (2011 - 2014, 2021) faced challenges resulting from the lack of sufficient funding to complete the process.

The presence of dedicated **IT systems/tools** was identified as another factor influencing the success of payment reforms, as reported in three reform examples from Estonia. For example, the electronic billing data collection system, which enables the monitoring of family physicians' activities without additional data collection, was a key facilitator in the implementation of the upgraded (mandatory) performance-based payment system in 2015/2016 (i.e., the QBS) (195).

Three reform examples from Poland and Estonia concerned issues stemming from the **regulatory framework and bureaucracy**. For example, in Poland, legal impediments prohibiting the establishment of new ambulatory clinics had a consequential impact on the implementation of hospital network reform in 2017, thus hindering hospitals from following the reform's financial incentives to move toward outpatient care (149). Similarly, in Estonia, the lack of revision of the regulatory framework and the formalization of an expanded scope of PHC through amendments to the Law on Health Organization were identified as barriers to implementing new contracts aimed at supporting multidisciplinary PHC reforms in 2017 (196).

Training for healthcare providers facilitated payment reforms in Estonia, Poland, and Lithuania (as shown in three reform examples). A workshop with stakeholders was convened as part of the implementation of bundled payments for stroke patients in Estonia (2020–2021). This workshop played a pivotal role in fostering stakeholder engagement and contributed to the development and refinement of metrics (197). In Poland, the Federation-led training initiative for healthcare providers—the Zielona Góra Agreement—played a crucial role in facilitating the implementation of a coordinated care model with new services financed through the FFS method in 2022 (198). In Lithuania, the facilitation of training and provision of teaching materials for hospitals, organized by the National Health Insurance Fund (NHIF), played a key role in enabling the implementation of DRGs for inpatient hospital care in 2012 (190).

Determining base rates/tariff valuations represented another set of factors described in six reform examples from Czechia, Estonia, Latvia, and Poland. A key obstacle was the lack of standardized and reliable cost reporting and inadequate tariff valuation. For example, in Czechia, the introduction of the IR DRG as the base payment mechanism in inpatient acute care hospitals (2012) was impacted by the disparity in base rates attributed to 'individual base rates' negotiated with the insurer (142). In 2021, this issue was mitigated by replacing the IR DRG with the Czech refined DRG (CZ DRG) with newly recalculated DRG tariffs embedded in the latter. In Poland, the implementation of changes to hospital payments under hospital network reform (2017) encountered insufficient valuations of tariffs to cover actual hospital costs (149). Similarly, the successful implementation of the DRG payment system is hindered by tariffs, which do not cover current costs in all cases, and hospitals must invest much effort to justify their current expenses. In contrast, Estonian payment reforms from 2010 onward (encompassing all payment reforms) reported the existence of a dedicated costing methodology defined by regulations, which was employed for regular tariff adjustments.

Finally, five reform examples from Poland, Croatia, and Lithuania included factors arising from **reform management and evaluation**. For example, the implementation of DRGs for hospital inpatient care in Lithuania in 2012 faced challenges because of the absence of a robust evaluation of their implementation, outcomes, and impacts (190). Similarly, in Croatia, the implementation of performance-based payments for primary/ambulatory care in 2013 lacked proper management and evaluation of the reform, with only limited financial controls in place (139).

Deductive thematic analysis of factors influencing payment reforms

The 14 major factor themes identified were deductively categorized into four dimensions of the health policy triangle framework (Figure 5). While certain factors were interrelated and had characteristics that could correspond to more than one category, they were assigned to the most appropriate dimension on the basis of the definitions of the health policy framework used (defined in Figure 4). The number of reform examples in which a given factor acted as either a barrier or a facilitator can serve as a proxy indicator of the factor's relevance in influencing the reform. Consequently, the reform process appears to be the most frequently affected dimension. There are six main theme factors with a total of 24 reform examples. The factors with the largest proportion of examples are reform piloting/feasibility studies (n=6), reform management/evaluations (n=5), and comprehensive approaches/coordinations of implementation systems (n=4). The reform content is represented by 21 reform examples under four main theme factors, where the three most common factors are motivation/favorability of the payment system for providers (n=7), the availability of clear performance indicators within the payment system (n=6), and the determination of base rates/tariff valuation (n=6). The reform context and actors represent the least affected dimensions, with two main theme factors each (included in 10 and 14 examples, respectively). The most frequently listed factor for the former is political willingness or support (n=7), whereas for the latter, both stakeholder support/engagement and stakeholder capacity were mentioned equally often (n=7 each). Nevertheless, the 'actor' dimension has the potential to influence all three remaining framework dimensions.

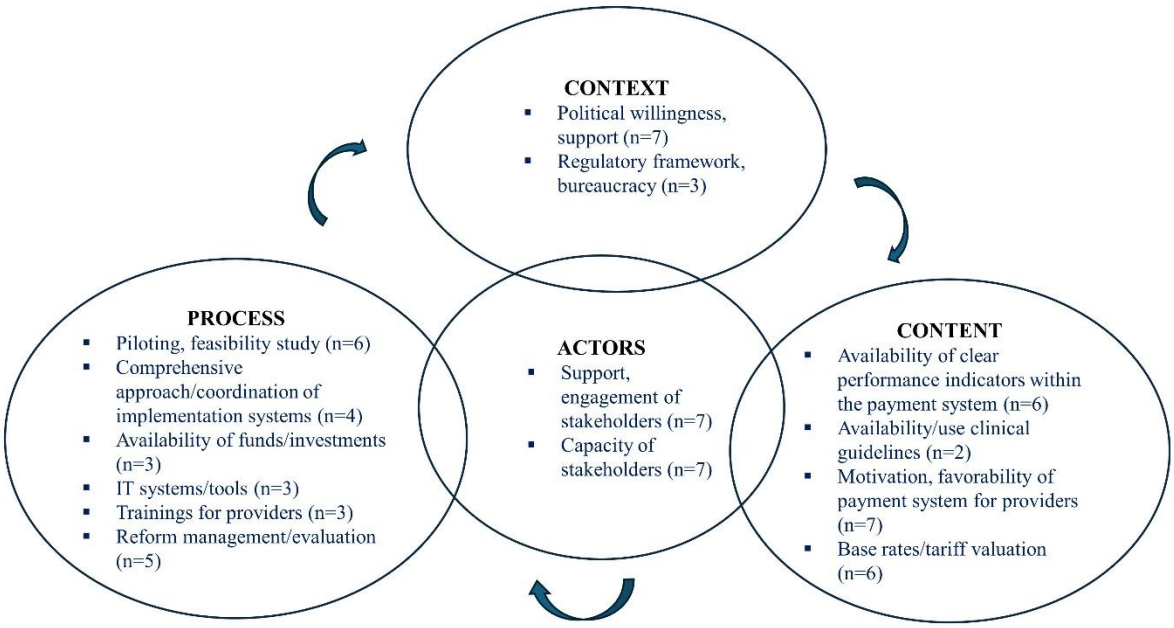

Figure 5. Health policy triangle of factors influencing payment reforms in CEE.

4.2. **Discussion**

The aim of this study was to identify the factors that have influenced health care provider payment reforms conducted in nine CEE countries since 2010. The inductive analysis identified 14 major factors, which were then deductively classified into four categories of the "health policy triangle" framework: context (political willingness/support, regulatory framework, and bureaucracy), content (availability of clear performance indicators within the payment scheme, availability/use of clinical guidelines, motivation/favorability of the payment system for providers, determining base rates/tariff valuation), process (piloting/feasibility study, comprehensive approach/coordination of implementation systems, availability of funds/investments, IT systems/tools, training for providers, reform management/evaluation), and actors (support, engagement of stakeholders, capacity of stakeholders).

The results are broadly consistent with current findings in the literature that highlight the diversity of factors influencing the success of provider payment reforms worldwide (44,179). The deductive classification shows that most identified factors (and the reform examples where they were observed) were related to the reform process. This suggests that how the reform is implemented is crucial to its success. Within this dimension, conducting a pilot/feasibility study might be considered the most relevant factor for reform. This may be partly because it facilitates reform adjustments before widespread implementation. In general, research suggests that without an enabling reform process, efforts to reform health care provider payment systems may fail because they require systematic and coordinated actions, collaboration among agencies, and a strategic approach where various interventions align and reinforce one another (178). However, previous studies indicate that policymakers tend to focus more on the content dimension of health reform rather than its process (182,199–201). This might be because the reform content heavily relies on the presence or absence of evidence data, which is essential for informing and persuading decision-makers (201,202). In this study, the factors associated with the content dimension were also influenced by the availability of evidence (e.g., the availability of performance indicators/clinical guidelines that can be used within P4P programs or a robust methodology for the tariff valuation process).

The literature indicates that the reform context is influenced by a range of factors, such as changes in political regimes, ideologies, historical experiences, and cultural influences (182,199,200,203). This aligns with the results, particularly the finding that political willingness/support is the most relevant factor influencing reforms in CEE countries. This observation is consistent with previous studies indicating that healthcare provider payment initiatives that are not adapted to local political environments are less likely to be successful (179,204). This is because these reforms typically require significant participation from politicians, political parties, and/or policymakers (179,204,205). Further research shows that such reforms often involve political compromises, as they can alter financial flows within the system. They therefore require political negotiations that can weaken or hinder reform implementation (205).

With respect to the actor dimension, it was found that stakeholders play a vital role in provider payment reform, as they impact multiple dimensions simultaneously. Stakeholder engagement might influence both the reform context (e.g., when there is strong lobbying or public pressure for or against reform), content (e.g., when they are involved in reform planning and payment scheme construction), and its process (e.g., when providers participate in piloting prior to full-scale reform implementation or when their resource capacities are aligned with the reform

content). This is consistent with previous studies highlighting the enormous importance of stakeholder engagement in payment reforms (44,126,179). The major limitations of this study include potential bias from the subjective perspectives of the country informants. To address this, informants were encouraged to provide references and sought to verify their input through additional data sources. It was also assumed that the number of reform examples corresponded to their relevance, although this approach has limitations. The factors identified by experts may be subjective and vary by reform; a factor frequently noted in one country may be less relevant in others. Moreover, a factor with frequent occurrence but minimal impact might be less significant than one with rare occurrence but a substantial effect. Future studies should aim to measure and rank the relevance and priority of these factors throughout various stages of reforms, from planning through implementation and evaluation. Research could focus on developing a framework to assess and rank factors affecting reform success. By combining both inductive and deductive analyses, this study captures diverse perspectives on the factors influencing health care provider payment reforms in CEE countries. It enriches the framework that can be used to better plan future payment reforms with various elements that need to be taken into account. This can aid policymakers in designing, implementing, and evaluating payment reforms and support researchers in conducting evaluations and comparative studies in this field.

4.3. **Conclusions**

CEE countries share common patterns when implementing healthcare provider payment reforms, and the factors influencing these reforms are comparable. The study shows that the reform process might be critical for success (e.g., reform piloting/feasibility study, reform management/evaluation, and comprehensive approach/coordination of implementation systems), followed by its content (e.g., motivation/favorability of the payment system for providers and availability of clear performance indicators within the payment system). However, dimensions with fewer factors, such as the reform context and actors, are also crucial. Therefore, focusing solely on one or a few aspects of reform might be insufficient. For the successful reform of healthcare provider payment systems, a comprehensive consideration of all reform dimensions, with careful consideration of their interconnectedness, is essential.

Chapter 5. Health Care Provider Payment Reforms in African Countries of the Commonwealth—A Scoping Review

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5.1. **Abstract**

This scoping review examines provider payment reform for strategic purchasing in 21 African Commonwealth countries. It investigates the types of payment methods implemented, the healthcare providers targeted, and, where reported, the factors influencing these reforms. A health policy framework—context, content, process, and actors—was applied specifically to analyze the reported factors. Studies were identified through searches in scientific databases and supplemented with gray literature.

A total of 35 full-text publications were included, comprising 29 empirical studies, four technical reports/policy briefs, and two reviews. The evidence was available from eight countries, six of which focused on PBF. Reforms often introduced new payment methods alongside existing ones (62.85%, n=22/35), replaced existing payment methods—most commonly shifting from FFS to capitation in PHC (28.57%, n=10/35)—or applied mixed payment methods (37.14%, n=13/35), with FFS-capitation combinations being the most frequent. Some reforms targeted specific providers, such as the replacement of FFS with capitation in PHC, while broader reforms, such as PBF, were applied across multiple provider categories, including PHCs, hospitals, and specialty care facilities.

Where reported, various factors influenced different reform dimensions. Political inattention and inadequate legal and regulatory frameworks often constrained the reform context. Reform content depended on well-defined elements, including performance indicators, guidelines, tariffs, financial incentives, and provider autonomy. Challenges in the reform process included a lack of pilot testing, chronic underfunding, fragmented financial flows, and inadequate monitoring and evaluation mechanisms. The actor dimension was hindered by insufficient stakeholder engagement and limited stakeholder capacity to implement reforms effectively.

Despite a growing body of research, evidence remains limited to a few countries and often focuses on specific reform types or single-perspective evaluations. Further research is needed to assess reforms more comprehensively, incorporating multistakeholder perspectives and evaluating their relationship to other elements of strategic purchasing.

Keywords: Healthcare provider; Strategic purchasing; Payment reform; Commonwealth, Africa

5.2. **Introduction**

African leaders have demonstrated a strong commitment to advancing UHC, as reflected in key policy documents such as the Africa Health Strategy (2007 - 2015, extended to 2016 - 2030) and the Addis Ababa Call to Action on UHC in 2019 (206). These documents highlight the continent's collective efforts to ensure equitable access to quality healthcare services for all citizens. Despite this widespread support, numerous challenges persist in pursuing UHC within resource-limited settings (20). Strategic purchasing is recognized as a crucial health financing policy approach aimed at optimizing the use of limited resources to progress toward UHC (19,20). This policy tool directs funds to priority populations, interventions, and services on the basis of evidence and health needs.

Strategic purchasing involves deliberate decisions in five key areas: 1) coverage—determining for whom healthcare services should be purchased; 2) benefit package—deciding which services to purchase; 3) contracting—selecting providers; 4) quality—ensuring the quality of services; and 5) payment of providers—determining the payment methods and prices for providers (207). Previous studies have assessed the progress of some African countries in various aspects of strategic purchasing (208–211), yet provider payment reforms remain underexplored in this context (212).

The evidence from high-income countries indicates that reforming healthcare provider payment schemes is a popular policy tool to enhance overall health system performance (2,174). Payment schemes are designed to influence healthcare providers' behaviors, thereby playing a crucial role in strategic health purchasing. They can facilitate the flexible use of funds by healthcare providers while holding them accountable for service delivery outcomes (19). However, successful implementation of provider payment reforms is challenging and often influenced by a mix of diverse barriers and facilitators (179).

This study aimed to identify, map, and systematize recent literature (published within the last decade) on provider payment reform for strategic purchasing, and, where reported, the factors influencing these reforms in 21 African Commonwealth countries (Botswana, Cameroon, Gabon, Gambia, Ghana, Kenya, Eswatini, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Seychelles, Sierra Leone, South Africa, Togo, Uganda, Tanzania, and Zambia). On the basis of general objectives of the scoping method (46), the study examined the breadth of existing evidence, identified potential research gaps, and formulated implications for future studies.

5.3. **Methods**

The study followed the scoping review methodological guidelines of Peters and colleagues (46,47), which included five steps: defining review questions, identifying relevant literature, selecting evidence, extracting evidence, and analyzing data. The results were reported using the PRISMA-ScR checklist (53), and the study protocol was registered with the Open Science Framework (213).

5.3.1. Defining research questions

The specific questions guiding the review were as follows:

1. What type of evidence is available? (study country, publication year, study type, study objective).
2. What type of payment method was analyzed (type of method, type of change)
3. What type of healthcare providers were targeted?
4. What factors (obstacles and facilitators) were listed/mentioned as influencing the reform? (if reported)

5.3.2. Identifying relevant literature

Three scientific databases—PubMed, Scopus, and Web of Science—were searched for empirical studies. The search strategy was iteratively developed and conducted using multiple synonyms of "healthcare provider" AND "payment" AND "country" in titles and abstracts. Complementary searches included Google and gray literature on relevant organization websites, such as the Strategic Purchasing Africa Resource Centre (SPARC), the WHO via the WHO African Region, the World Bank, Responsive and Resilient Health Systems (RESYST), and Health Finance and Governance (HFG) country publications. The reference lists of the included publications were manually searched for additional studies. Details of the search strategy and records for each data source are provided in Supplementary File-4 Tables S12 - 17. The searches were conducted between June and July 2023.

5.3.3. Selecting evidence

The publications were selected in two stages: screening abstracts and evaluating full texts on the basis of predefined inclusion and exclusion criteria (Supplementary File-4 Table S18). Studies were included if they 1) focused on provider payments within strategic purchasing; 2) were peer-reviewed empirical studies, policy briefs, theoretical papers, technical reports, books/chapters, or theses; 3) focused on an African Commonwealth country; 4) were published between 2013 and 2023; and 5) were available in English. Studies were excluded if they 1) did not focus on healthcare provider payments within strategic purchasing (e.g., focused on social insurance schemes, community financing, cost recovery, medication payments, or informal caregiving); 2) were not full-text publications (e.g., conference abstracts); 3) focused on non-African Commonwealth countries; 4) were published before 2013; or 5) were in other languages.

Two independent researchers (CN and KDJ) conducted the title and abstract screening phase, achieving an agreement level above 80%. The full-text evaluation was performed by one researcher (CN) and reviewed by KDJ. Mendeley and Rayyan software were used for data management.

5.3.4. Data extraction

Data extraction tables were created using Microsoft Excel and were tailored to specific research questions. A single researcher (CN) conducted the extraction, which was reviewed by another researcher (KDJ) and further by all coauthors during the draft and final manuscript review stages.

5.3.5. Data analysis and reporting

The study employed inductive thematic analysis to analyze qualitative data, which were then coded for quantitative summaries and tabulated. The paper types were classified into four categories: empirical studies (original, on the basis of primary data, published in peer-reviewed journals), discussion/policy papers (published in peer-reviewed journals), literature reviews (published in peer-reviewed journals), and technical reports/policy briefs (e.g., policy briefs published by advocacy organizations). For payment methods reforms, the OECD classification (2) was used to code whether the reform modified an existing payment method, introduced an additional method, or replaced it with a new method.
Factors influencing reforms were deductively classified using the health policy framework (181–183), which consists of CONTEXT (systemic factors, e.g., political, economic, and cultural influences), CONTENT (detailed elements of a reform), PROCESS (creation, communication, implementation, and evaluation of the reform), and ACTORS (participants in policymaking: individuals, organizations, groups, and the government).

5.4. **Results**

5.4.1. Search results

The database searches yielded 3,030 records, with 1,603 duplicates. After screening 1,427 titles and abstracts, 65 full texts were reviewed, and 30 met the inclusion criteria. Most studies (n=19) were excluded because they did not focus on healthcare providers. Four articles from organizations and one from reference lists were included, totaling 35 publications for the final analysis. Figure 6 shows the PRISMA flowchart, and Table 14 lists all included studies by country and relevant details aligned with the study questions.

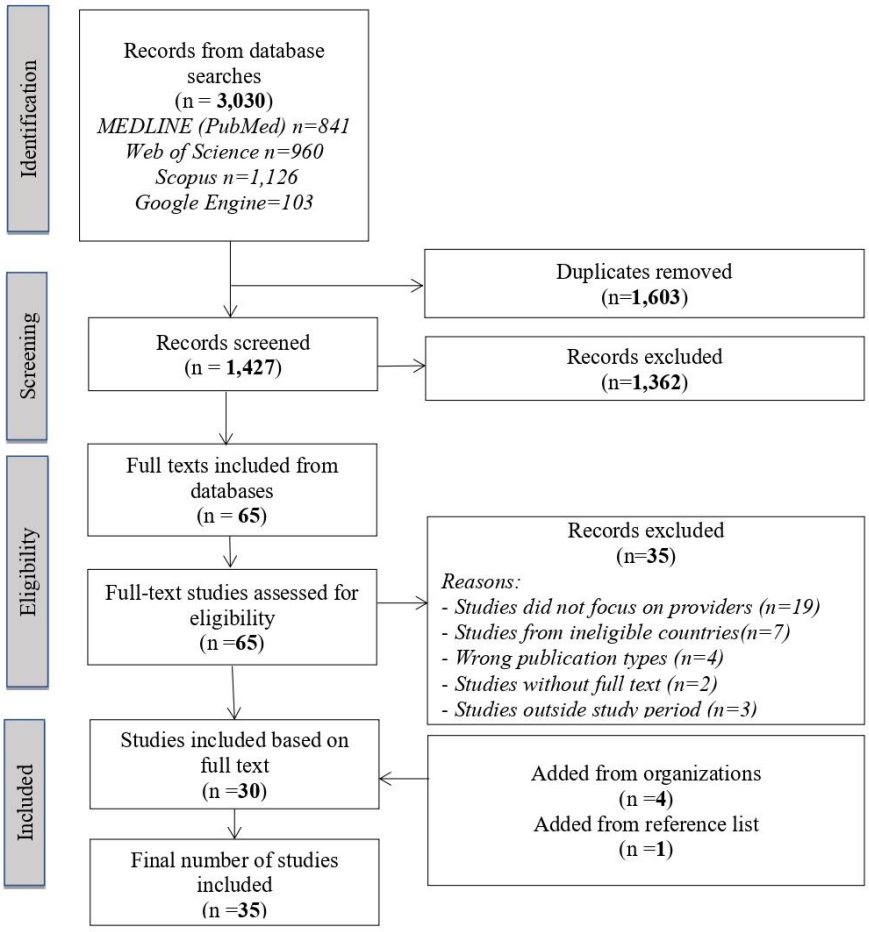

Figure 6. PRISMA flowchart of the study selection process

Table 14. Characteristics of the included studies by country

Country	Reference	Year	Study type a*	Study aims b*	Reform objectives	Reform content		
						pay method	change c*	provider
Cameroon	SPARC (214)	2021	tec/pb	3	Reduce maternal and child mortality through targeted healthcare services.	FFS (with additional incentives via P4P)	add	Multiple
	Sieleunou et al. (215)	2021	lit rev	3	Link provider payments and funding to service quantity and quality, focusing on maternal and child health.	P4P	add	Multiple
	Nkangu et al. (216)	2022	emp-QL	1	Prioritize maternal and child health services delivery.	P4P	add	Multiple
Ghana	Aboagye (217)	2013	emp-mix	1	Control costs, simplify claims processing, enhance efficiency, improved forecasting and budgeting.	Capitation (replacing FFS)	rep	PHC
	Agyei-Baffour et al. (218)	2013	emp-QN	2	Contain costs, share financial risks, implement managed competition and enhance patient choice.	Capitation (replacing FFS)	rep	PHC
	Atuoye et al. (205)	2016	emp-QL	1	Contain costs: strengthen claims processing to curb fraud.	Capitation (replacing FFS)	rep	PHC
	Anyona (219)	2018	tec/pb	3	Contain costs.	Capitation (replacing FFS)	rep	PHC
	Andoh-Adjei et al. (220)	2018	emp-QN	1	Control utilization and contain costs of claims.	Capitation (replacing FFS)	rep	PHC
	Abduali et al. (221)	2019	emp-QN	2	Contain costs and share risks.	Capitation (replacing FFS)	rep	PHC
	Andoh-Adjei et al. (66)	2019	emp-QN	2	Control cost escalation.	Capitation (replacing FFS)	rep	PHC
	Aikins et al. (222)	2021	emp-QL	2	Contain costs and reduce fraud in claims submission.	Capitation (replacing FFS)	rep	PHC
	Amporfu & Arthur (223)	2022	tec/pb	2	Control cost escalation.	Capitation (replacing FFS)	rep	PHC
	Agyepong et al. (224)	2014	emp-mix	2	Reduce cost escalation and solve claims processing inefficiencies.	Mixing (G-DRG and FFS).	add	Hospital
	Amporfu et al. (225)	2022	emp-QL	3	Control cost escalation.	Mixing (DRG) and FFS).	add	Hospital
Kenya	Munge et al. (226)	2018	emp-QL	1	Incentivize efficiency, service quality, and promote equitable access.	Mixing (capitation, case-based payments, and FFS)	add	Multiple
	Mbau et al. (227)	2018	emp-QL	3	Encourage efficiency and service quality.	Mixing (line-item budgets and salaries)	noch	Multiple
	Munge et al. (228)	2019	emp-QL	1	Improve efficiency, control cost, enhance service quality and access.	Mixing (FFS and capitation)	add	Multiple
	Obadha et al. (229)	2019	emp-QL	2	Improve efficiency, quality, and utilization of needed services.	Mixing (FFS and capitation)	add	Multiple
	Obadha et al. (230)	2020	emp-QN	2	Enhance service quality and efficiency.	Mixing (capitation and FFS	add	Hospital
	Kazungu et al. (231)	2021	emp-QL	3	Incentivize providers to deliver quality services, efficiently, and equitably.	Mixing (capitation, case-based payments, FFS)	mod, add	Multiple
	Kabia et al. (232)	2022	lit rev	3	Improve efficiency, equity, access, and quality of care.	Mixing (capitation, case-based payments, FFS)	mod, add	Multiple

Mozambique	Schuster et al. (233)	2018	emp-mix	2	Improve human immunodeficiency virus (HIV) services, reduce mother-to-child HIV transmission (i.e., prevention of mother-to-child transmission (PMTCT)), and enhance maternal/child health (MCH) services.	P4P	add	Multiple
Nigeria	Ezenduka et al. (234)	2022	emp-QL	3	Control costs, improve efficiency, and quality of services.	Mixing (capitation and FFS)	add	Multiple
	Ezenwaka et al. (235)	2022	emp-QL	3	Contain cost, enhance efficiency and quality care.	Mixing (capitation and FFS)	add	Multiple
	Onwujekwe et al. (236)	2022	emp-QL	3	Contain costs, improve efficiency and service quality.	Mixing (capitation and FFS)	add	Multiple
Rwanda	Binagwaho et al. (237)	2014	emp-QN	1	Enhance maternal and child health care service quantity and quality services.	P4P	add	Multiple
	Ngo et al. (238)	2017	emp-QN	1, 2	Incentivize health facilities based on performance in maternal health, child health, family planning, HIV/acquired immunodeficiency syndrome (AIDS), and overall facility quality.	P4P	add	Multiple
	Umuhoza et al. (239)	2022	emp-mix	3	Incentive providers to focus on maternal and child health, HIV, tuberculosis, and child stunting.	P4P	add	Multiple
Tanzania	Manongi et al. (240)	2014	emp-QL	2	Improve service quality.	P4P	add	PHC
	Binyaruka and Anselmi (241)	2020	emp-QN	1	Enhance maternal and child health services.	P4P	add	Multiple
	Kuwawenaruwa et al. (242)	2022	emp-QL	3	Enhance service access, efficiency, and care quality.	Mixing (capitation and FFS)	mod, add	Multiple
Uganda	Ekirapa-Kiracho et al. (243)	2017	emp-QN	3	Enhance care quality, efficiency, and quantity, prioritizing maternal and child mortality prevention.	Mixing (FFS, capitation, and line-item budgets).	add	Multiple
	Ekirapa-Kiracho et al. (244)	2022	emp-QL	3	Provide key services for maternal and child health, and communicable diseases like malaria.	P4P	add	Multiple
Multicountry (Ghana, Tanzania)	Yé et al. (245)	2014	emp-QL	2	Enhance quality of maternal and neonatal health care provision	P4P	add	Multiple
Multicountry (Ghana, Mozambique)	Cashin et al. (23)	2018	tec/pb	3	Contain costs and expand access to priority services – maternal and child health care.	Capitation, P4P	add	Multiple

a*(emp-QL: empirical study-qualitative; emp-QN: quantitative; or emp-mix: mixed; tec/pb: technical report/policy brief; lit rev: literature review)

b*(1 – payment reform evaluation from the system perspective; 2 – payment reform evaluation from the provider perspective; 3 - general overview of the strategic purchasing progress including payment method analysis/description)

c*(mod: Modifying the existing payment method; add: Implementing an additional payment method; rep: Replacing the existing method with the new one; noch: no change)

5.4.2. Publication overview

The 35 studies included (23,66,205,214–245) were from eight countries. Of these, 29 were empirical studies, four were technical reports/policy briefs (23,214,219,223), and two were reviews (215,232). One review was a scoping review mapping progress in strategic health purchasing in Cameroon (215), and the other was a narrative review assessing health purchasing reforms' effects on equity, access, quality of care, and financial protection in Kenya (232). Empirical studies have primarily evaluated specific experiences with payment reforms, notably P4P (n=12/35), also known as results-based financing (RBF) or PBF and capitation (n=10/35). Studies utilized qualitative (n=16/35), quantitative (n=9/35), or mixed methods (n=4/35) to assess these reforms. Reform assessment often emphasized specific stakeholders' perspectives, including providers' experiences, opinions, and preferences (31.42%, n=11/35). Examples include Ghana's capitation (66,218,222,224), Kenya's capitation and FFS (229), and PBF in Mozambique (233) and Rwanda (238). Some evaluations took a system perspective (22.85%, n=8/35), assessing payment methods' effectiveness in achieving broader healthcare system objectives. For example, PBF strategies have been evaluated to improve maternal health service access and utilization in Cameroon (216). In some cases, evaluations aimed to draw lessons from healthcare provider payment reforms for the entire health system. An example is the evaluation of capitation in PHC in Ghana, which aimed to inform a nationwide rollout (217). Evaluations could also compare achievements before and after payment reform, as observed in Tanzania's study on technical efficiency before and after the P4P scheme (241).

5.4.3. Payment method reforms

Reforms in many countries frequently focused on adding new payment methods to existing methods (62.85%, n=22/35), with P4P being the most commonly adopted method to bolster the strategic purchase of specific curative, preventive, and promotional services (Table 14). Many reforms have concentrated particularly on maternal and child health. Primary prevention efforts prioritized vaccinations such as childhood immunizations (e.g., measles) and maternal tetanus vaccinations during prenatal care, as seen in Rwanda (239), Tanzania (240), and Cameroon (216). Prevention measures aimed at controlling infectious diseases such as HIV and tuberculosis have also been noted in Mozambique (233), Cameroon (215), and Rwanda (237,238). In 37.14% (13/35) of the studies, countries added methods with the intention of using mixed methods to pay providers, predominantly combining FFS and capitation. This approach was evident in countries such as Kenya (226,228–230), Uganda (243), Tanzania (242), and Nigeria (234–236). Other reforms were implemented to completely replace existing payment methods, notably replacing FFS with capitation in PHC, prominently in Ghana (66,205,217–223). Ghana introduced capitation in 2012 to contain costs, share financial risk, enhance competition, and improve efficiency and claims processing after previous methods such as FFS and G-DRG were ineffective in addressing these challenges (217,218,223).

5.4.4. Providers targeted by the reform

Certain payment reforms targeted specific providers, such as replacing FFS with capitation in PHC. However, most reforms, such as PBF, have been broadly applied across various provider categories, including PHCs, hospitals, and/or specialty care (214–216,239,244). Both public and nonpublic sectors were sometimes included, as seen in Kenya (229) and Tanzania (242), where capitation and FFS were applied to public, private, and charity providers, and in Cameroon (214,216), for PBF.

5.4.5. Factors influencing payment reforms

Where reported, various interconnected factors impacted different reform dimensions (Supplementary File-4 Table S19). The reform context was frequently shaped by political will,

policies, legal frameworks, and governance structures for strategic purchasing practices. Political neglect often led to superficial endorsement of reforms without sustained commitment, resulting in inconsistent implementation (205,223,235). Inadequacies in legal and regulatory frameworks hindered the effective operationalization of reforms, resulting in implementation inefficiencies and gaps (215,226–228,231,240,243,244).

Reform content factors stemmed from essential elements such as guidelines, performance indicators, tariffs, financial incentives, and providers' autonomy over finances. These were important to ensure clarity, consistency, and alignment with reform objectives. Guidelines guided reform implementors (223,234,236,239,242–244). Unclear indicators hindered many reforms, but good examples were observed in countries such as Rwanda (239), Cameroon (215), Ghana (223), Nigeria (234,236), and Uganda (243,244). Transparent tariffs provided fair incentives (214,225,236,242), whereas financial autonomy allowed providers to use resources flexibly, responsively, and responsibly (e.g., PBF programs in Cameroon (214,215), Mozambique (233), and Tanzania (240)).

Several factors impacted the reform process dimension, with top barriers stemming from the absence of reform piloting, chronic underfunding, fragmented funding flows, and inadequate monitoring and evaluation mechanisms. Piloting reform helped identify implementation challenges and informed its redesign before a nationwide rollout (e.g., capitation in Ghana (217) and PBF programs in Rwanda (237–239) and Tanzania (240,241)). Piloting proved essential for detecting and addressing potential issues early. Chronic underfunding crippled the ability to sustain long-term reform initiatives. Payment reform in various countries suffered heavy dependency on donor funds (214,215,218,219,222–224,234,236,240–245). Fragmented funding flows with often multiple payment systems further exacerbated these issues by creating inefficiencies and resource misallocations (214–216,224,228,231,232,235,236,241,242,244). Inadequate monitoring and evaluation mechanisms led to a lack of accountability and transparency, impeding the ability to measure progress and make necessary adjustments (214–216,226,227,231,232,234,235,244).

Finally, the reform actor dimension was frequently impacted by barriers associated with a lack of a holistic approach to stakeholders and inadequate stakeholder capacity to perform reform tasks. Reforms and involved stakeholders varied within and between countries. Frequent actors can generally be grouped into government, purchasers, healthcare providers (including provider groups), and the general public. Notably, in most reforms, the general public, such as citizens or patients and their associations, was commonly overlooked (23,217,221,226–228,233,234,244).

5.5. **Discussion**

Evidence suggests that since 2013, only eight of the 21 African Commonwealth countries have implemented healthcare provider payment reforms. This underscores a scarcity consistent with previous findings in low-income economy countries (179). Countries typically added new payment methods to existing methods (usually P4P for different providers), replaced FFS with capitation in PHC, or mixed these two methods. This shift from FFS to capitation aims to contain costs, as FFS can lead to cost increases and service oversupply, jeopardizing the financial stability of purchasers (174). Capitation is known to promote efficiency (246), reduce costs (247,248), generate attractive provider revenue (249), promote compliance with guidelines and policies (250), and improve provider performance and patient education (251). However, it can negatively impact care quality and quantity (249), encourage skimming on inputs, discourage providers from treating high-risk patients (252), and negatively affect patient–provider relationships (252). Many countries have adopted mixed payment systems that

combine FFS and capitation (226,228–232,234–236,242,243), a strategy supported by high-income country literature in PHC (174). Mixed approaches can offset the disadvantages of pure payment methods and make them attractive options for policymakers (18,127,155,157,174,253).

Where reported, factors influencing payment reforms in the surveyed countries are broadly consistent with international literature (44,179), although there are particularities in the African context. Contextual factors such as political will and regulatory frameworks play crucial roles in most reforms, particularly when they coincide with other health policies and political priorities (179). This study found that the success of a reform largely depended on its clarity and transparency in content elements such as performance indicators, payment rates and quality criteria as well as its potential to generate positive perceptions and interests among key stakeholders, particularly providers. Consistent with previous studies, deficiencies in these elements can lead to several problems, such as tensions between providers and reformers, which can stagnate reform efforts (67,179). The reform process is hindered by chronic underfunding, largely driven by donor influence in low-resource settings and exacerbated by high fragmentation in financing and health service delivery systems, as consistently observed by previous researchers (67,179). Finally, stakeholder engagement is important, but it's crucial that stakeholders have the capacity to carry out tasks. Many payment reforms were hindered by a lack of capacity(e.g., financial resources, human resources, technical skills, and tools such as IT). An interesting approach in Ghana (223) involved mapping stakeholder capacities and forming groups for those unable to implement reforms on their own. Further research is needed to evaluate this practice and shed light on potential challenges and strengths or feasibility in other, particularly resource-limited, countries.

This study primarily focuses on English literature, which is justified, as it is the official language in Commonwealth countries. It highlights important research gaps. Current evidence is available for only a few countries and often focuses on specific types of reforms and/or provides evaluations from a single perspective. The results help define indications for future studies. First, PBF is the most commonly implemented reform (studies were identified in six of the eight countries for which evidence was found). Previous studies have also shown that such outcome-based payment models have gained traction, but their scope is narrow, and they focus on specific diseases or conditions (44,151,153). In particular, studies have reported mixed results concerning the long-term viability of P4P in similar settings (254,255), and a review of PBF in low- and middle-income countries concluded that no definitive conclusions could be drawn regarding the likely impact of PBF (256). Therefore, the effectiveness of these methods in the studied settings remains to be investigated.

Second, it is worth noting that the majority of studies examining the impacts of capitation reforms focus on experiences in Ghana. While these insights are undoubtedly valuable, they may not provide a comprehensive understanding of how such payment reforms play out in other countries on the continent. Third, many of the reforms included are broad and target multiple providers at the same time. This approach often lacks the nuance needed to determine which methods are most effective for certain types of providers. Although some countries combine methods that can sometimes mitigate the unintended consequences of individual payment methods, previous research suggests that certain methods may be more suitable for particular types of providers while proving ineffective for others (126). Examples include capitation for PHC plus FFS for priority interventions, FFS with P4P for episodic care, and DRGs with a global budget (155). This practice of which methods should be blended for specific types of providers particularly needs to be investigated in the studied countries.

Additionally, it is crucial to acknowledge the absence of experiences with other value-based payment methods, such as bundled payments, within the study settings. Bundled payments are important for effective care continuity, especially for chronic conditions (155). Future research should examine the potential of such payment models in African settings and assess their feasibility. Moreover, the provider payment method defines the mechanism used to transfer funds from purchasers to providers (4) and is just one of five interrelated elements of the strategic purchasing framework (207,208). Future studies could aim for a more comprehensive evaluation of reforms, such as from a multistakeholder perspective and/or in relation to other elements of strategic purchasing. Finally, the issue of factors influencing payment reform success can be investigated through targeted original research, focusing on developing policy recommendations for best practices to overcome specific barriers.

5.6. **Conclusions**

This study highlights a major research gap in healthcare provider payment reforms in African Commonwealth countries. The evidence shows a trend toward supplementing traditional methods with new methods, such as P4P, replacing FFS with capitation, or mixed models. Unlike high-income countries, which prioritize bundled payments for chronic diseases, African countries' reforms often focus on specific diseases such as HIV or maternal health. Success factors in Africa are similar to those in high-income countries, but unique challenges include fragmented funding and heavy reliance on donors.

Chapter 6. Performance-Based Financing in Rwanda—Qualitative Analysis of Healthcare Provider Perspectives

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6.1. **Abstract**

Results-based healthcare financing policies have been adopted in countries worldwide, including those with limited resources. A retrospective, semistructured interview study was conducted to evaluate healthcare providers' experiences with Rwanda's PBF policy and the factors influencing its implementation. Data from 21 participants (doctors: n = 13; nurses: n = 5; midwives: n = 3) were analyzed using the health policy evaluation model—context, content, process, and actors—as a deductive framework supplemented by inductive coding. The participants described PBF as a key motivator, supplementing incomes, increasing accountability, and fostering teamwork to meet performance targets. PBF was credited with improving patient outcomes, particularly in incentivized services; however, concerns were raised regarding disparities in service prioritization. Key facilitators of and barriers to PBF implementation were identified, providing insights into its operational dynamics. Strong political commitment and integration into national strategies, such as Imihigo, along with decentralization through district steering committees, were identified as key contextual enablers, enhancing the program's flexibility and alignment with local priorities. Content factors centered on a two-tiered contracting system that combines national accreditation processes with individual performance incentives. Process factors supporting PBF were characterized by decentralized evaluations, audits, and multilevel communication, which collectively bolstered accountability mechanisms. The engagement and capacity of stakeholders were highlighted as crucial to the success of PBF. Nonetheless, significant barriers, such as payment delays, manual documentation, untimely evaluations, insufficient training, limited provider participation in decision-making, and the exclusion of patients as stakeholders, were identified. These findings provide practical recommendations for policymakers aiming to improve or adapt provider payment mechanisms in similar contexts.

Keywords: Performance-based financing; Health financing; Hospital accreditation; Performance indicators; Healthcare providers; Health policy; Rwanda

6.2. **Background**

Healthcare provider payment methods are essential to strategic purchasing, a key health financing approach aimed at achieving UHC, especially in resource-limited countries (257). In Africa, this approach has been incorporated into major health plans and financing strategies (257,258). In 2001, the governments of the African Union signed the Abuja Declaration, urging countries to allocate 15% of their budgets to health (259). Later declarations, such as the Ouagadougou Declaration on PHC and health systems in Africa, emphasized the need for renewed health financing policies (260). These commitments have driven important reforms in health financing. Many countries have adopted RBF policies, also known as PBF, as key tools for achieving UHC (208,261,262). PBF is a health financing approach designed to offer financial rewards to healthcare providers when they meet predefined quantitative and/or qualitative performance targets (257).

Rwanda adopted PBF early, starting a pilot in 2001 and scaling it up nationwide by 2006 (263,264). Since then, the government has made PBF a national priority, integrating it into key policies such as the Health Sector Strategic Plan (HSSP-II) 2009–2012, aligned with the Millennium Development Goals (MDGs) by 2015 and Vision 2020 (264–267); the Economic Development and Poverty Reduction Strategy (EDPRS) (2008–2021) (265,266); and the Health Financing Strategic Plan (2018–2024) (266,267). The HSSP-II sets objectives and outputs to create an enabling environment for service delivery to be optimally effective and efficient, with the PBF scheme serving as a crucial instrument to reward health facilities and staff for good performance (increased utilization and quality of services, focusing on output financing models rather than input financing) (265). The EDPRS II (2013–2018) highlighted PBF's role in advancing health sector goals by focusing on improving healthcare service quality, including facility management, while expanding both geographical and financial access. PBF was seen as a tool to foster healthy competition among facilities, encouraging healthcare providers to innovate, enhance service quality, and advocate for increased service utilization, ultimately increasing both income and personal incentives (267). These efforts have standardized PBF models across the country as part of Rwanda’s strategic purchasing initiatives (239). The program was primarily implemented in public and government-assisted facilities, which constitute most of the health sector (258). In 2010, PBF was extended from health facilities to the community level to provide financial incentives to community health workers (CHWs) (239,268).

A major reform in 2014 integrated the PBF program with the hospital accreditation system at the provincial and district levels. The linkage aimed to avoid duplication of efforts in implementing the two programs and, as such, promote and achieve greater efficiency (239,267,269). Both programs share complementary goals of improving health facility performance by addressing intrinsic and extrinsic motivational factors among healthcare providers and managers. They also rely on third-party verification to assess performance against defined standards or targets. To ensure transparency and effective implementation, the MoH developed a detailed PBF Procedures Manual for Health Facilities, covering both hospitals and health centers (267).

Currently, PBF remains a key mechanism for incentivizing healthcare providers in Rwanda. The scheme seeks to increase both the quantity and quality of healthcare services. The purchasers within the PBF scheme (the Ministry of Finance and Economic Planning (MINECOFIN) and its partners), in collaboration with the regulator, the MoH, pay healthcare providers on the basis of a set of quantitative indicators adjusted for the overall quality of services delivered at the health facility (239,267). Performance indicators can be categorized into two groups: visit and outreach indicators (e.g., curative care visits, prenatal visits,

contraceptive visits, facility deliveries, and child growth monitoring) and content of care indicators (e.g., timely vaccinations, malaria prophylaxis, and appropriate emergency referrals) (239,270). Quantitative indicators are evaluated monthly under the leadership of the District Steering Committee, with monitoring and supervision of health facilities reinforced through peer reviews, while quality assessments are conducted quarterly (267). Since 2014, assessments of qualitative indicators at the district and provincial hospital levels have been integrated with accreditation assessments. Internal hospital self-assessments are conducted biannually by hospital staff, and certified accreditation surveyors carry out external assessments annually (267,269).

The value of financial incentives varies across indicators, with the MoH and the Rwanda Biomedical Centre determining payments on the basis of specific criteria. Key factors influencing these decisions include current coverage levels of each indicator—those indicators with lower achievement rates may receive higher funding to encourage improvement—and government priorities (referred to as "imihigo"), where indicators that have already achieved significant progress may receive reduced funding (267). At the facility level, individual contracts are established between facility management and employees (e.g., individual providers), specifying bonuses for meeting agreed-upon goals. These contracts include both basic indicators and strategic intervention measures aligned with the facility's action plan (239,267).

Previous reports claim that Rwanda's PBF policy has increased the utilization of health services and quality (239,258,263,264,266,267,270,271), with most studies focused primarily on quantitative analyses (258,263,264,270,271). For example, Gertler and Vermeersch reported a 20% increase in productivity and notable advancements in child health (270), whereas Basinga et al. reported a 23% increase in institutional deliveries and higher rates of preventive care visits for young children (271). While these findings underscore PBF's measurable benefits, quantitative research often falls short of explaining why policies succeed or fail, leaving critical gaps in understanding the lived experiences and challenges of those directly impacted (272). Healthcare providers, as the primary beneficiaries of PBF, play a pivotal role in its implementation; however, their perspectives remain underexplored.

To address this gap, the present study examines healthcare providers' views on PBF through in-depth interviews guided by an established health policy framework (273). By emphasizing the factors that drive PBF success and identifying its challenges, the findings offer actionable insights for policymakers and stakeholders in other contexts seeking to implement or refine similar provider payment mechanisms.

6.3. **Methods**

6.3.1. Design and setting

A retrospective, semistructured interview study was conducted to gain detailed insights into healthcare providers' perspectives and experiences regarding the implementation of PBF. Given that PBF has been widely implemented across Rwanda's health system, there was no restriction to a specific geographic location or type of provider. Ethical approval for conducting this research was granted by the Rwanda NCST (Research Permit No. NCST/482/0124/2024) and the Research Ethics Committee of Jagiellonian University Medical College (No. 118.0043.1.10.2024).

6.3.2. Participants

Twenty-five healthcare providers were randomly sampled (i.e., individuals directly involved in delivering health services) from various healthcare facilities across the four provinces of the

country and Kigali city, inviting them to self-nominate for participation. To further expand the participant pool, official request letters were sent to two prominent professional associations in Rwanda: the Rwanda Medical and Dental Council and the National Council of Nurses and Midwives. Additionally, a snowball sampling method was employed by asking interviewed participants to recommend other eligible candidates.

The enrollment process began with an email invitation sent to potential participants, providing a brief overview of the study's objectives and procedures. Participants were assured of confidentiality and anonymity throughout the study. Interested individuals received detailed information about the study, including its purpose, potential risks, benefits, and rights as participants. Informed consent was obtained from all participants prior to conducting the interviews.

The eligibility criteria required participants to be healthcare providers with direct experience working in facilities implementing PBF schemes. Proficiency in Kinyarwanda and/or English was also mandatory to ensure effective communication during data collection (respondents could choose their preferred language for the interview).

6.3.3. Data collection

After providing consent, face–to-face interviews were conducted at locations chosen by the participants—usually their workplaces—or virtually between July 2024 and October 2024. The interviews were conducted by the principal investigator (CN). While the principal investigator is a medical doctor with prior knowledge of the Rwandan healthcare system, he had no direct relationship with participants before the study commenced.

The interview guide consisted of seven key questions (see Supplementary File-5). Each interview began with introductory questions to provide an overview of the discussion and create a comfortable environment for participants. These initial questions focused on healthcare providers' professional backgrounds, a brief description of their roles at their respective health facilities, and their general understanding of the PBF policy. Subsequently, specific questions and probes were used to examine their perceptions of the PBF scheme's impact, including its benefits, risks, and unintended consequences for provider work and patient care. The participants were also asked to discuss the factors—both challenges and facilitators—that contributed to the success or failure of PBF implementation. The interviews concluded with an opportunity for participants to offer recommendations or suggestions for potential improvements to the PBF system and highlight areas that needed attention.

Seventeen of the 25 initially invited participants agreed to participate in the study, but one later declined due to unavailability. Nine additional participants were identified through snowball sampling, but after interviews with five participants, recruitment stopped as no new ideas or codes emerged. In total, 21 healthcare providers were included in the study. Twelve interviews were conducted in person (usually at participants' work offices), two by phone, and seven via WhatsApp. The average interview time was 37 minutes. All the interviews were conducted in Kinyarwanda, except for two in English.

6.3.4. Data analysis

The interviews were recorded and transcribed verbatim (by CN). The interviews conducted in Kinyarwanda were then translated into English (by CN). The transcripts were subsequently anonymized and checked for accuracy (by RN). To protect participant anonymity and the confidentiality of their institutions, detailed sociodemographic information was excluded. The

names and locations of health facilities were also omitted, as most Rwandan districts have only one hospital, making it easier to identify specific institutions or participants. Moreover, participants in prominent roles, such as clinical directors, could be easily recognized if facility names were disclosed. QDA MINER software (v3.0.6) was used to manage the interview data, and a thematic approach was employed for the analysis. Initial coding was deductive, on the basis of predefined themes from the interview guide (Supplementary File-5), with additional codes generated inductively through a six-step process: 1) familiarizing with the data, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the manuscript/report (274). Codes were grouped into overarching themes and refined iteratively throughout the analysis. Recruitment and interviews continued until no new codes emerged.

The factors affecting PBF were classified using an existing health policy framework (181–183), which was previously used to analyze barriers to and facilitators of payment reforms (273). This framework describes four dimensions of the health policy spectrum. The first dimension, *Context*, addresses systemic factors that can influence reforms, such as political commitment and regulatory frameworks affecting PBF. The second dimension, *content*, describes the specific elements of the reform, such as clearly defined performance indicators, the use of clinical guidelines, the suitability of the PBF payment system for providers, and tariff valuation. The third dimension, *Process*, relates to how the reform was developed, communicated, implemented, and evaluated, including pilot studies, coordination of implementation systems, availability of funds, IT systems, provider training, and management of the reform. The final dimension, *Actors*, includes all individuals involved in the policy-making process, with a focus on stakeholder engagement and capacity (273).

6.4. **Results**

6.4.1. Respondent background

All the participants confirmed having direct experience with PBF while working at public health facilities. Among the 21 participants, 12 were male and 9 were female. The majority were doctors (n = 13), followed by nurses (n = 5) and midwives (n = 3). Many participants were healthcare providers without managerial roles (n = 16), whereas five also held managerial roles, including clinical directors (n = 4) and a chief nurse (n = 1). The participants worked in diverse healthcare settings, including both urban and rural facilities. The majority of participants reported PBF experience across multiple facilities due to frequent rotations, part-time roles, or transitions to teaching hospitals for specialization.

6.4.2. PBF effects

Influence on provider work/practice

All the participants agreed that PBF significantly influenced their work. A majority of respondents reported increased accountability and documentation requirements, driven by the system's emphasis on linking individual and facility performance to financial incentives. Many participants highlighted that PBF motivated them to work harder, knowing that their performance directly affected their income. Additionally, PBF was reported to encourage teamwork and communication among staff, as meeting hospital-wide targets required collective effort. The participants emphasized that the program played a critical role in sustaining performance. However, delays or the absence of PBF payments were associated with reduced morale and diminished service quality.

> *"PBF is essentially about motivating us to achieve better outcomes. It makes us think about quality more deliberately."* (Participant 8, Doctor)

"Yes, it definitely impacts the work. For example, when employees do not receive PBF on time—or sometimes not at all, as happens in some hospitals where staff can go a year without it—it leads to negative consequences. Employees become demotivated, and the quality of services declines. However, in hospitals that provide PBF regularly, employees work with greater commitment and effort. [Those] hospitals generate more revenue and deliver better services, which leaves patients well cared for." (Participant 3, Clinical Director)

Influence on patient care/outcomes

The participants generally agreed that PBF contributed to improved patient outcomes, citing increased vaccination rates and greater utilization of maternal health services as examples. Timely PBF payments were widely regarded as enhancing patient care and satisfaction. However, participants also noted potential downsides, such as disparities in attention given to services on the basis of their associated incentives. Some services received less focus because they provided little or no financial reward.

"We've seen an increase in women seeking prenatal care since this hospital implemented the PBF program, which I believe is directly related to the incentives provided to healthcare providers. The PBF amount here is relatively high and fairly consistent compared with what my colleagues at other hospitals receive." (Participant 15, Chief of Nursing)

Additionally, some participants reported that PBF indirectly influenced the volume of services provided, including the number of diagnostic tests ordered and the number of medications prescribed.

"The PBF system encourages us to be more thorough with patient care, which can sometimes mean ordering more lab exams or routinely offering various services, even if they aren't of high importance for every patient. It's a balance, though, as I always try to ensure it aligns with my patients' needs. But [it] is important because this hospital benefits from PBF through more billing." (Participant 21, Doctor)

While this 'more billing' often resulted in increased PBF payments to health facilities, it also raised concerns about the potential overutilization of resources and unnecessary services offered to patients. Nevertheless, some participants mentioned that facilities cannot exceed a specific ceiling on PBF payments, citing this restriction in connection with the MoH guidelines. However, the exact limit was neither clearly defined nor consistently reported by participants.

6.4.3. Perceptions of success/failure factors

The respondents indicated diverse factors that influence PBF success. They were assigned to the four dimensions of the health policy triangle (Figure 7).

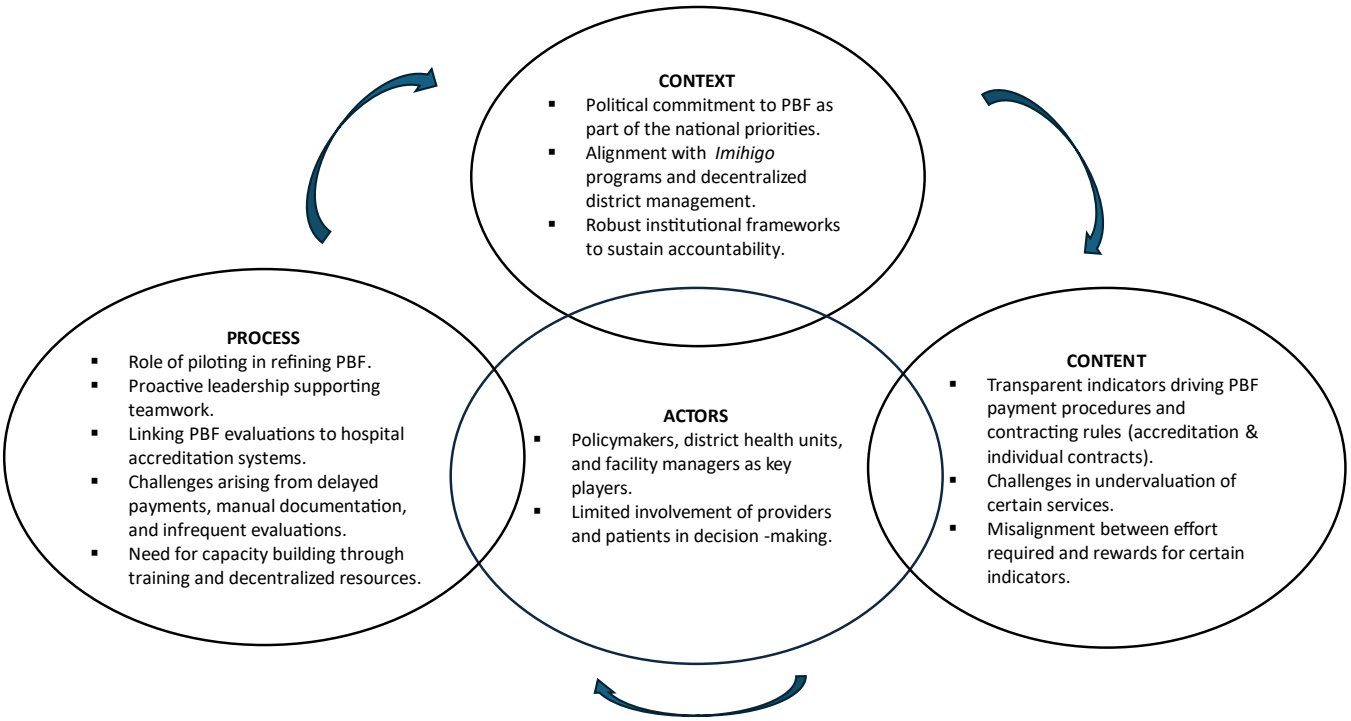

Figure 7. Facilitators and barriers to performance-based financing in Rwanda.

Context

Political willingness was consistently cited as a key driver of Rwanda's success in implementing and scaling up PBF. The participants emphasized the government's strong commitment to improving health system performance, reflected in policy prioritization, resource allocation, and the institutionalization of PBF within the national health strategy.

> *"The government's leadership was instrumental. They recognized early on that PBF could address some problems in the health system and were willing to support it, both politically and financially."* (Participant 6, Clinical Director)

The participants highlighted that Rwanda's postgenocide governance reforms created an enabling environment for innovative approaches such as PBF. The government's emphasis on results-oriented policies ensured that PBF received high-level support from the MoH and local governments. The integration of PBF into broader *Imihigo* performance programs at the district level further demonstrated the political commitment to achieving health targets. This alignment reinforced accountability and helped sustain political momentum for PBF.

> *"The country's leadership showed remarkable foresight by adopting PBF as a national policy. It wasn't just about healthcare but about building accountability into service delivery."* (Participant 19, Clinical Director)
>
> *"The fact that PBF targets are part of the government's performance programs 'Imihigo' with district leaders shows how serious they are about this program."* (Participant 3, Clinical Director)

The participants confirmed that the government has established robust frameworks to support PBF implementation. This included incorporating PBF into the National Health Strategic Plan and standardizing its operational tools and performance indicators. The establishment of a clear institutional framework was cited as a critical factor in ensuring accountability and coordination across all levels of the health system.

> *"The MoH played a vital role in developing policies and guidelines for PBF*

implementation, which made it easier for everyone to understand their responsibilities." (Participant 3, Clinical Director)

Additionally, participants noted the government's efforts to decentralize PBF management, allowing district health units (known as district steering committees) to oversee performance monitoring, data validation, and financial disbursements. This decentralization was viewed as a key enabler of flexibility and responsiveness in addressing local health priorities.

"The district health office plays a central role in managing PBF, but we also have the flexibility at the facility level to determine how funds are distributed on the basis of our performance." (Participant 19, Clinical Director)

"The decentralization of PBF has been a game changer. District health teams can adapt the program to fit local contexts, which has improved its impact on the ground." (Participant 6, Clinical Director)

Content

The content dimension revealed diverse opinions among participants. While the majority admitted that they were not fully aware of the specific indicators used to determine their PBF payments, they readily identified activities they performed that were excluded from the payment scheme. Health education sessions were frequently mentioned as essential but not incentivized under PBF, and certain indicators were noted to qualify for PBF only for specific patient groups.

"*Screening HIV for a male patient does not qualify for PBF at our facility. Regardless of how many you screen, even several hundred, you do not receive any payment for this. However, for female counterparts, this indicator is part of the quantitative criteria for the award of PBF*." (Participant 20, Midwife).

The participants holding nonmanagerial roles, such as nurses and doctors, were generally more familiar with their individual performance scoring metrics in their personal performance contracts (Imihigo)—agreements between providers and their respective health facilities specifying the required individual achievements. Nevertheless, they consistently identified the facility's accreditation score as the primary determinant of PBF payments. They acknowledged that facility financing depended on accreditation levels, which directly influenced PBF payments from the government. However, the majority of these participants admitted that they had limited knowledge of the broader facility-level contracting rules and the specific metrics outlined in the facility agreements with the MoH.

"*PBF is awarded to facilities on the basis of their accreditation levels I, II, and III, with level I receiving the lowest amount and level III receiving the highest. For individual providers, PBF is distributed on the basis of their performance contract achievements 'Imihigo', graded out of 100%: those achieving more than 90% receive full payment; those scoring between 70% and 90% receive reduced payments accordingly; and those scoring below 70% do not receive any payment*." (Participant 8, Doctor)

"I know that my PBF payment depends largely on the hospital's accreditation score, but I don't truly know how the score is calculated or what the process involves." (Participant 2, Doctor)

In contrast, participants in managerial roles demonstrated a better understanding of PBF content beyond the individual provider level. They emphasized the alignment of PBF contracting with the country's *Imihigo* performance contracts, which involve agreements with both administrative districts and health facilities. Nonetheless, these participants also highlighted the strong linkages between PBF and hospital accreditation performance scoring.

"The way hospital accreditation is linked to PBF is a powerful driver for change. It's a key factor that shapes how our facility prioritizes and implements PBF, ensuring that

quality is consistently measured." (Participant 3, Clinical Director)

On the other hand, the participants appreciated the structured implementation of the PBF system but highlighted the need for greater transparency and inclusiveness in selecting and weighting performance indicators. Some participants suggested that actively involving providers in these processes could better align the PBF program with on-the-ground realities, enhance providers' sense of ownership, and improve its overall effectiveness.

> *"The PBF system is well structured, but there needs to be more transparency and inclusiveness in how performance indicators are selected and how their importance is determined for financial rewards. If we were more involved in this process, it would align the program better with what's actually happening on the ground, give us a sense of ownership, and ultimately make the system more successful."* (Participant 10, Doctor)

Providers expressed mixed feelings about the motivational impact of PBF. While most viewed it as a strong motivator owing to the financial incentives it provided alongside their regular salaries, dissatisfaction stemmed from the irregularity of payments and significant variations in the amounts received among providers and across health facilities. As one participant remarked,

> *"PBF payments are not consistent, and what we receive can vary a lot, even when we're doing the same work. This makes it hard to rely on the money."* (Participant 12, Nurse)

Some providers felt that the payment system did not fully reflect the workload or complexity of the services they provided. Irregularities in the amounts received—largely influenced by the overall facility accreditation score—contributed to a sense of inequity in how the PBF system rewarded their efforts. Managerial participants noted that while defined performance indicators and unit costs exist, the valuation of specific indicators did not always capture the effort needed. This sentiment extended to preventive and community-based services, which were viewed as undervalued despite their significance for patient outcomes.

> *"Some indicators are undervalued compared with the effort they require. This discourages providers from prioritizing these services, even when they are important"* (Participant 16, Doctor).

Process

The process dimension encompassed frequent themes related to how PBF was implemented, communicated, and monitored within healthcare facilities. Only one participant elaborated on the piloting of PBF, noting that its initial implementation in selected districts—including their hospital—was critical in refining the system before national rollout. This participant explained that the pilot phase allowed for the identification of potential challenges, adaptation of performance indicators, and development of standardized processes. However, providers who joined the health system after the national implementation of PBF expressed limited knowledge about the pilot phase.

Leadership within health facilities emerged as a critical factor in the PBF implementation process. The participants working under proactive and supportive leaders reported better teamwork, greater motivation, and more consistent performance outcomes.

> *"Our success with PBF is largely due to our leadership. They motivate us and ensure that we work together as a team to achieve our goals."* (Participant 2, Doctor)

Evaluation mechanisms were widely discussed, with participants describing a bottom-up approach for individual assessments. Monthly evaluations were conducted by first-line managers, such as unit heads or service directors, who assigned scores to individual providers. These scores were reviewed by the comité de gestion and approved by the hospital's director general. The participants emphasized the importance of integrating PBF evaluations with hospital accreditation systems.

> *"The PBF evaluation process begins with a monthly evaluation by your first-line*

manager (service director), such as the nursing service manager for nurses, who assigns the score. The score is then reviewed by the director of nursing and midwives before being submitted to the hospital's director general for final approval. The individual provider's score, along with the facility's score on the basis of its level of accreditation, determines the amount awarded to the provider." (Participant 3, Clinical Director)

At higher levels, PBF monitoring was decentralized, with districts playing a key role in aligning PBF plans with national health priorities and broader government objectives such as *Imihigo.* Providers noted that district health units oversaw performance monitoring through field visits, peer reviews, and compliance checks.

"The district health office ensures that we are meeting our targets and evaluates our hospital performance. They conduct field visits and audits to verify compliance, but sometimes their limited capacity affects how effectively they oversee the process." (Participant 15, Chief Nurse)

However, the participants highlighted three key challenges associated with linking PBF with accreditation evaluations. The first challenge was the potential manipulation of evaluations, particularly concerning accreditation. Since accreditation assessments are infrequent and predictable, some facilities focus on meeting requirements only when the accreditation cycle approaches, which may not accurately reflect the facility's true quality or operational reality. The participants suggested more frequent external independent evaluations to ensure that facilities consistently work toward agreed-upon targets rather than only during the accreditation cycle.

The second challenge was the potential aggravation of inequitable financing among facilities. Facilities were assessed via uniform accreditation criteria that did not account for significant differences among hospitals. Most participants emphasized that different hospitals cover large patient populations, serve broader geographical areas, or have limited resources, such as fewer hospital beds and workforce. While such disparities influenced how facilities performed in meeting accreditation targets, these differences were not considered. However, hospital financing was based on accreditation outcomes without adjusting for such variations.

"*Linking PBF with accreditation was a good idea, but we see unintended consequences. Hospitals with high accreditation scores receive substantial funding—not necessarily through PBF but also from other financing sources. These are often not the hospitals that need money because they serve smaller populations, cover smaller geographic areas, or have many beds and equipment that help them generate more revenue. Moreover, hospitals that are overburdened with large patient loads and limited resources receive less funding. We see this a lot in urban hospitals, especially in Kigali*." (Participant 8, Doctor)

The third challenge, closely related to the second challenge, was inequitable financial rewards for individual providers working in hospitals with low accreditation scores. Some participants expressed frustration that their PBF payments were significantly reduced due to the overall hospital accreditation score, despite their personal efforts. They cited external factors, such as high patient loads and understaffed facilities, as reasons for poor hospital performance, which they felt were beyond their control.

"*Can you imagine working harder—much harder—than your colleagues in other hospitals, yet receiving half their PBF payments because your hospital scored low during accreditation? I left my first hospital because the workload was overwhelming due to the high number of patients we served. Despite our efforts, our accreditation score was low, and our PBF payments were much lower than where I work now*." (Participant 10, Doctor)

The availability of resources, including IT systems and tools, was another frequently discussed

area. Many participants expressed concerns about the reliance on manual processes in their facilities, which increased workloads, delayed performance evaluations, and reduced time for patient care. They emphasized the need for digital tools to streamline documentation and improve timeliness.

> *"Digital tools would make an enormous difference. Right now, we spend too much time on paperwork, which takes away from patient care."* (Participant 18, Nurse)
> *"If we had more digital tools, it would simplify the process and make evaluations more timely and accurate."* (Participant 20, Midwife)

The participants also commented on the consistency and timeliness of PBF payments. Delays in payments were a common grievance, with some attributing delays to facility-level inefficiencies and others pointing to external factors such as funding gaps. Providers noted differing causes for these delays. Nonmanagement staff attributed delays to facility leaders not processing documentation promptly, whereas managers cited external factors, such as late payments from health insurance partners. Additionally, facilities often used PBF funds for both operational costs/utilities and provider incentives, leading to potential delays or reductions in payments when operational expenses exceeded available funds.

> *"Health facilities receive PBF payments quarterly, which are used to provide performance-based incentives to healthcare providers and/or cover health facility operational costs."* (Participant 6, Clinical Director)

Notably, PBF is provided in most, but not all, public health facilities. Additionally, two participants reported having worked in facilities receiving PBF funds from multiple sources, including donor-funded programs, but still perceived these funding sources as unreliable. Four participants (doctors, participants 16, 2, and 4, and nurses, Participant 9) also expressed reluctance to work at hospitals that did not offer PBF incentives. Participant 4, Doctor, believed that this worsened the quality of care in such institutions:

> *"Hospitals without PBF funding struggle to attract and retain skilled providers, which can exacerbate inequities in the Rwandan healthcare system."* (Participant 4, Doctor)

The majority of participants recommended three key ideas on this issue. First, they emphasized that PBF should be extended to all public hospitals. Second, they suggested linking PBF directly and fully to government funding and incorporating it into regular salaries rather than depending on monthly facility revenues. Finally, a few participants proposed that extending PBF incentives to all hospitals would help address workforce shortages in facilities that are unable to attract providers due to the inconsistency or absence of PBF incentives.

> *"To increase the effectiveness and sustainability of the PBF system, it is essential to link disbursements directly to government revenues and ensure timely funding. This will stabilize hospital finances and ensure consistent payment for healthcare providers, regardless of fluctuations in hospital-generated incomes."* (Participant 3, Clinical Director)

Training emerged as another key area of concern among participants. Many providers reported insufficient training on PBF processes, leading to confusion about expectations. Even those who attended training noted that it was infrequent and often focused more on hospital accreditation than on PBF specifics.

> *"We did not receive much training on how PBF works in practice. It felt like we were learning on the job, which led to a lot of confusion initially."* (Participant 1, Doctor)

Actors

The engagement and capacity of stakeholders were identified as crucial to the success of PBF. Most participants emphasized the importance of involving key actors—providers, facility

managers, and policymakers. They particularly commended policymakers for their foresight and consistent efforts to improve the PBF system at both the central and local levels through decentralized policies. A commonly cited example was the role of district health units. These units were highlighted as essential for ensuring accountability and consistency in the implementation and evaluation of PBF. They also facilitated the integration of community perspectives by establishing community health committees, which provided oversight for public health facilities. Furthermore, quality improvement committees at the hospital level were created to coordinate quality improvement activities in collaboration with the MoH. These efforts reinforced accountability, aligned PBF activities with national priorities, and strengthened the representation of users' voices in health services.

However, many participants noted that the limited engagement of providers in decision-making processes posed a significant barrier to PBF effectiveness. While providers played a strong role in delivering services to meet PBF targets, they often felt excluded from influencing PBF decisions.

> *"Providers need to be part of the PBF decision-making process. When we're excluded, it feels like [such] policies do not reflect our realities."* (Participant 11, Doctor)

The participants also raised concerns about the exclusion of patients as key actors, despite their central role as beneficiaries. They highlighted the potential benefits of engaging patients in the design and implementation of PBF to better address their needs and improve the program's effectiveness.

> *"Patients are not included in any decisions regarding PBF, yet these decisions affect them the most. Engaging patients could help us understand their needs better and improve the PBF program."* (Participant 17, midwife)

Building the capacity of stakeholders was also emphasized as a critical determinant of PBF success. The participants highlighted the need for targeted training and resource allocation to strengthen both the technical and the operational capacity of all involved actors.

> *"The success of PBF depends on how well-equipped the stakeholders are to manage it. Training and resources are key to ensuring this."* (Participant 6, Clinical Director)

6.5. **Discussion**

This study provides new insights into healthcare providers' perceptions of PBF implementation in Rwanda, shedding light on its successes and challenges. Using a structured framework, the findings offer a comprehensive understanding of PBF's role in incentivizing providers. The participants highlighted how linking financial incentives to performance metrics fosters accountability, motivation, and adherence to service delivery standards as well as improved provider attraction and retention. These findings align with prior research in Rwanda and other low-resource settings, where PBF has been notably linked to improved provider engagement, performance, and service efficiency (262,270,271,275,276).

One of the notable strengths of Rwanda's PBF system is its integration into national health strategies, such as Imihigo, which aligns health sector goals with broader government priorities. This integration underscores the strong political commitment to accountability and results-based management, a feature frequently highlighted in comparative studies of PBF programs in sub-Saharan Africa (257). The participants in this study attributed much of PBF's success to structural and policy-level support, emphasizing their role in reinforcing sustainability and ensuring alignment with national priorities.

On the other hand, delayed payments emerged as a significant barrier, undermining provider morale and service delivery. The respondents largely attributed these delays to the manual processing of PBF documentation and, in some cases, to slow reimbursements from health

insurance providers. Similar challenges have been documented in other PBF implementations, where inefficiencies in financial flows disrupt program effectiveness (208,262). Streamlining payment mechanisms through the adoption of digital tools could address these delays by improving the speed and accuracy of reimbursements. Research on digital technologies for health financing in low- and middle-income countries suggests that these tools offer promising solutions to such challenges (277,278). While specific digital (pilot) programs in Rwanda and other low- and middle-income countries are not well documented, most countries use them for revenue raising and pooling, with few applying them for purchasing or provider payments. For example, the Philippines uses machine learning for fraud detection in claims, North Macedonia uses digital tools for claims management and e-contracting, and Estonia uses digital solutions for multiple purchasing purposes, including digital claims management, automated claims reviews, machine learning for claims evaluation, and cost-sharing aggregation (278). Digitalization could also improve PBF evaluations by addressing the infrequency and irregularity of assessments reported by participants, ensuring more consistent and timely feedback. Previous research on healthcare digitalization and P4P incentives in financing (smart) hospitals revealed that such a move toward digitalization created an enhanced information feedback mechanism that could move healthcare delivery toward results-based practice and help make more efficient use of scarce resources (279).

Another potential challenge pertains to equity. Reliance on facility accreditation scores to determine payments disproportionately disadvantaged providers in resource-limited, low-grade facilities. This aligns with critiques emphasizing inequitable resource distribution in standardized PBF frameworks (261). For example, a study in Rwanda reported that PBF improved efficiency but not equity in most health services (280). Linking PBF to facility accreditation scores effectively creates a ‘Group Incentive Plan,’ which ties rewards to collective performance and fosters collaboration. However, this approach weakens the connection between individual effort and rewards, undermining perceptions of fairness (275,281,282). Employees often struggle to see how their efforts influence group performance metrics, leading to perceived inequities, particularly compared with individual incentive plans (276). Individual-level measures are seen as more achievable since they are within direct control, making individual PBFs preferred by providers (275,276,281,282). Providers tend to resist accountability for factors beyond their control, as shown in prior research (154).

The participants also raised concerns about limited involvement in the design and refinement of performance indicators. This exclusion may hinder the program’s adaptability and alignment with ground-level realities. Similar critiques have been made in other settings, where greater stakeholder engagement has been recommended to enhance PBF relevance and provider buy-in (41). Expanding participatory mechanisms, such as regular structured feedback and provider representation in decision-making, as well as piloting changes under 'real-life' conditions prior to broader implementation, could improve the program’s effectiveness and acceptance among providers (283). Similarly, this study revealed minimal emphasis on patient involvement in PBF design and evaluation, a gap that contrasts with global calls for more inclusive health system reforms (32,154). Engaging patients as active stakeholders could improve the program's responsiveness, aligning it more closely with community health needs (32,284). These aspects fall under a broader need for participatory consensus building in health policy design, implementation, and evaluation (285–287).

Study strengths and limitations

This study is the first in-depth qualitative analysis of healthcare providers’ perspectives on PBF in Rwanda, offering valuable insights into the program’s strengths and challenges. By focusing on providers—the key implementers—it highlights their experiences, operational realities, and

recommendations. The use of in-depth interviews allowed capturing nuanced views and experiences of PBF in daily practice. The respondent group included diverse types of healthcare providers, enabling a comprehensive overview. The findings provide a solid foundation for policy improvements and cross-country learning in similar settings, particularly for countries developing or refining PBF frameworks.

However, the exclusion of other stakeholder groups represents a significant study limitation. Future research could incorporate perspectives from policymakers, CHWs, and patient representatives. For example, examining the informal health sector, where CHWs play a crucial role, could reveal opportunities and challenges for integrating PBF across all levels of care.

6.6. **Conclusions**

By linking financial incentives to performance metrics, PBF has motivated providers, enhanced accountability, and improved provider attraction and retention. Its successful implementation in Rwanda is largely attributed to strong political will, integration into national strategies, and decentralized management structures. However, addressing systemic barriers (e.g., payment delays) and contextual disparities among facilities and fostering greater stakeholder engagement are critical to maximizing the program's impact. These findings offer valuable lessons for policymakers in Rwanda and other contexts looking to implement or refine PBF systems, emphasizing the need to balance financial incentives with equity and inclusivity in healthcare reform.

Chapter 7. General Discussions & Summary

Chapter 7 generalizes findings from individual studies to highlight overarching themes and lessons for future provider payment reforms, as well as key considerations for future research. Key takeaways include rethinking provider payment reforms—moving beyond financial incentives to systemic change—and the need for contextually adaptable payment models.

7.1. **Discussion**

This dissertation highlights the global push toward payment reform, which reflects ongoing efforts to align provider incentives with health system goals. Across all regions and types of providers, countries have increasingly transitioned from relying on input-based payment methods to output-based payment models. Many have gradually embraced hybrid models that attempt to balance the strengths and mitigate the weaknesses of traditional payment approaches.

Key findings indicate that high-income countries have led the way in these reforms, leveraging robust data systems, financial resources, and healthcare infrastructure to implement sophisticated payment models, such as bundled payments and DRGs (Chapters 2 and 3). In contrast, provider payment reforms in low- and middle-income countries remain less explored, highlighting critical gaps in understanding how these models function in resource-constrained environments (Chapters 2, 5, and 6).Regardless of income level or region, however, countries face unique challenges that require context-specific solutions. Understanding these variations is crucial for identifying effective strategies that can be adapted to diverse healthcare environments. On the other hand, many generalizable findings exist:

1) Rethinking provider payment reforms – Beyond incentives for systemic change

Provider payment reforms are often framed within the broader economic paradigm of principal–agent theory, where financial incentives are used to align provider behavior with health system goals. A recent literature review identified seven key characteristics of provider payment mechanisms that influence healthcare providers' behavior (288). Six of these were closely tied to financial incentives, including the payment rate, its ability to cover service costs, the timeliness and scheduling of payments, performance requirements and accountability measures. While financial incentives are powerful tools, they should not be seen as the sole driver of provider behavior acceptability of reform or reform success. The findings from Chapters 2, 4, 5, and 6 consistently show that an overemphasis on financial incentives risks oversimplifying the complexities influencing provider engagement with reforms.

Providers operate not just as rational economic actors responding to financial incentives alone but also as professionals shaped by institutional norms, organizational and infrastructural restrictions, professional culture, and patient relationships —topics explored in detail in Chapter 2. While financial incentives can encourage behavior change, assuming that they can single-handedly drive sustainable improvements in quality, efficiency, and access underestimates the role of trust, autonomy, and organizational culture. Additionally, providers often consider how reforms impact their clinical practice and relationships with patients. Payment reforms that fail to consider these nonfinancial dimensions may face significant resistance or achieve only short-term behavioral shifts without leading to long-term systemic change.

2) There is a need for more tailored interventions

The effectiveness of any payment reform is contingent on institutional readiness, provider autonomy, regulatory enforcement, and health system maturity (as seen in both CEE (Chapters 3 and 4) and African Commonwealth countries (Chapters 5 and 6)). The evidence shows that there is always a need to implement tailored interventions to fit local needs (e.g., as seen in most CEE countries, which adopted DRGs long ago, yet recent reforms have focused on adapting DRGs to local contexts). This requires local institutional readiness to overcome issues such as limited and outdated IT infrastructure, lack of interoperability between health information systems, and insufficient digitalization. Context-specific factors, such as governance structures, regulatory capacity, financial constraints, and varying levels of decentralization, also influence how these reforms are designed and executed.

For example, in 'heavily' fragmented health systems (as seen in many analyzed African countries' reforms in Chapters 5 and 6), introducing PBF may initially improve performance but often struggles with sustainability owing to weak governance, administrative burden, and funding volatility. Similarly, although influenced by varying country conditions, health systems as a whole are often unprepared, with severe shortages of trained personnel, insufficient administrative capacity, and limited technical knowledge that ultimately impacts the management of payment reforms. These challenges imply that payment interventions must be properly addressed in ways that fit each country's situation.

The findings also underscore the need for piloting reforms before full-scale implementation as a crucial step, indicating that tailored reforms are much needed. As discussed in Chapters 3 to 6, some analyzed CEE and African Commonwealth countries successfully conducted small-scale tests/pilots of payment reforms, allowing for necessary adjustments before wider adoption.

Therefore, these findings challenge the notion that payment models can be transplanted across contexts without adaptation. Future research should focus on adaptive, context-sensitive reforms that consider local institutional constraints, historical legacies, and stakeholder dynamics.

3) The administrative burden paradox: Does more accountability undermine efficiency?

This research revealed that many provider payment reforms are being implemented with the aim of increasing provider accountability in many areas, particularly in financial matters (Chapters 2 to 6). To achieve this, most methods require extensive 'additional' work on top of an already overburdened health workforce, which is often stretched thin owing to personnel shortages—a common challenge across all regions. For example, many value-based models demand extensive monitoring, data collection, and auditing, which can paradoxically reduce provider efficiency by diverting attention away from patient care. There are examples in the literature about the 'trade-off' between the level of detail in a payment system and its feasibility for implementation (166,289,290). A significant tension in payment reform now appears to be the trade-off between 'financial' accountability and administrative complexity.

For example:

- Performance-based schemes require constant documentation, auditing, and reporting, increasing provider workload. In some countries, these systems involve third-party validation (e.g., Rwanda's PBF, discussed in Chapter 6), adding bureaucratic layers that delay payments and lower provider morale.
- Complex reimbursement structures (e.g., DRGs, as seen in CEE, Chapters 3 and 4) demand elaborate coding systems and verification processes, which can create inefficiencies.

This raises a critical question: Are we measuring and monitoring too much at the expense of care delivery? Some potential solutions were discussed in previous chapters, particularly in the African context (Chapters 5 and 6), where much of the work remains manual (e.g., In Rwanda's PBF program (Chapter 6), reliance on manual reporting requirements burdened healthcare providers, diverting time away from patient care). Moving forward, payment reforms should balance accountability with administrative simplicity by leveraging artificial intelligence (AI)-driven automation, streamlined reporting, and real-time performance tracking to reduce the bureaucratic burden on providers.

4) The need for a more participatory approach in designing payment reforms

One of the key findings across all analyzed reforms is the importance of a participatory approach in designing and implementing payment models. All the studies included in this dissertation consistently revealed that stronger involvement of healthcare providers and patients in reform is crucial for increasing feasibility, fostering trust, and enhancing reform relevance and provider/patient buy-in. This is in line with the consensus-building for health policy, which is strongly advocated in the literature (285–287,291–293). It underscores the importance of fostering active and meaningful engagement with populations, communities, and various societal groups in the health policy-making process. The WHO advocates this participatory approach as a means to develop responsive and inclusive health policies and programs that are more likely to need broad stakeholder support and be effectively implemented (292). Specifically, this aligns with prior research highlighting the need for a fundamental restructuring of payment policies and healthcare delivery systems to create systems that prioritize patients' needs while enabling physicians and their care teams to provide high-value, patient-centered and family-centered care (293).

Evidence from both CEE (Chapter 3) and African Commonwealth countries (Chapters 5 and 6) shows that reforms designed through participatory consensus building—where providers and patients contribute to shaping incentive structures—are more likely to be accepted and sustained. In several cases, top-down payment reforms failed to gain traction because they did not adequately address the concerns of frontline providers or patients. The lack of early involvement of key stakeholders has often led to misalignment between policy objectives and real-world constraints, such as provider workload, patient needs, performance indicator suitability and refinement (e.g., as seen in Rwanda's PBF, Chapter 6).

Therefore, fostering inclusive decision-making processes in payment reforms should be a key priority for policymakers. A more collaborative approach—incorporating continuous feedback from healthcare professionals, patient organizations, and other stakeholders—can lead to payment systems that are both technically sound and practically implementable. Future research should focus on identifying best practices for stakeholder engagement in payment reforms and evaluating their long-term impact on health system performance.

Final Reflection: Are We Framing the Right Questions?

Perhaps the most fundamental question is not " *What is the best payment model?*" but rather:

- How do we create payment systems that align with the realities of provider behavior, institutional constraints, and patient needs?
- How can we ensure that financial incentives support—not distort—high-quality, equitable healthcare?

These questions build upon prior discussions, but the emphasis here is on a key finding across all regions: provider payment models are increasingly being blended to better address the complex needs of modern healthcare systems. This challenges past approaches that focused on analyzing individual payment methods in isolation or focused solely on the actions of individual purchasers.

A critical insight from this research is that in nonunified (i.e., fragmented) health financing systems—where multiple purchasers operate—blended payment methods often lead to providers receiving funds from multiple sources. For example, in the African countries analyzed (Chapters 5 and 6), in contrast to the more centralized funding systems of most CEE countries (Chapter 3), healthcare providers are typically reimbursed through multiple funding

mechanisms. This creates a complex funding landscape where providers receive diverse financial signals, sometimes leading to inefficiencies such as duplicative efforts (e.g., double reporting to different purchasers). The way providers navigate these multiple funding flows directly impacts service delivery and shapes overall health system outcomes.

Existing research on provider responses to multiple funding sources suggests that when exposed to different revenue streams, providers may prioritize certain funding sources over others on the basis of their financial advantages (294). This leads to a set of incentives that influence provider behavior in three key ways: shifting resources, shifting services, and shifting costs. These behavioral adjustments, in turn, impact the delivery of patient care and the achievement of broader health system objectives (294). In Chapters 5 and 6, the importance of aligning incentives created by multiple funding streams was highlighted. This includes revising policy strategies to address key challenges, such as reducing the fragmentation of health financing structures. Additionally, implementing measures to prevent providers from prioritizing financial gains over patient care in response to multiple unintended incentives is crucial. Achieving this goal will require engaging all relevant stakeholders, including patients—who, as revealed by this research (Chapters 2, 5, and 6) , are rarely included in provider payment reforms. However, further research is needed to explore this issue in greater depth.

Finally, healthcare provider payment reform should not be viewed as a stand-alone intervention but as part of a broader health system transformation. Effective reforms must align with governance structures, workforce policies, and health infrastructure to create an enabling environment for sustainable change. Instead of asking which payment model works best in isolation, policymakers should focus on how payment systems interact with broader health system dynamics, ensuring that financial incentives support—rather than distort—high-quality, equitable healthcare delivery. Future reforms should adopt a more comprehensive and pragmatic approach that incorporates the following:

- Professional motivation & intrinsic incentives – Recognizing that provider satisfaction, autonomy, and career development are as crucial as financial rewards.
- Systemic enablers – Strengthening health information systems, governance structures, and workforce training to support payment innovations.
- Patient-centered metrics – Moving from process-based incentives (e.g., number of consultations) to outcome-oriented rewards that measure patient well-being, equity, and long-term health gains.
- Adaptive models – Designing flexible, iterative payment systems that allow localized adaptation rather than rigid, top-down implementation.

7.2. **Summary**

Across different global contexts, provider payment reforms may vary in their objectives, implementation, and outcomes, yet they share common challenges and facilitating factors. The main barriers to and facilitators of provider payment reform are interrelated, with the same factor acting as either a barrier or a facilitator depending on its characteristics. While many influencing factors are highly context specific, there are notable similarities in payment reforms worldwide.

Since multiple factors affect different stages of reform—design, implementation, evaluation, or multiple stages simultaneously—it is essential to approach payment reform systematically. This dissertation applies the health policy framework—context, content, process, and actors—to develop a structured approach for analyzing these factors systematically. Many influencing

factors fall primarily within the policy process (e.g., pilot studies, implementation coordination, availability of funds, IT systems, provider training, and reform management) and policy content (e.g., availability of performance indicators, use of clinical guidelines, provider acceptance of payment systems, and tariff valuation). The remaining two policy dimensions—the reform context (e.g., political support, regulatory frameworks, bureaucracy) and actors (e.g., stakeholder engagement, stakeholder capacity)—tend to have fewer influencing factors. However, all four dimensions are crucial, and given their interconnected nature, focusing solely on one or a few aspects of reform is highly discouraged.

A key trend across countries is the shift from input-based to output-based payment methods, particularly in PHC. Blended payment methods are gaining traction, often by modifying existing payment approaches (e.g., refining payment categories) or integrating additional methods to pay for specific services or performance incentives (e.g., FFS, bonus payments). These blended approaches help balance and complement incentives, steering provider behavior toward desired health system goals such as quality, efficiency, and increased provider accountability.

However, in fragmented health financing systems, providers exposed to multiple funding sources may prioritize certain revenue streams over others on the basis of financial advantages. This can lead to unintended consequences such as resource shifting, service shifting, and cost shifting, ultimately distorting provider behavior and patient care. A significant research gap exists in this area, particularly in low- and middle-income countries, where health systems are highly fragmented and reliant on multiple funding sources, including government allocations and donor aid.

Finally, as countries continue to experiment with innovative payment mechanisms, these reforms are increasingly being aligned with broader health system reforms and goals. Therefore, provider payment policies are shaped by country-specific factors, including health system capacity, policy objectives, health financing structures, public financial management systems, and the maturity of health information systems. Overall, provider payment reforms must be adaptable, context specific, and supported by strong institutional frameworks and iterative policy adjustments to ensure long-term sustainability. Additionally, as payment models become more complex, requiring greater levels of monitoring and accountability, leveraging AI-driven automation, streamlining reporting processes, and implementing real-time performance tracking are essential. These measures can help reduce the administrative burden on providers, making payment reforms more flexible, data-driven, and sustainable.

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Appendices

SUPPLEMENTARY FILE-1:

Table S1. Search strategy in Scopus (search date: 08/11/2022)

Search	Query
#46	((TITLE-ABS-KEY (pay*)) OR (TITLE-ABS-KEY (compensat*)) OR (TITLE-ABS- KEY (incentive*)) OR (TITLE-ABS-KEY (financ*)) OR (TITLE-ABS-KEY (reimburs*)) OR (TITLE- ABS-KEY (purchas*)) OR (TITLE-ABS-KEY (reward*)) OR (TITLE-ABS- KEY (bonus*))) AND ((TITLE-ABS-KEY (reform*)) OR (TITLE-ABS-KEY (polic*)) OR (TITLE- ABS-KEY (chang*))) AND ((TITLE-ABS-KEY ("healthcare provider*")) OR (TITLE-ABS-KEY ("care provider*")) OR (TITLE-ABS-KEY ("health provider*")) OR (TITLE-ABS-KEY ("health service provider*")) OR (TITLE-ABS-KEY ("health practice*")) OR (TITLE-ABS-KEY ("healthcare practice*")) OR (TITLE-ABS-KEY ("medical practice*")) OR (TITLE-ABS-KEY ("health institution*")) OR (TITLE-ABS-KEY ("healthcare institution*")) OR (TITLE-ABS-KEY ("health care institution*"))) AND ((TITLE-ABS-KEY (factor*)) OR (TITLE-ABS-KEY (barrier*)) OR (TITLE- ABS-KEY (obstacle*)) OR (TITLE-ABS-KEY (hurdle*)) OR (TITLE-ABS- KEY (imped*)) OR (TITLE-ABS-KEY (difficult*)) OR (TITLE-ABS-KEY (challenge*)) OR (TITLE- ABS-KEY (facilitat*)) OR (TITLE-ABS-KEY (promot*)) OR (TITLE-ABS-KEY (aid*)) OR (TITLE- ABS-KEY (enabl*)) OR (TITLE-ABS-KEY (help*)) OR (TITLE-ABS-KEY (reason*)) OR (TITLE- ABS-KEY (experienc*)) OR (TITLE-ABS-KEY (perception*)) OR (TITLE-ABS- KEY (determinant*)) OR (TITLE-ABS-KEY (influenc*)) OR (TITLE-ABS- KEY (constraint*)) OR (TITLE-ABS-KEY (issue*))) AND (LIMIT- TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT- TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT- TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT- TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT- TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013) OR LIMIT- TO (PUBYEAR , 2012) OR LIMIT-TO (PUBYEAR , 2011) OR LIMIT- TO (PUBYEAR , 2010) OR LIMIT-TO (PUBYEAR , 2009) OR LIMIT- TO (PUBYEAR , 2008) OR LIMIT-TO (PUBYEAR , 2007) OR LIMIT- TO (PUBYEAR , 2006) OR LIMIT-TO (PUBYEAR , 2005) OR LIMIT- TO (PUBYEAR , 2004) OR LIMIT-TO (PUBYEAR , 2003) OR LIMIT- TO (PUBYEAR , 2002) OR LIMIT-TO (PUBYEAR , 2001) OR LIMIT- TO (PUBYEAR , 2000)) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT- TO (SRCTYPE , "j") OR LIMIT-TO (SRCTYPE , "b"))
#45	((TITLE-ABS-KEY (pay*)) OR (TITLE-ABS-KEY (compensat*)) OR (TITLE-ABS-KEY (incentive*)) OR (TITLE-ABS-KEY (financ*)) OR (TITLE-ABS-KEY (reimburs*)) OR (TITLE- ABS-KEY (purchas*)) OR (TITLE-ABS-KEY (reward*)) OR (TITLE-ABS-KEY (bonus*))) AND ((TITLE-ABS-KEY (reform*)) OR (TITLE-ABS-KEY (polic*)) OR (TITLE-ABS-KEY (chang*))) AND ((TITLE-ABS-KEY ("healthcare provider*")) OR (TITLE-ABS-KEY ("care provider*")) OR (TITLE-ABS-KEY ("health provider*")) OR (TITLE-ABS-KEY ("health service provider*")) OR (TITLE-ABS-KEY ("health practice*")) OR (TITLE-ABS-KEY ("healthcare practice*")) OR (TITLE-ABS-KEY ("medical practice*")) OR (TITLE-ABS-KEY ("health institution*")) OR (TITLE-ABS-KEY ("healthcare institution*")) OR (TITLE-ABS-KEY ("health care institution*"))) AND ((TITLE-ABS-KEY (factor*)) OR (TITLE-ABS-KEY (barrier*)) OR (TITLE-ABS- KEY (obstacle*)) OR (TITLE-ABS-KEY (hurdle*)) OR (TITLE-ABS-KEY (imped*)) OR (TITLE-ABS-KEY (difficult*)) OR (TITLE-ABS-KEY (challenge*)) OR (TITLE-ABS-KEY (facilitat*)) OR (TITLE- ABS-KEY (promot*)) OR (TITLE-ABS-KEY (aid*)) OR (TITLE-ABS-KEY (enabl*)) OR (TITLE-ABS- KEY (help*)) OR (TITLE-ABS-KEY (reason*)) OR (TITLE-ABS-KEY (experienc*)) OR (TITLE-ABS-KEY (perception*)) OR (TITLE-ABS-KEY (determinant*)) OR (TITLE-ABS- KEY (influenc*)) OR (TITLE-ABS-KEY (constraint*)) OR (TITLE-ABS-KEY (issue*)))
#44	(TITLE-ABS-KEY (reform*)) OR (TITLE-ABS-KEY (polic*)) OR (TITLE-ABS-KEY (chang*))
#43	TITLE-ABS-KEY (chang*)
#42	TITLE-ABS-KEY (polic*)
#41	TITLE-ABS-KEY (reform*)
#40	(TITLE-ABS-KEY (pay*)) OR (TITLE-ABS-KEY (compensat*)) OR (TITLE-ABS-KEY (incentive*)) OR (TITLE-ABS-KEY (financ*)) OR (TITLE-ABS-KEY (reimburs*)) OR (TITLE-ABS-KEY (purchas*)) OR (TITLE-ABS-KEY (reward*)) OR (TITLE-ABS-KEY (bonus*))
#39	TITLE-ABS-KEY (bonus*)
#38	TITLE-ABS-KEY (reward*)
#37	TITLE-ABS-KEY (purchas*)
#36	TITLE-ABS-KEY (reimburs*)

#35	TITLE-ABS-KEY (financ*)
#34	TITLE-ABS-KEY (incentive*)
#33	TITLE-ABS-KEY (compensat*)
#32	TITLE-ABS-KEY (pay*)
#31	(TITLE-ABS-KEY ("healthcare provider*")) OR (TITLE-ABS-KEY ("care provider*")) OR (TITLE-ABS-KEY ("health provider*")) OR (TITLE-ABS-KEY ("health service provider*")) OR (TITLE-ABS-KEY ("health practice*")) OR (TITLE-ABS-KEY ("healthcare practice*")) OR (TITLE-ABS- KEY ("medical practice*")) OR (TITLE-ABS-KEY ("health institution*")) OR (TITLE-ABS-KEY ("healthcare institution*")) OR (TITLE-ABS-KEY ("health care institution*"))
#30	TITLE-ABS-KEY ("health care institution*")
#29	TITLE-ABS-KEY ("healthcare institution*")
#28	TITLE-ABS-KEY ("health institution*")
#27	TITLE-ABS-KEY ("medical practice*")
#26	TITLE-ABS-KEY ("healthcare practice*")
#25	TITLE-ABS-KEY ("health practice*")
#24	TITLE-ABS-KEY ("health service provider*")
#23	TITLE-ABS-KEY ("health provider*")
#22	TITLE-ABS-KEY ("care provider*")
#21	TITLE-ABS-KEY ("healthcare provider*")
#20	(TITLE-ABS-KEY (factor*)) OR (TITLE-ABS-KEY (barrier*)) OR (TITLE-ABS-KEY (obstacle*)) OR (TITLE-ABS-KEY (hurdle*)) OR (TITLE-ABS-KEY (imped*)) OR (TITLE ABS-KEY (difficult*)) OR (TITLE-ABS-KEY (challenge*)) OR (TITLE-ABS-KEY (facilitat*)) OR (TITLE- ABS-KEY (promot*)) OR (TITLE-ABS-KEY (aid*)) OR (TITLE-ABS-KEY (enabl*)) OR (TITLE-ABS- KEY (help*)) OR (TITLE-ABS-KEY (reason*)) OR (TITLE-ABS-KEY (experienc*)) OR (TITLE-ABS-KEY (perception*)) OR (TITLE-ABS-KEY (determinant*)) OR (TITLE-ABS-KEY (influenc*)) OR (TITLE-ABS-KEY (constraint*)) OR (TITLE-ABS-KEY (issue*))
#19	TITLE-ABS-KEY (issue*)
#18	TITLE-ABS-KEY (constraint*)
#17	TITLE-ABS-KEY (influenc*)
#16	TITLE-ABS-KEY (determinant*)
#15	TITLE-ABS-KEY (perception*)
#14	TITLE-ABS-KEY (experienc*)
#13	TITLE-ABS-KEY (reason*)
#12	TITLE-ABS-KEY (help*)
#11	TITLE-ABS-KEY (enabl*)
#10	TITLE-ABS-KEY (aid*)
#9	TITLE-ABS-KEY (promot*)
#8	TITLE-ABS-KEY (facilitat*)
#7	TITLE-ABS-KEY (challenge*)
#6	TITLE-ABS-KEY (difficult*)
#5	TITLE-ABS-KEY (imped*)
#4	TITLE-ABS-KEY (hurdle*)
#3	TITLE-ABS-KEY (obstacle*)
#2	TITLE-ABS-KEY (barrier*)
#1	TITLE-ABS-KEY (factor*)

Table S2. Web of Science (search date: 08/11/2022)

Set	Query
#46	#44 AND #40 AND #31 AND #20 and Article or Review Article or Book Chapters (Document Types) and 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 or 2009 or 2008 or 2007 or 2006 or 2005 or 2004 or 2002 or 2003 or 2001 or 2000 (Publication Years) and English (Languages)
#45	#44 AND #40 AND #31 AND #20
#44	#41 OR #42 OR #43
#43	(TI=(chang*)) OR AB=(chang*)
#42	(TI=(polic*)) OR AB=(polic*)
#41	(TI=(reform*)) OR AB=(reform*)
#40	#32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39
#39	(TI=(bonus*)) OR AB=(bonus*)
#38	(TI=(reward*)) OR AB=(reward*)
#37	(TI=(purchas*)) OR AB=(purchas*)
#36	(TI=(reimburs*)) OR AB=(reimburs*)
#35	(TI=(financ*)) OR AB=(financ*)
#34	(TI=(incentive*)) OR AB=(incentive*)
#33	(TI=(compensat*)) OR AB=(compensat*)
#32	(TI=(pay*)) OR AB=(pay*)
#31	#21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30
#30	(TI=(“health care institution*”)) OR AB=(“health care institution*”)
#29	(TI=(“healthcare institution*”)) OR AB=(“healthcare institution*”)
#28	(TI=(“health institution*”)) OR AB=(“health institution*”)
#27	(TI=(“medical practice*”)) OR AB=(“medical practice*”)
#26	(TI=(“healthcare practice*”)) OR AB=(“healthcare practice*”)
#25	(TI=(“health practice*”)) OR AB=(“health practice*”)
#24	(TI=(“health service provider*”)) OR AB=(“health service provider*”)
#23	(TI=(“health provider*”)) OR AB=(“health provider*”)
#22	(TI=(“care provider*”)) OR AB=(“care provider*”)
#21	(TI=(“healthcare provider*”)) OR AB=(“healthcare provider*”)
#20	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19
#19	(TI=(issue*)) OR AB=(issue*)
#18	(TI=(constraint*)) OR AB=(constraint*)
#17	(TI=(influenc*)) OR AB=(influenc*)
#16	(TI=(determinant*)) OR AB=(determinant*)
#15	(TI=(perception*)) OR AB=(perception*)
#14	(TI=(experienc*)) OR AB=(experienc*)
#13	(TI=(reason*)) OR AB=(reason*)
#12	(TI=(help*)) OR AB=(help*)
#11	(TI=(enabl*)) OR AB=(enabl*)
#10	(TI=(aid*)) OR AB=(aid*)
#9	(TI=(promot*)) OR AB=(promot*)
#8	(TI=(facilitat*)) OR AB=(facilitat*)
#7	(TI=(challenge*)) OR AB=(challenge*)
#6	(TI=(difficult*)) OR AB=(difficult*)
#5	(TI=(imped*)) OR AB=(imped*)
#4	(TI=(hurdle*)) OR AB=(hurdle*)
#3	(TI=(obstacle*)) OR AB=(obstacle*)
#2	(TI=(barrier*)) OR AB=(barrier*)
#1	(TI=(factor*)) OR AB=(factor*)

Table S3. PubMed (search date: 08/11/2022)

Set	Query
#46	((((((((((((((((((((factor*[Title/Abstract]) OR (barrier*[Title/Abstract])) OR (obstacle*[Title/Abstract])) OR (hurdle*[Title/Abstract])) OR (imped*[Title/Abstract])) OR (difficult*[Title/Abstract])) OR (challenge*[Title/Abstract])) OR (facilitat*[Title/Abstract])) OR (promot*[Title/Abstract])) OR (aid*[Title/Abstract])) OR (enabl*[Title/Abstract])) OR (help*[Title/Abstract])) OR (reason*[Title/Abstract])) OR (experienc*[Title/Abstract])) OR (perception*[Title/Abstract])) OR (determinant*[Title/Abstract])) OR (influenc*[Title/Abstract])) OR (constraint*[Title/Abstract])) OR (issue*[Title/Abstract])) AND ((((((((("healthcare provider*"[Title/Abstract]) OR ("care provider*"[Title/Abstract])) OR ("health provider*"[Title/Abstract])) OR ("health service provider*"[Title/Abstract])) OR ("health practice*"[Title/Abstract])) OR ("healthcare practice*"[Title/Abstract])) OR ("medical practice*"[Title/Abstract])) OR ("health institution*"[Title/Abstract])) OR ("healthcare institution*"[Title/Abstract])) OR ("health care institution*"[Title/Abstract]))) AND (((((((pay*[Title/Abstract]) OR (compensat*[Title/Abstract])) OR (incentive*[Title/Abstract])) OR (financ*[Title/Abstract])) OR (reimburs*[Title/Abstract])) OR (purchas*[Title/Abstract])) OR (reward*[Title/Abstract])) OR (bonus*[Title/Abstract]))) AND (((reform*[Title/Abstract]) OR (polic*[Title/Abstract])) OR (chang*[Title/Abstract])) Filters: English, from 2000 - 2022
#45	((((((((((((((((((((factor*[Title/Abstract]) OR (barrier*[Title/Abstract])) OR (obstacle*[Title/Abstract])) OR (hurdle*[Title/Abstract])) OR (imped*[Title/Abstract])) OR (difficult*[Title/Abstract])) OR (challenge*[Title/Abstract])) OR (facilitat*[Title/Abstract])) OR (promot*[Title/Abstract])) OR (aid*[Title/Abstract])) OR (enabl*[Title/Abstract])) OR (help*[Title/Abstract])) OR (reason*[Title/Abstract])) OR (experienc*[Title/Abstract])) OR (perception*[Title/Abstract])) OR (determinant*[Title/Abstract])) OR (influenc*[Title/Abstract])) OR (constraint*[Title/Abstract])) OR (issue*[Title/Abstract])) AND ((((((((("healthcare provider*"[Title/Abstract]) OR ("care provider*"[Title/Abstract])) OR ("health provider*"[Title/Abstract])) OR ("health service provider*"[Title/Abstract])) OR ("health practice*"[Title/Abstract])) OR ("healthcare practice*"[Title/Abstract])) OR ("medical practice*"[Title/Abstract])) OR ("health institution*"[Title/Abstract])) OR ("healthcare institution*"[Title/Abstract])) OR ("health care institution*"[Title/Abstract]))) AND (((((((pay*[Title/Abstract]) OR (compensat*[Title/Abstract])) OR (incentive*[Title/Abstract])) OR (financ*[Title/Abstract])) OR (reimburs*[Title/Abstract])) OR (purchas*[Title/Abstract])) OR (reward*[Title/Abstract])) OR (bonus*[Title/Abstract]))) AND (((reform*[Title/Abstract]) OR (polic*[Title/Abstract])) OR (chang*[Title/Abstract]))
#44	((reform*[Title/Abstract]) OR (polic*[Title/Abstract])) OR (chang*[Title/Abstract])
#43	chang*[Title/Abstract]
#42	polic*[Title/Abstract]
#41	reform*[Title/Abstract]
#40	(((((((pay*[Title/Abstract]) OR (compensat*[Title/Abstract])) OR (incentive*[Title/Abstract])) OR (financ*[Title/Abstract])) OR (reimburs*[Title/Abstract])) OR (purchas*[Title/Abstract])) OR (reward*[Title/Abstract])) OR (bonus*[Title/Abstract])
#39	bonus*[Title/Abstract]
#38	reward*[Title/Abstract]
#37	purchas*[Title/Abstract]
#36	reimburs*[Title/Abstract]
#35	financ*[Title/Abstract]
#34	incentive*[Title/Abstract]
#33	compensat*[Title/Abstract]
#32	pay*[Title/Abstract]
#31	(((((((((("healthcare provider*"[Title/Abstract]) OR ("care provider*"[Title/Abstract])) OR ("health provider*"[Title/Abstract])) OR ("health service provider*"[Title/Abstract])) OR ("health practice*"[Title/Abstract])) OR ("healthcare practice*"[Title/Abstract])) OR ("medical practice*"[Title/Abstract])) OR ("health institution*"[Title/Abstract])) OR ("healthcare institution*"[Title/Abstract])) OR ("health care institution*"[Title/Abstract])
#30	"health care institution*"[Title/Abstract]
#29	"healthcare institution*"[Title/Abstract]
#28	"health institution*"[Title/Abstract]
#27	"medical practice*"[Title/Abstract]

#26	"healthcare practice*"[Title/Abstract]
#25	"health practice*"[Title/Abstract]
#24	"health service provider*"[Title/Abstract]
#23	"health provider*"[Title/Abstract]
#22	"care provider*"[Title/Abstract]
#21	"healthcare provider*"[Title/Abstract]
#20	((((((((((((((((factor*[Title/Abstract]) OR (barrier*[Title/Abstract])) OR (obstacle*[Title/Abstract])) OR (hurdle*[Title/Abstract])) OR (imped*[Title/Abstract])) OR (difficult*[Title/Abstract])) OR (challenge*[Title/Abstract])) OR (facilitat*[Title/Abstract])) OR (promot*[Title/Abstract])) OR (aid*[Title/Abstract])) OR (enabl*[Title/Abstract])) OR (help*[Title/Abstract])) OR (reason*[Title/Abstract])) OR (experienc*[Title/Abstract])) OR (perception*[Title/Abstract])) OR (determinant*[Title/Abstract])) OR (influenc*[Title/Abstract])) OR (constraint*[Title/Abstract])) OR (issue*[Title/Abstract])
#19	issue*[Title/Abstract]
#18	constraint*[Title/Abstract]
#17	influenc*[Title/Abstract]
#16	determinant*[Title/Abstract]
#15	perception*[Title/Abstract]
#14	experienc*[Title/Abstract]
#13	reason*[Title/Abstract]
#12	help*[Title/Abstract]
#11	enabl*[Title/Abstract]
#10	aid*[Title/Abstract]
#9	promot*[Title/Abstract]
#8	facilitat*[Title/Abstract]
#7	challenge*[Title/Abstract]
#6	difficult*[Title/Abstract]
#5	imped*[Title/Abstract]
#4	hurdle*[Title/Abstract]
#3	obstacle*[Title/Abstract]
#2	barrier*[Title/Abstract]
#1	factor*[Title/Abstract]

Table S4. Business Source Complete, EBSCO (search date: 16/11/2022)

Search ID#	**Search Terms**
# S46	*Limiters* Full Text Date Published: 2000-2022 *Source Types* Academic Journals Reports Dissertations *Language* english
# S45	S20 AND S31 AND S40 AND S44
# S44	S41 OR S42 OR S43
# S43	TI chang* OR AB chang*
# S42	TI polic* OR AB polic*
# S41	TI reform* OR AB reform*
# S40	S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39
# S39	TI bonus* OR AB bonus*
# S38	TI reward* OR AB reward*
# S37	TI purchas* OR AB purchas*
# S36	TI reimburs* OR AB reimburs*
# S35	TI financ* OR AB financ*
# S34	TI incentive* OR AB incentive*
# S33	TI compensat* OR AB compensat*
# S32	TI pay* OR AB pay*

# S31	S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30
# S30	TI “health care institution*” OR AB “health care institution*”
# S29	TI “healthcare institution*” OR AB “healthcare institution*”
# S28	TI “health institution*” OR AB “health institution*”
# S27	TI “medical practice*” OR AB “medical practice*”
# S26	TI “healthcare practice*” OR AB “healthcare practice*”
# S25	TI “health practice*” OR AB “health practice*”
# S24	TI “health service provider*” OR AB “health service provider*”
# S23	TI “health provider*” OR AB “health provider*”
# S22	TI “care provider*” OR AB “care provider*”
# S21	TI “healthcare provider*” OR AB “healthcare provider*”
# S20	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19
# S19	TI issue* OR AB issue*
# S18	TI constraint* OR AB constraint*
# S17	TI influenc* OR AB influenc*
# S16	TI determinant* OR AB determinant*
# S15	TI perception* OR AB perception*
# S14	TI experienc* OR AB experienc*
# S13	TI reason* OR AB reason*
# S12	TI help* OR AB help*
# S11	TI enabl* OR AB enabl*
# S10	TI aid* OR AB aid*
# S9	TI promot* OR AB promot*
# S8	TI facilitat* OR AB facilitat*
# S7	TI challenge* OR AB challenge*
# S6	TI difficult* OR AB difficult*
# S5	TI imped* OR AB imped*
# S4	TI hurdle* OR AB hurdle*
# S3	TI obstacle* OR AB obstacle*
# S2	TI barrier* OR AB barrier*
# S1	TI factor* OR AB factor*

Table S5. Google Engine (search date: 14/11/2022)

i) **Procedure:**

Similar to scientific databases, the Google Engine was searched using terms from the four core concepts listed in Table 1. However, Google Engine limits the search queries to 32 words. The most appropriate keywords were used and some of them were combined. Exceptionally, Google Engine does not index publications by abstract. Therefore, the command was adapted to search for the terms in the "title" or in the "text". The corresponding commands were also applied: |= OR, &= AND. Since Google Engine can index files in different formats, a command to limit the file types to those that are common in scientific formats and that can be imported into the citation manager (Mendeley) was also added. The file types were limited to (.pdf) and TeX/LaTeX (.tex). The latter did not occur in any document found and was therefore removed from the query.

The final search query is as follows:

intitle | intext:factor | barrier | obstacle | hurdle | imped | difficult | challenge | facilitator | promote| aid | enable | help | experience | perception | determinant | influence | constraint | issue & “care provider” | “healthcare provider*” | “health provider” & “payment reform” | “reimbursement reform” |“renumeration reform” filetype:pdf

ii) **Search results:**

Google Engine was allowed to omit entries that were very similar to the results already displayed. As a result, the most relevant results were displayed: 145 publications on 14 pages. They were all taken into account.

Table S6. List of manually searched organizations

Organization name	Website/Link	Search date
Center for healthcare quality and payment reform (CHQPR)	https://chqpr.org/	24/01/2023
OECD	https://www.oecd.org/index.htm	24/01/2023
WHO via WHO Library	https://www.who.int/publications/	24/01/2023
European Observatory on Health System and Policies	https://eurohealthobservatory.who.int/	24/01/2023
Asia Pacific Observatory on Health Systems and Policies	https://apo.who.int/	24/01/2023
North American Observatory on Health Systems and Policies (NAO)	https://naohealthobservatory.ca/	24/01/2023
African Health Observatory Platform on Health Systems and Policies (AHOP)	https://ahop.aho.afro.who.int/	24/01/2023

Table S7. List of manually searched journals

Journal name	Website/Link	Access date
International Journal of Health Policy and Management	https://www.ijhpm.com/	23/01/2023
Lancet health policy reform series	https://www.thelancet.com/series/health- system-reform-in-mexico	23/01/2023
Health Policy	https://www.sciencedirect.com/journal/health- policy	23/01/2023
Health Systems & Reform (HS&R)	https://www.tandfonline.com/action/journalInformation?show=journalMetrics&journalCode=khs r20	23/01/2023
Health Reform Observer	https://mulpress.mcmaster.ca/hro-ors/index	23/01/2023
Journal of Health Politics, Policy and Law	https://www.dukeupress.edu/journal-of-health- politics-policy-and-law	23/01/2023
Health affairs	https://www.healthaffairs.org/	23/01/2023

Table S8. Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	2

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	4
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	4
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	5
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Tables S1-4
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	6
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	6
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	7
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	N/A
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	7
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	8
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	8
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	N/A
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	11 (Table 2)
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	11
DISCUSSION			

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	23
Limitations	20	Discuss the limitations of the scoping review process.	27
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	28
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	N/A

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.
* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.
† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).
‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.
§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinions, and policy documents).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

SUPPLEMENTARY FILE-2:

Table S9. Payment methods classification overview* – per country and provider type

Type of care & provider/Country	PRIMARY HEALTH CARE	OUTPATIENT SPECIALIZED CARE (outside hospitals)	HOSPITALS		LONG TERM CARE (within health sector)	
			Outpatient specialized care (inside hospitals)	Inpatient hospital care	Inpatient LTC	Outpatient/day/home LTC
Bulgaria	Capitation + FFS, P4P	FFS	Case payment	Case payment	Case payments (for acute episodes), Per diem (for psychiatric care)	Not covered
Croatia	Capitation + FFS, P4P, Fixed budget,	FFS	FFS, Case payments	Global budget, DRGs, Case payment	Per diem	FFS
Czechia	Capitation + FFS, P4P, Fixed payments (for emergency care shifts)	FFS + Case payments (day surgeries), P4P elements (dialysis providers)	FFS + Case payments (day surgeries), P4P elements (dialysis providers)	Global budget (based on DRGs), DRGs, Fixed payment (for palliative care)	Per diem	FFS
Estonia	Capitation, FFS, P4P, Fixed payment (e.g. for distance, second nurse)	FFS + P4P elements (video consultations)	FFS + P4P elements (video consultations)	DRGs, FFS, Per diem, Fixed payment, Bundled payments (for stroke patients)	Per diem, FFS	FFS
Hungary	Capitation, Case payment, P4P, Fixed payment (for group practices formulation and salaries)	FFS + Fixed payment (for salaries)	FFS + Fixed payment (for salaries)	DRGs + Fixed payment (for salaries)	Per diem + Fixed payment (for salaries)	Per diem (hospice home care), Per visit (specialist home care)
Latvia	Capitation, FFS, Fixed payment (for salaries), P4P	FFS, Case payment, Fixed payment (for salaries)	FFS, Case payment	DRGs, Case payment, Per diem, Fixed payment (for emergency care), FFS	Fixed budget, Per diem	Case payment, FFS,

Lithuania	Capitation, FFS, P4P, Fixed payment (for special needs patients)	Case payment	Case payment, FFS (for expensive procedures and examinations)	DRGs, FFS	Per diem, Case payment (palliative care)	Per diem, FFS, Fixed payment (nursing at home), Case payment (palliative care)
Poland	Capitation + Per visit/consultation, FFS (for diagnostic tests and within coordinated care), Fixed payment (for rural/low density population)	Per visit payment (groups adjusted for number and type of services provided) + FFS	Per visit payments (groups adjusted for number and type of services provided) + FFS, P4P elements (oncological network)	Global budget (based on DRGs) for hospital included in network + DRGs, P4P elements (for stroke patients), FFS, per diem	Per diem (differentiated based on health and care needs)	Per diem (differentiated based on health and care needs)
Romania	FFS + Capitation, P4P, Fixed payment(for newcomers)	FFS	FFS	DRGs + Case payment, Fixed payment (for salaries)	Per diem	FFS, Case payment

*payment method category is marked by colors: input-based; output-based—per capita; output-based—per unit of service; output-based—per unit of service; outcome-based (see Table 1 in the main manuscript), while case-payment and DRGs are used in the literature as synonyms, the distinction between the two has been made on the basis of the cost group complexity level, with DRGs being a more complex method (cost groups on the basis of a set of characteristics including three dimensions: diagnosis, procedures and patient features), while case payments can take a simpler form (e.g., series of procedures for the same diagnosis, without patient characteristics for the day surgeries in Czechia; care provided by outpatient specialists for 30 days in Latvia; or clinical pathways in hospitals and LTC in Bulgaria).

Table S10. Overview of the main changes to payment methods* and their motivations**, per country and provider type, since 2010

Type of care & provider/Country	**PRIMARY HEALTH CARE**	**OUTPATIENT SPECIALIZED CARE (outside hospitals)**	**HOSPITALS**		**LONG TERM CARE (within health sector)**	
			Outpatient specialized care (inside hospitals)	**Inpatient hospital care**	**Inpatient LTC**	**Outpatient/day/home LTC**
Bulgaria	**'MOD'** (ongoing: new capitation tariffs, age adjusted FFS, FFS tariff modification aimed at	**'MOD'** (new tariffs valuation aimed at better reflection of actual costs)	**'MOD'** (2016: new ambulatory procedures to improve efficiency, new tariffs aimed at better reflection of actual costs)	**'MOD'** (increased number and tariffs of clinical pathways to better reflect the actual costs)	'NO CHANGES'	'NO CHANGES'

	better reflection of actual costs) + **'ADD'** (2022: P4P elements for prophylaxis aimed to enhance population coverage with prophylactic services)					
Croatia	**'ADD'** (2013: P4P to encourage provision of certain types of care (e.g. preventive care) and to improve quality of care and patient satisfaction)	'NO CHANGES'	**'MOD'** (2015: introducing diagnostic procedures to encourage more services being provided in outpatient settings)	**'MOD'** (2015: refined DRGs to make payment more transparent and related to actual costs, to encourage more effective use of resources)	'NO CHANGES'	'NO CHANGES'
Czechia	**'MOD'** (ongoing: increasing capitation, expanding the scope of services financed via FFS aimed at strengthening the intensity and scope of PHC services) + **'ADD'** (2016: fixed bonus/payment for emergency care shifts – to encourage PHC doctors to work in emergency care, to fill-in the physicians deficit)	'**MOD**' (ongoing: new FFS tariffs, expanding the scope of services financed via FFS to encourage more services being provided in outpatient settings) + **'ADD'** (2019-2020: P4P for dialyzes providers to encourage better access and quality of care, 2023: case payment for day surgery to encourage more procedures being performed in day settings)	**'MOD'** (ongoing: changes in reimbursement formula, new FFS tariffs, expanding the scope of services financed via FFS to encourage more services being provided in outpatient settings) + **'ADD'** (2019-2020: P4P for dialyzes providers to encourage better access and quality of care, 2023: case payment for day surgery to encourage more procedures being performed in day settings)	**'MOD'** (2012: activity based global budgets aimed at better flexibility of services provided within hospital budgets, 2019: DRGs modifications to make costing group more detailed and better reflect the actual costs) + **'ADD'** (2023: fixed payment based on number of insured for palliative care to encourage provision of palliative services) +	**'MOD'** (2016: ongoing tariffs differentiation, new reimbursement rules aimed at better reflection of actual costs)	**'MOD'** (2018-2019: expanding scope of services financed via FFS to encourage more LTC services to be provided in home settings)

				'REP' (2021: CZ-DRGs aimed at better reflection of actual costs)		
Estonia	**'MOD'** (2012: new capitation groups, ongoing: tariff valuation changes to make costing group more detailed and better reflect the actual costs) + **'ADD'** (2013: FFS for e-consultations to encourage more services to be provided remotely; 2015: P4P to encourage better care coordination especially for chronic disease and strengthen health promotion activities, 2017: fixed payment to encourage setting up group practices)	**'ADD'** (2021: video consultations P4P to encourage more services to be provided remotely)	**'ADD'** (2021: video consultations P4P to encourage more services to be provided remotely)	**'ADD'** (2020: fixed payment for emergency care to secure services provision; 2021: bundled payment for stroke patients for better care coordination)	**'MOD'** (ongoing tariffs differentiation aimed at better reflection of actual costs)	**'MOD'** (ongoing tariffs differentiation aimed at better reflection of actual costs)
Hungary	**'ADD'** (2021: Fixed payment to encourage group practices, 2021: fixed payment for salaries to cover regulatory wages increase)	**'ADD'**(2021: fixed payment for salaries to cover regulatory wages increase)	**'ADD'** (2021: fixed payment for salaries to cover regulatory wages increase)	**'MOD'** (ongoing tariffs adjustments aimed at better reflection of actual costs) + **'ADD'** (2021: fixed payment for salaries to cover regulatory wages increase)	**'ADD'**(2021: fixed payment for salaries to cover regulatory wages increase)	'NO CHANGES'

Latvia	**'ADD'** (2013: FFS to encourage more services being provided in PHC and P4P to enhance health promotion and disease prevention activities)	**'MOD'** (ongoing tariffs adjustments aimed at better reflection of actual costs)	**'MOD'** (ongoing tariffs adjustments aimed at better reflection of actual costs)	**'REP'** (2011: DRGs DRGs to make payment more transparent and related to actual costs, to encourage more effective use of resources) + **'MOD'** (DRGs modifications to make costing group more detailed and better reflect the actual costs)	**'MOD'** (ongoing: changes in the scope of services financed via given method to incentivize provision of specified services)	**'MOD'** (ongoing: changes in the scope of services financed via given method to incentivize provision of specified services)
Lithuania	**'MOD'** (ongoing tariffs differentiation, expanding the scope of services financed via FFS and P4P aimed at strengthening PHC services intensity and scope by e.g. adding more diagnostic tests, health prevention activities to be carried by PHC doctors and involving supporting health workers)	**'MOD'**(new tariffs, expanding the list of services financed via case payments; 2016: extended consultations to encourage more services being provided in outpatient settings)	**'MOD'**(new tariffs, expanding the list of services financed via given methods; 2016: extended consultations to encourage more services being provided in outpatient settings)	**'REP'** (2012: DRGs to make payment more transparent and related to actual costs, to encourage more effective use of resources, to allow hospital comparisons) + **'MOD'** (2015: country specific DRGs weights aimed at better reflection of actual costs)	**'MOD'** (2018-2022: ongoing tariffs differentiation aimed at better reflection of actual costs)	**'MOD'** (2019: new tariffs for palliative care to encourage more LTC services to be provided in out-, home and/or day settings)
Poland	**'MOD'** (adjusted capitation groups, expanding scope of services financed via FFS aimed at strengthening PHC services intensity and scope by e.g. adding more diagnostic tests,	**'REP'** (2011: per visit adjusted for number and type of services provided aimed at better reflection of actual costs) + **'MOD'** (new tariff valuation rules, new rules for reimbursement	**'REP'** (2011: per visit adjusted for number and type of services provided aimed at better reflection of actual costs) + **'MOD'**(new tariff valuation rules, new rules for reimbursement calculation to	**'MOD'** (new tariff valuation rules, new rules for reimbursement calculation aimed at better reflection of actual costs) + **'ADD'** (2017: global budget aimed at better flexibility of services	**'MOD'**(2015: gradual tariffication of services, differentiation of per diem payment depending on health needs aimed at better reflection of actual costs)	**'MOD'**(2015: gradual tariffication of services; differentiation of per diem depending on health needs aimed at better reflection of actual costs)

	health promotion activities to be carried by PHC doctors) + **'ADD'** (2019: fixed payment for rural areas aimed at encouraging setting practices in rural areas)	calculation aimed at better reflection of actual costs and to encourage more services being provided in outpatient settings)	encourage more services being provided in outpatient settings) + **'ADD'**(2017-2022: global budget aimed at shifting emphasis from in- to outpatient services within hospital budget, 2015: P4P elements within oncological network, FFS and per diem for oncological coordinated care aimed at improving access to oncological diagnostic and treatment)	provided within hospital budgets and shifting emphasis from in- to -outpatient care; 2015: P4P elements within oncological pathways, FFS and per diem for oncological coordinated care aimed at improving access and coordination of oncological diagnostic and treatment, 2022: P4P elements within stroke program aimed at better access and coordination of care for stroke patients)		
Romania	**'MOD'** (expanding the scope of services financed via FFS to encourage more services being provided in PHC, e.g. preventive services more diagnostic test) + **'ADD'** (2023: P4P to encourage provision of preventive services, e.g. health risk assessment)	**'MOD'** (ongoing changes to the tariff valuation rules to make costing group more detailed and better reflect the actual costs)	**'MOD'** (extending the list of services financed via FFS to encourage more services being provided in outpatient settings, ongoing changes to the tariff valuation rules aimed at better reflection of actual costs)	**'MOD'** (new tariff rules for DRGs in Romanian context 2020 aimed at better reflection of actual costs) + **'ADD'** (2017: additional, fixed payment to cover regulatory salaries increase)	'NO CHANGES'	**'MOD'** (2014: changes to tariffs calculation methods for home care aimed at better reflection of actual costs) + **'ADD'**(2018: payment for outpatient palliative care to encourage more services provision)

*Major changes to payment methods, including four options: 'NO CHANGES' (no change in the payment methods since 2010 as well as no major modification to its content); REP' – replacing the previous method with a new method; 'MOD' – modifying the existing method (e.g., by changing the number of DRGs/capitation groups, modifying costing groups by making them more detailed, changing tariff valuation rules, expanding the scope of services financed via the given method); 'ADD' – adding a new method (additional method) to the existing method. ** description of the main motivations behind specific changes is marked in red.

SUPPLEMENTARY FILE-3:

Table S11. Overview of recent reforms that were chosen and analyzed for various factors affecting health care provider payment reforms in nine CEE countries.

		Reform No 1	**Reform No 2**	**Reform No 3**	**Reform No 4**
Estonia	Implemented reform	Remunerating new innovative e-consultations between family physicians and medical specialists.	Upgrade of the performance-based payment system, known as the QBS	New contracts to support multidisciplinary PHC reform	Bundled payment for Stroke Patient
	Provider & type of care	PHC (family doctors & medical specialists)	PHC (family doctors)	PHC (family doctors)	Hospital (inpatient care)
	Year of implementation	2013	2015/2016	2017	2020/2021
	Formal objective(s)	*To support family doctors in assuming more responsibility for patient care and improve cooperation with specialists.*	*To increase the quality and effectiveness of preventive services, as well as to improve monitoring of chronic diseases.*	*To increase the quality and effectiveness of preventive services, as well as to improve monitoring of chronic diseases.*	*(1) To improve patients' quality of life; (2) to improve health outcomes, (3) motivate cooperation and coordination; (4) to give medical institutions opportunities to direct additional resources to stroke treatment.*
Hungary	Implemented reform	Reintroduction of degressive zones	Cost weight adjustments of the Hungarian version of Diagnosis Related Groups	Reverting to input payment to cover a substantial pay increase	New financial incentives introduced to encourage PHC group practices
	Provider & type of care	Specialist care providers	Hospital (Acute inpatient care)	Medical doctors and provider organizations in specialist care	PHC

	Year of implementation	2010	2016	2020	2021
	Formal objective(s)	*To financially incentivize the use of free capacities in specialist care.*	*To incentivize hospitals to avoid unnecessary hospitalizations.*	*To increase the salary and criminalize informal payments.*	*To encourage the establishment of PHC group practices and to enhance the role of GPs.*
Poland	Implemented reform	Global budgets and 4-year guaranty of hospitals in "hospital network"	P4P elements within coordinated care model for acute AMI patients	Coordinated care model with new services financed with FFS method.	
	Provider & type of care	Hospital (inpatient & outpatient care)	Hospital (inpatient & outpatient care)	PHC	
	Year of implementation	2017	2017 (regional pilot)	2022	
	Formal objective(s)	*1) to improve the organization of services delivered by hospitals; 2) improve access to hospital care; 3) optimize the number of specialist wards; 4) improve coordination of in- and outpatient care; 5) facilitate hospitals' financial management*	*To improve secondary prevention measures, quality of care and long-term health outcomes in AMI-patients by providing care coordination following the European Society of Cardiology (ESC) guidelines*	*To improve care coordination and access to diagnostic and specialist services*	
Bulgaria	Implemented reform	Redefining case-based payments- adding clinical and ambulatory procedures to "clinical pathways"	Introduction of ceilings to hospital sector by the NHIF	A ban on NHIF contracting with new hospitals and for new hospital activities and medicines.	
	Provider & type of care	Hospitals (outpatient care)	Hospitals	Hospitals	
	Year of implementation	2016 - 2022	2015 - 2018	2018/2019	
	Formal objective(s)	*To optimize hospital activity.*	*To regulate rapidly increasing hospital expenditure, disincentivize hospitalization*	*To limit the financial risks to the NHIF budget and to ensure the*	

			and further rationalize hospital-based services.	*financial sustainability of the statutory health insurance scheme.*	
Croatia	Implemented reform	Introducing performance-based payment	Changes in hospital payment model	Refined DRG system - Diagnostic & Therapeutic procedures	
	Provider & type of care	Primary/ambulatory care, GPs	Hospitals	Hospital (outpatient services) - Day hospital + day surgery	
	Year of implementation	2013	2015	2015	
	Formal objective(s)	*1) To incentivize health care providers to further increase the provision of certain types of care (e.g., preventive care); 2) improve quality of care and patient satisfaction.*	*1) To modernize and restructure hospitals; 2) improve quality of care; 3) increase efficiency*	*1) To reduce cost; 2) rationalization of resources; 3) improve certain performance indicators, e.g., shortening average length of stay per hospitalization, achieving a higher patient turnover and reducing waiting times for certain procedures.*	
Lithuania	Implemented reform	Introduction of DRGs	Revised methodology of calculating P4P indicators	Gradual development of combination of payment methods	
	Provider & type of care	Hospital (inpatient care)	PHC	PHC, family medicine	
	Year of implementation	2012	2022	2010–2023	
	Formal objective(s)	*1) To encourage more effective use of resources; 2) lower volumes of inpatient hospitalizations; 3) ensure more accurate and transparent payments for acute inpatient services and day surgery; 4) compare performance of hospitals*	*To modify the methodology for calculating P4P indicators.*	*1) To incentivize improved performance of PHC; 2) improve access to the PHC; 3) reduce overprovision of inpatient services*	
Romania	Implemented reform	General health care reform	Improving Romania's DRG system		
	Provider & type of care	Multiple providers: hospital care, PHC	Hospital (impatient services)		

	Year of implementation	2008–2012	*2020-2023*		
	Formal objective(s)	*1) To improve the performance of the health system in general. In particular, 2) to allow hospitals to introduce measures to promote efficiency; 3) introduce cost-volume contracts and cost-volume-outcome contracts.*	*To improve the DRG system for estimating the real costs of service provision.*		
Latvia	Implemented reform	Implementation of DRGs based hospital payment "the Nord-DRG system"	Introducing pay for quality (P4P)		
	Provider & type of care	Hospital (inpatient care)	PHC, GPs		
	Year of implementation	2011	2011		
	Formal objective(s)	*To increase efficiency and transparency in the hospital payment system.*	*To improve the quality of health services*		
Czechia	Implemented reform	Introducing a new FFS payment (replacing the capped compensation to GPs that was introduced in 2015 after user-fee abolishment).	Introducing case-based DRG as the base payment mechanism based on international refined DRG (IR DRG) classification (IR DRG were introduced as early as 2007, with 70% of acute inpatient hospital payments based on DRGs in 2012).	Full adoption of the case-based Czech Refined Diagnosis-Related (CZ DRG) classification (following a DRG restart project in 2015).	Introducing case payment for day surgery.
	Provider & type of care	PHC, GPs	Hospitals (inpatient acute care)	Hospitals (inpatient acute care)	Outpatient care
	Year of implementation	2020	2012	2021	2023

	Formal objective(s)	*To meet the high demand for care by multimorbid patients (usually diabetics and oncological patients).*	*1) To increase the efficiency and transparency of health service provision; (2) to improve data systems; and (3) to contain costs.*	*1) To improve previous DRG version; 2) to adapt CZ DRG to local conditions (e.g., payments for hospitalization cases, quality and efficiency of care, and transparent financing); 3) to implement newly recalculated DRG tariffs into reimbursement mechanisms.*	*To increase the efficiency of care and patients' comfort (patients recover at home, payers save money, providers reduce nursing workload).*

SUPPLEMENTARY FILE-4:

Table S12. Search terms for databases: PubMed, Web of Science & Scopus

Healthcare provider	"healthcare provider*" OR "care provider*" OR "health provider*" OR "health service provider*" OR "health practi*" OR "healthcare practi*" OR "medical practi*" OR "health institution*" OR "healthcare institution*" OR "health care institution*" OR caregiver*
AND	
Payment	pay* OR compensat* OR incentive* OR financ* OR reimburs* OR purchas* OR reward* OR bonus*
AND	
Country	Botswana* OR Cameroon* OR Gabon* OR Gambia* OR Ghan* OR Kenya* OR Eswatini* OR Lesotho* OR Malawi* OR Mauriti* OR Mozambiqu* OR Namibia* OR Nigeria* OR Rwand* OR Seychell* OR "Sierra Leone*" OR "South Africa*" OR Togo* OR Uganda* OR Tanzania* OR Zambia*

Table S13. Search in Scopus
Search date: **01/07/2023**

Search	Query	Hints
#45	((TITLE-ABS-KEY (caregiver*)) OR (TITLE-ABS-KEY ("health care institution*")) OR (TITLE-ABS-KEY ("healthcare institution*")) OR (TITLE-ABS-KEY ("health institution*")) OR (TITLE-ABS-KEY ("medical practi*")) OR (TITLE-ABS-KEY ("healthcare practi*")) OR (TITLE-ABS-KEY ("health practi*")) OR (TITLE-ABS-KEY ("health service provider*")) OR (TITLE-ABS-KEY ("health provider*")) OR (TITLE-ABS-KEY ("care provider*"))) AND ((TITLE-ABS-KEY (pay*)) OR (TITLE-ABS-KEY (compensat*)) OR (TITLE-ABS-KEY (incentive*)) OR (TITLE-ABS-KEY (financ*)) OR (TITLE-ABS-KEY (reimburs*)) OR (TITLE-ABS-KEY (purchas*)) OR (TITLE-ABS-KEY (reward*)) OR (TITLE-ABS-KEY (bonus*))) AND ((TITLE-ABS-KEY (botswana*)) OR (TITLE-ABS-KEY (cameroon*)) OR (TITLE-ABS-KEY (gabon*)) OR (TITLE-ABS-KEY (gambia*)) OR (TITLE-ABS-KEY (ghan*)) OR (TITLE-ABS-KEY (kenya*)) OR (TITLE-ABS-KEY (eswatini*)) OR (TITLE-ABS-KEY (lesotho*)) OR (TITLE-ABS-KEY (malawi*)) OR (TITLE-ABS-KEY (mauriti*)) OR (TITLE-ABS-KEY (mozambiqu*)) OR (TITLE-ABS-KEY (namibia*)) OR (TITLE-ABS-KEY (nigeria*)) OR (TITLE-ABS-KEY (rwand*)) OR (TITLE-ABS-KEY (seychell*)) OR (TITLE-ABS-KEY ("sierra leone*")) OR (TITLE-ABS-KEY ("south africa*")) OR (TITLE-ABS-KEY (togo*)) OR (TITLE-ABS-KEY (uganda*)) OR (TITLE-ABS-KEY (tanzania*)) OR (TITLE-ABS-KEY (zambia*))) AND PUBYEAR > 2009 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "bk")) AND (LIMIT-TO (LANGUAGE , "english"))	1,126
#44	((TITLE-ABS-KEY (caregiver*)) OR (TITLE-ABS-KEY ("health care institution*")) OR (TITLE-ABS-KEY ("healthcare institution*")) OR (TITLE-ABS-KEY ("health institution*")) OR (TITLE-ABS-KEY ("medical practi*")) OR (TITLE-ABS-KEY ("healthcare practi*")) OR (TITLE-ABS-KEY ("health practi*")) OR (TITLE-ABS-KEY ("health service provider*")) OR (TITLE-ABS-KEY ("health provider*")) OR (TITLE-ABS-KEY ("care provider*"))) AND ((TITLE-ABS-KEY (pay*)) OR (TITLE-ABS-KEY (compensat*)) OR (TITLE-ABS-KEY (incentive*)) OR (TITLE-ABS-KEY (financ*)) OR (TITLE-ABS-KEY (reimburs*)) OR (TITLE-ABS-KEY (purchas*)) OR (TITLE-ABS-KEY (reward*)) OR (TITLE-ABS-	1,510

	KEY (bonus*))) AND ((TITLE-ABS-KEY (botswana*)) OR (TITLE-ABS-KEY (cameroon*)) OR (TITLE-ABS-KEY (gabon*)) OR (TITLE-ABS-KEY (gambia*)) OR (TITLE-ABS-KEY (ghan*)) OR (TITLE-ABS-KEY (kenya*)) OR (TITLE-ABS-KEY (eswatini*)) OR (TITLE-ABS-KEY (lesotho*)) OR (TITLE-ABS-KEY (malawi*)) OR (TITLE-ABS-KEY (mauriti*)) OR (TITLE-ABS-KEY (mozambiqu*)) OR (TITLE-ABS-KEY (namibia*)) OR (TITLE-ABS-KEY (nigeria*)) OR (TITLE-ABS-KEY (rwand*)) OR (TITLE-ABS-KEY (seychell*)) OR (TITLE-ABS-KEY ("sierra leone*")) OR (TITLE-ABS-KEY ("south africa*")) OR (TITLE-ABS-KEY (togo*)) OR (TITLE-ABS-KEY (uganda*)) OR (TITLE-ABS-KEY (tanzania*)) OR (TITLE-ABS-KEY (zambia*)))	
#43	(TITLE-ABS-KEY (botswana*)) OR (TITLE-ABS-KEY (cameroon*)) OR (TITLE-ABS-KEY (gabon*)) OR (TITLE-ABS-KEY (gambia*)) OR (TITLE-ABS-KEY (ghan*)) OR (TITLE-ABS-KEY (kenya*)) OR (TITLE-ABS-KEY (eswatini*)) OR (TITLE-ABS-KEY (lesotho*)) OR (TITLE-ABS-KEY (malawi*)) OR (TITLE-ABS-KEY (mauriti*)) OR (TITLE-ABS-KEY (mozambiqu*)) OR (TITLE-ABS-KEY (namibia*)) OR (TITLE-ABS-KEY (nigeria*)) OR (TITLE-ABS-KEY (rwand*)) OR (TITLE-ABS-KEY (seychell*)) OR (TITLE-ABS-KEY ("sierra leone*")) OR (TITLE-ABS-KEY ("south africa*")) OR (TITLE-ABS-KEY (togo*)) OR (TITLE-ABS-KEY (uganda*)) OR (TITLE-ABS-KEY (tanzania*)) OR (TITLE-ABS-KEY (zambia*))	627,729
#42	TITLE-ABS-KEY (zambia*)	16,680
#41	TITLE-ABS-KEY (tanzania*)	41,902
#40	TITLE-ABS-KEY (uganda*)	39,305
#39	TITLE-ABS-KEY (togo*)	4,899
#38	TITLE-ABS-KEY ("south africa*")	219,969
#37	TITLE-ABS-KEY ("sierra leone*")	7,887
#36	TITLE-ABS-KEY (seychell*)	3,233
#35	TITLE-ABS-KEY (rwand*)	12,516
#34	TITLE-ABS-KEY (nigeria*)	122,564
#33	TITLE-ABS-KEY (namibia*)	12,353
#32	TITLE-ABS-KEY (mozambiqu*)	14,557
#31	TITLE-ABS-KEY (mauriti*)	9,685
#30	TITLE-ABS-KEY (malawi*)	18,126
#29	TITLE-ABS-KEY (lesotho*)	3,735
#28	TITLE-ABS-KEY (eswatini*)	675
#27	TITLE-ABS-KEY (kenya*)	62,653
#26	TITLE-ABS-KEY (ghan*)	47,008
#25	TITLE-ABS-KEY (gambia*)	13,101
#24	TITLE-ABS-KEY (gabon*)	6,219
#23	TITLE-ABS-KEY (cameroon*)	22,418
#22	TITLE-ABS-KEY (botswana*)	11,339
#21	(TITLE-ABS-KEY (pay*)) OR (TITLE-ABS-KEY (compensat*)) OR (TITLE-ABS-KEY (incentive*)) OR (TITLE-ABS-KEY (financ*)) OR (TITLE-ABS-KEY (reimburs*)) OR (TITLE-ABS-KEY (purchas*)) OR (TITLE-ABS-KEY (reward*)) OR (TITLE-ABS-KEY (bonus*))	2,535,112
#20	TITLE-ABS-KEY (bonus*)	10,441
#19	TITLE-ABS-KEY (reward*)	168,224
#18	TITLE-ABS-KEY (purchas*)	207,883
#17	TITLE-ABS-KEY (reimburs*)	78,817
#16	TITLE-ABS-KEY (financ*)	895,829
#15	TITLE-ABS-KEY (incentive*)	184,348
#14	TITLE-ABS-KEY (compensat*)	702,771
#13	TITLE-ABS-KEY (pay*)	531,025
#12	(TITLE-ABS-KEY (caregiver*)) OR (TITLE-ABS-KEY ("health care institution*")) OR (TITLE-ABS-KEY ("healthcare institution*")) OR (TITLE-ABS-KEY ("health	446,077

	institution*")) OR (TITLE-ABS-KEY ("medical practi*")) OR (TITLE-ABS-KEY ("healthcare practi*")) OR (TITLE-ABS-KEY ("health practi*")) OR (TITLE-ABS-KEY ("health service provider*")) OR (TITLE-ABS-KEY ("health provider*")) OR (TITLE-ABS-KEY ("care provider*"))	
#11	TITLE-ABS-KEY (caregiver*)	155,338
#10	("health care institution*")	4,830
#9	TITLE-ABS-KEY ("healthcare institution*")	4,853
#8	TITLE-ABS-KEY ("health institution*")	7,613
#7	TITLE-ABS-KEY ("MEDICAL PRACTI*")	129,695
#6	TITLE-ABS-KEY ("HEALTHCARE PRACTI*")	6,538
#5	TITLE-ABS-KEY ("HEALTH PRACTI*")	57,369
#4	TITLE-ABS-KEY ("HEALTH SERVICE PROVIDER*")	2,511
#3	TITLE-ABS-KEY ("HEALTH PROVIDER*")	11,237
#2	TITLE-ABS-KEY ("CARE PROVIDER*")	83,732
#1	TITLE-ABS-KEY ("healthcare provider*")	41,295

Table S14. Search in PubMed
Search date: **28/06/2023**

Search	Query	Hints
#45	(("healthcare provider*"[Title/Abstract] OR "care provider*"[Title/Abstract] OR "health provider*"[Title/Abstract] OR "health service provider*"[Title/Abstract] OR "health practic*"[Title/Abstract] OR "healthcare practic*"[Title/Abstract] OR "medical practi*"[Title/Abstract] OR "health institution*"[Title/Abstract] OR "healthcare institution*"[Title/Abstract] OR "health care institution*"[Title/Abstract] OR "caregiver*"[Title/Abstract]) AND ("pay"[Title/Abstract] OR "compensat*"[Title/Abstract] OR "incentive*"[Title/Abstract] OR "financ*"[Title/Abstract] OR "reimburs*"[Title/Abstract] OR "purchas*"[Title/Abstract] OR "reward*"[Title/Abstract] OR "bonus*"[Title/Abstract]) AND ("botswana*"[Title/Abstract] OR "cameroon*"[Title/Abstract] OR "gabon*"[Title/Abstract] OR "gambia*"[Title/Abstract] OR "ghan*"[Title/Abstract] OR "kenya*"[Title/Abstract] OR "eswatini*"[Title/Abstract] OR "lesotho*"[Title/Abstract] OR "malawi*"[Title/Abstract] OR "mauriti*"[Title/Abstract] OR "mozambiqu*"[Title/Abstract] OR "namibia*"[Title/Abstract] OR "nigeria*"[Title/Abstract] OR "rwand*"[Title/Abstract] OR "seychell*"[Title/Abstract] OR "sierra leone*"[Title/Abstract] OR "south africa*"[Title/Abstract] OR "togo*"[Title/Abstract] OR "uganda*"[Title/Abstract] OR "tanzania*"[Title/Abstract] OR "zambia*"[Title/Abstract])) AND ((english[Filter]) AND (2010:2023[pdat]))	841
#44	("healthcare provider*"[Title/Abstract] OR "care provider*"[Title/Abstract] OR "health provider*"[Title/Abstract] OR "health service provider*"[Title/Abstract] OR "health practic*"[Title/Abstract] OR "healthcare practic*"[Title/Abstract] OR "medical practi*"[Title/Abstract] OR "health institution*"[Title/Abstract] OR "healthcare institution*"[Title/Abstract] OR "health care institution*"[Title/Abstract] OR "caregiver*"[Title/Abstract]) AND ("pay"[Title/Abstract] OR "compensat*"[Title/Abstract] OR "incentive*"[Title/Abstract] OR "financ*"[Title/Abstract] OR "reimburs*"[Title/Abstract] OR "purchas*"[Title/Abstract] OR "reward*"[Title/Abstract] OR "bonus*"[Title/Abstract]) AND ("botswana*"[Title/Abstract] OR "cameroon*"[Title/Abstract] OR "gabon*"[Title/Abstract] OR "gambia*"[Title/Abstract] OR "ghan*"[Title/Abstract] OR "kenya*"[Title/Abstract] OR "eswatini*"[Title/Abstract] OR "lesotho*"[Title/Abstract] OR "malawi*"[Title/Abstract] OR "mauriti*"[Title/Abstract] OR "mozambiqu*"[Title/Abstract] OR "namibia*"[Title/Abstract] OR "nigeria*"[Title/Abstract] OR "rwand*"[Title/Abstract] OR "seychell*"[Title/Abstract] OR "sierra leone*"[Title/Abstract] OR "south	969

	africa*"[Title/Abstract] OR "togo*"[Title/Abstract] OR "uganda*"[Title/Abstract] OR "tanzania*"[Title/Abstract] OR "zambia*"[Title/Abstract])	
#43	"botswana*"[Title/Abstract] OR "cameroon*"[Title/Abstract] OR "gabon*"[Title/Abstract] OR "gambia*"[Title/Abstract] OR "ghan*"[Title/Abstract] OR "kenya*"[Title/Abstract] OR "eswatini*"[Title/Abstract] OR "lesotho*"[Title/Abstract] OR "malawi*"[Title/Abstract] OR "mauriti*"[Title/Abstract] OR "mozambiqu*"[Title/Abstract] OR "namibia*"[Title/Abstract] OR "nigeria*"[Title/Abstract] OR "rwand*"[Title/Abstract] OR "seychell*"[Title/Abstract] OR "sierra leone*"[Title/Abstract] OR "south africa*"[Title/Abstract] OR "togo*"[Title/Abstract] OR "uganda*"[Title/Abstract] OR "tanzania*"[Title/Abstract] OR "zambia*"[Title/Abstract]	215,457
#42	"zambia*"[Title/Abstract]	7,286
#41	"tanzania*"[Title/Abstract]	17,208
#40	"uganda*"[Title/Abstract]	20,320
#39	"togo*"[Title/Abstract]	2,071
#38	"south africa*"[Title/Abstract]	54,868
#37	"sierra leone*"[Title/Abstract]	2,904
#36	"seychell*"[Title/Abstract]	960
#35	"rwand*"[Title/Abstract]	4,354
#34	"nigeria*"[Title/Abstract]	42,863
#33	"namibia*"[Title/Abstract]	2,177
#32	"mozambiqu*"[Title/Abstract]	4,581
#31	"mauriti*"[Title/Abstract]	2,174
#30	"malawi*"[Title/Abstract]	9,463
#29	"lesotho*"[Title/Abstract]	939
#28	"eswatini*"[Title/Abstract]	333
#27	"kenya*"[Title/Abstract]	25,182
#26	"ghan*"[Title/Abstract]	16,287
#25	"gambia*"[Title/Abstract]	9,065
#24	"gabon*"[Title/Abstract]	2,483
#23	"cameroon*"[Title/Abstract]	9,194
#22	"botswana*"[Title/Abstract]	3,035
#21	"pay"[Title/Abstract] OR "compensat*"[Title/Abstract] OR "incentive*"[Title/Abstract] OR "financ*"[Title/Abstract] OR "reimburs*"[Title/Abstract] OR "purchas*"[Title/Abstract] OR "reward*"[Title/Abstract] OR "bonus*"[Title/Abstract]	514,994
#20	"bonus*"[Title/Abstract]	1,903
#19	"reward*"[Title/Abstract]	66,519
#18	"purchas*"[Title/Abstract]	38,494
#17	"reimburs*"[Title/Abstract]	32,768
#16	"financ*"[Title/Abstract]	142,544
#15	"incentive*"[Title/Abstract]	36,570
#14	"compensat*"[Title/Abstract]	184,472
#13	"pay*"[Title/Abstract]	51,075
#12	"healthcare provider*"[Title/Abstract] OR "care provider*"[Title/Abstract] OR "health provider*"[Title/Abstract] OR "health service provider*"[Title/Abstract] OR "health practic*"[Title/Abstract] OR "healthcare practic*"[Title/Abstract] OR "medical practi*"[Title/Abstract] OR "health institution*"[Title/Abstract] OR "healthcare institution*"[Title/Abstract] OR "health care institution*"[Title/Abstract] OR "caregiver*"[Title/Abstract]	247,905
#11	"caregiver*"[Title/Abstract]	91,489
#10	"health care institution*"[Title/Abstract]	3,286
#9	"healthcare institution*"[Title/Abstract]	3,066
#8	"health institution*"[Title/Abstract]	4,897
#7	"medical practi*"[Title/Abstract]	31,004

#6	"healthcare practi*"[Title/Abstract]	1,830
#5	"health practi*"[Title/Abstract]	8,515
#4	"health service provider*"[Title/Abstract]	1,549
#3	"health provider*"[Title/Abstract]	9,055
#2	"care provider*"[Title/Abstract]	69,991
#1	"healthcare provider*"[Title/Abstract]	34,676

Table S15. Search in Web of Science
Search date: **29/06/2023**

Search	Query	Hints
#45	#12 AND #21 AND #43 and 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 (Publication Years) and Meeting Abstract or Correction or Editorial Material or Proceeding Paper (Exclude – Document Types) and English (Languages)	960
#44	#12 AND #21 AND #43	1,086
#43	#22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42	486,383
#42	(TI=(Zambia*)) OR AB=(Zambia*)	13,714
#41	(TI=(Tanzania*)) OR AB=(Tanzania*)	33,265
#40	(TI=(Uganda*)) OR AB=(Uganda*)	32,390
#39	(TI=(Togo*)) OR AB=(Togo*)	3,580
#38	(TI=("South Africa*")) OR AB=("South Africa*")	165,024
#37	(TI=("Sierra Leone*")) OR AB=("Sierra Leone*")	6,183
#36	(TI=(Seychell*)) OR AB=(Seychell*)	2,622
#35	(TI=(Rwand*)) OR AB=(Rwand*)	9,819
#34	(TI=(Nigeria*)) OR AB=(Nigeria*)	82,167
#33	(TI=(Namibia*)) OR AB=(Namibia*)	9,756
#32	(TI=(Mozambiqu*)) OR AB=(Mozambiqu*)	11,699
#31	TI=(Mauriti*)) OR AB=(Mauriti*)	6,795
#30	(TI=(Malawi*)) OR AB=(Malawi*)	15,587
#29	(TI=(Lesotho*)) OR AB=(Lesotho*)	2,711
#28	(TI=(Eswatini*)) OR AB=(Eswatini*)	540
#27	(TI=(Kenya*)) OR AB=(Kenya*)	49,966
#26	(TI=(Ghan*)) OR AB=(Ghan*)	38,007
#25	(TI=(Gambia*)) OR AB=(Gambia*)	10,482
#24	(TI=(Gabon*)) OR AB=(Gabon*)	4,524
#23	(TI=(Cameroon*)) OR AB=(Cameroon*)	18,101
#22	(TI=(Botswana*)) OR AB=(Botswana*)	8,485
#21	#13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20	1,638,766
#20	(TI=(bonus*)) OR AB=(bonus*)	7,006
#19	(TI=(reward*)) OR AB=(reward*)	120,582
#18	(TI=(purchas*)) OR AB=(purchas*)	125,304
#17	(TI=(reimburs*)) OR AB=(reimburs*)	28,692
#16	(TI=(financ*)) OR AB=(financ*)	532,036
#15	(TI=(incentive*)) OR AB=(incentive*)	130,924
#14	(TI=(compensat*)) OR AB=(compensat*)	475,434
#13	(TI=(pay*)) OR AB=(pay*)	356,588
#12	#11 OR #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1	260,268
#11	(TI=(caregiver*)) OR AB=(caregiver*)	104,584
#10	(TI=("health care institution*")) OR AB=("health care institution*")	2,824
#9	(TI=("healthcare institution*")) OR AB=("healthcare institution*")	3,345
#8	(TI=("health institution*")) OR AB=("health institution*")	4,949

#7	(TI=("medical practi*")) OR AB=("medical practi*")	28,628
#6	(TI=("healthcare practi*")) OR AB=("healthcare practi*")	4,726
#5	(TI=("health practi*")) OR AB=("health practi*")	15,661
#4	(TI=("health service provider*")) OR AB=("health service provider*")	1,767
#3	(TI=("health provider*")) OR AB=("health provider*")	8,888
#2	(TI=("care provider*")) OR AB=("care provider*")	62,863
#1	(TI=("healthcare provider*")) OR AB=("healthcare provider*")	33,568

Table S16. Google Engine Search
Date of search: 01/07/2023

i) Procedure:
Similar to scientific databases, Google Engine was searched using key terms. However, Google Engine limits searches to 32 words. The most appropriate keywords and combined some of them were used. In addition, Google Engine does not index the publications by abstract. Therefore, the command was adapted to search for the exact terms in the "title" or in the "text". The corresponding commands was also applied: |= OR, &= AND. Since Google Engine can index files in different formats, a command was also added to limit the file types to those that are common in scientific formats and can be imported into the citation manager (Mendeley). The file types were limited to (.pdf) and TeX/LaTeX (.tex).
The final search query was as follows:
intitle | intext:"provider payment" | "strategic purchasing" and Botswana | Cameroon | Gabon | Gambia | Ghana | Kenya | Eswatini | Lesotho | Malawi | Mauritius | Mozambique | Namibia | Nigeria | Rwanda | Seychelles | "Sierra Leone" | "South Africa" | Togo | Uganda | Tanzania | Zambia filetype:pdf
ii) Search results:
Google Engine was allowed to omit entries that were very similar to the results already displayed. As a result, the most relevant results were displayed: 103 publications on 11 pages. They were all considered.

Table S17. List of hand-searched organizations, their websites and search dates.

Organization name	Website/Link	Search date
Strategic Purchasing Africa Resource Centre (SPARC)	https://sparc.africa/	07/2023
WHO via WHO African Region	https://www.afro.who.int/	07/2023
Responsive and Resilient Health Systems (RESYST)	https://resyst.lshtm.ac.uk/resources	07/2023
Health Finance and Governance (HFG) country publications	https://www.hfgproject.org/hfg-country-final-reports/	07/2023
World Bank	https://www.worldbank.org/en/topic/health	07/2023

Table S18. List of inclusion and exclusion criteria for studies.

Inclusion	Exclusion
-Studies focused on healthcare provider payment and strategic purchasing. - Peer-reviewed empirical studies, policy-briefs, theoretical papers, technical reports, books/chapters, theses. -Published between 2013 and 2023 -Full text in English. -African Commonwealth countries only	-Publications that do not focus on health care providers (e.g., social insurance schemes, community financing, health cards or voucher systems, cost recovery, subsidized payment schemes) -Wrong publication types (conference abstract, commentary, letters to the editor, erratum) - Full text is in other languages. - Other countries (non-Commonwealth countries within or outside Africa, Commonwealth countries outside Africa)

Table S19. Factors influencing payment reform in analyzed Commonwealth African Countries

Country	Factors influencing reforms (blue= facilitator, red= barrier)			
	context	**content**	**process**	**actors**
Cameroon	-Presence of legal mandate for strategic purchasing (215). -Lack of relevant policy frameworks (215). -Highly centralized administration reduced purchasers' autonomy to influence reform objectives (215).	-Well-defined service delivery standards were integral in provider contracting and renewals (214–216). -Regular revision of indicators (215). -Providers given financial and managerial autonomy (214,215). -Presence of clear methods for setting purchaser's budget and tracking expenses (214). -Multiple purchasers with varied in institutional arrangements (214,215).	-Regularly monitored providers for production quantity and quality (215). -Poor monitoring and information systems hindered proactive detection of provider misconduct (214–216). -Lack of harmonized funding flows and payment systems across different schemes (214–216). -Underfunding, reliance on donor funding (e.g., World Bank support for PBF) (214,215). -Delays/irregular payments to providers (216). -Publicity, awareness, and education gaps on payment reform (e.g. hindered PBF reform efforts) (216).	-Multiple stakeholders— Government, public, private, community-based organizations, and external agencies (donors) —were engaged (214–216). -Lack of measures to balance stakeholder powers (215).
Ghana	-Capitation policy sparked political debates, heavily influenced by MPs, thereby garnering attention (205,223). -The chosen Ashanti region for piloting capitation was home to major opposing political party, raising political suspicion (223). -Politicians, disguised as pressure (anti-capitation) groups, allegedly exploited their hidden interests to gain political points and discredit the government (205).	-Clear indicators (e.g. quality), coherent guidelines and management arrangements ensured effective financial reporting and accountability during reform implementation (e.g. capitation) (223). -Ensuring clear tariffication (e.g. G-DRG system included 600 tariff criteria for outpatient and inpatient services, determined by costing and provider negotiations) (225). -Insufficient data/evidence (e.g. base per capita rate applied to pay providers lacked data for adjusting coefficients) (223). -Inadequate reimbursement rates (e.g. low rates for capitation) hindered reform by causing provider dissatisfaction and unrest (219,220,223,224).	-Piloting reforms (e.g. capitation in Ashanti Region) (66,205,217,218,220–224). -Training modules for providers were developed on financial and other management changes under the capitation payment system (223). -A monitoring and evaluation system was designed to measure the impact of capitation on trends in quality of care, utilization, access to healthcare, cost containment, and provider experience (223). -Failure to pilot and prospectively evaluate G-DRG exacerbated cost escalation, ultimately causing reform failure (220,224). -Misleading advertising/negative publicity/lack of effective public education (e.g. the media spread misinformation about capitation payments, misleading providers and causing opposition) (66,217,218,220,221,223).	-A multistakeholder provider payment mechanism technical steering committee (PPM TSC), comprising experts in health financing, implementation and authorities, was formed to design the capitation policy and plan its implementation (205,223). -The capitation payment reform involved mapping capacities of all facilities, exposing significant capacity differences. Facilities meeting standards operated independently, while those lacking capacity formed groups in order to operate (223). -Poor public participation (lack of involvement of interest groups from the general public e.g. care seekers/patients'/community organisations) (217,221).

		-Lack of trust in NHIA's timely payments weakened capitation cost containment efforts (223).	-Payment delays/irregular rates to providers (217,219,222–225). -Chronic underfunding, reliant on donor funds (e.g., capitation tied to World Bank funds) (218,219,222–224). -Fragmented health service delivery systems (224,225). -Insufficient information/IT tools (e.g. limited E-claim systems hindered claims processing; most work still relied on manual processes) (222,224,225). -Irregular fund flows with unpredictable amount (224). -Providers opposed capitation payment due to their prior favoritism toward G-DRG and FFS (they wanted to evade cost-sharing roles included in capitation) (66,223).	
Kenya	-Weak regulatory and policy framework (e.g. The NHIF Act of 1998 provides guidelines for mandates and functions but does not address strategic purchasing issues like provider payment methods) (226–228,231). .	-Unclear rationale for designing payment systems (e.g. capitation was theoretically chosen to mitigate overservicing risks associated with FFS and per diem payments) (226). -Providers resisted new payment forms due to concerns over payment rates estimation (they perceived capitation rates as insufficient for covering actual care costs) (226,228–232). -Weak provider accountability mechanisms (226,227). -Inadequate quality assurance mechanisms (e.g. reliance on facility utilization of MoH standards and treatment guidelines despite hospitals' evidence indicating poor adherence to these guidelines.) (226–229,231). -Reduced provider financial autonomy limited their decisions, power, and demotivated them (227,229,232).	-Implementing measures to mitigate payment incentives' unintended effects, such as regular facility visits, capped claims, staff fraud training, and establishing risk investigation units (226). -Lack of required resources (insufficient resources allocated for meeting service delivery demands) (226,227). -Inadequate monitoring (lack of framework and reporting structures to monitor provider performance and adherence to standards) (226,227,231,232). -Inadequate complaints and feedback mechanisms (226–228,232). -Provider payment delays and unpredictability (227,229,230,232). -Insufficient health information systems (reliance on paper-based records due to limited electronic systems, computer shortages, and frequent network failures) (227,229,231). -Fragmented/poor coordination between health and financing structures (multiple payment mechanisms lacking coherence across different schemes) (228,231,232).	-Poor public participation (lack of involvement of interest groups from the general public e.g. care seekers/patients'/community organisations) (226–228).

Mozambique	-PBF scheme gained significant political support, especially at the district level (233).	-Health facilities were given autonomy to manage funds, prioritize their specific issues, and address implementation barriers independently (233).	-Although the supervisions were well-organized and inspiring, they led to excessive leadership duties (managers in the fields of mother and child health complained that PBF made them more invested in roles as supervisors) (233). -Delays in PBF disbursements, due to internal processing and facility management issues, including leadership transitions, caused frustration among providers and administrators (233). -Insufficient funds (e.g. stock-outs of essential equipment like HIV tests and drugs) (233).	-Engaged key stakeholders (e.g. providers, government) (233). -Providers' involvement in PBF design and implementation fostered feelings of ownership and fulfillment of motives like autonomy, feeling valued, and competence demonstration (233). -Poor public participation (lack of involvement of interest groups from the general public e.g. care seekers/patients'/community organisations) (233).
Nigeria	-Presence of policy, legal, and governance structures and frameworks for strategic purchasing (234–236). -National Health Insurance Scheme (NHIS) encountered governance obstacles, including political interference compromising financial autonomy and decision-making power for effective purchasing (235).	-Use of well-defined benefit package, metrics, and guidelines (e.g. NHIS standardized treatment and quality protocols) (234,236). -Provider contracting involved meeting service and target criteria; noncompliance with personnel and facility standards led to nonrenewal (235,236). -Payment rates were established via actuarial studies (236). -Weak accountability mechanisms (lack of structures to monitor and evaluate provider performance) (234,236). -Restricted financial autonomy hindered provider service prioritization and access to financial resources (234).	-Providers received training on reform activities (e.g. using implementation guidelines and reporting quantitative data) (234). -Inadequate monitoring of providers and purchasers (234,235). -Insufficient health information systems (inadequate technology to collect relevant information on provider activities for evidence-based planning and decision-making; health-related information remained predominantly paper-based; and providers lacked adequate electronic systems due to a lack of computers) (234,235). -Lack of feedback and complaints mechanisms (234,235). -Inadequate budget allocation/chronic underfunding, reliance on donors (234,236). -Providers faced frequent delays and inadequate payments, resulting in service rationing and charging user fees for supposedly free services (234–236). -Fragmented funding flows through different schemes (235,236).	-Involvement of multiple stakeholders: providers, government authorities, and donors (234). -Poor public participation (lack of involvement of citizens or their associations) (234).
Rwanda	-Rwanda integrated PBF policy into its nationwide development policies and plans (e.g. millennium development goals, etc.) (237–239). -Established regulatory framework that supports strategic purchasing (239). -In 2015, Rwanda's government restructured major schemes to consolidate management and create an	-Clearly defined indicators determined based on national priorities and service delivery protocols of the MoH (239). -In 2014, the MoH tied PBF incentives to hospital accreditation, motivating managers to pursue it and improve service quality (239). -Overlapping mandates and functions between key institutions and actors	-PBF piloting before nationwide expansion (237–239). -PBF indicators' weight and costs regularly reviewed transparently using evidence-based processes (239). -PBF contracting was tied to the country's Imihigo performance contracting process (239). -Regular internal and external PBF audits (239).	-Involvement of multiple stakeholders: government, private/public providers, insurers, and citizen representatives (237–239). -Established community health committees with community representatives at public health facilities and district health units –(239).

	efficient, sustainable purchaser-provider split (239). -In 2006, decentralization health reforms granted autonomy to public health facilities, facilitating reforms like PBF (239).	(similar purchasing functions performed by multiple institutions) (239).	-Providers given autonomy to manage revenue generated (239). -Availability of various performance monitoring mechanisms and tools (239). -Adequate deployment of information systems (e.g., DHIS2 software, Mutuelle Membership Management System (3MS), e-payment technologies, EMRs) (239). -Limited interoperability among deployed health information systems hindered timely decisions (239). -Lack of a biometric fingerprint system and accurate, real-time data hindered efforts to detect fraud and abuse (239). -Limited funding (despite the government budget being the main source of PBF funds, its sustainability remained a major challenge) (239).	
Tanzania	-PBF garnered broad political support, notably from the Ministry of Health and Social Welfare (240). -Absence of an officially established national policy and guidelines for PBF in healthcare (240).	-Granting provider autonomy enabled them to be creative and enhance care quality (240). -Use of standard treatment guidelines provided by the MoH (242). -Transparent provider contracting and accountability mechanisms (242). -Price/fee rates were determined based on a comprehensive review of policy documents, actuarial valuation, costing studies, and expert advice (242). -The price list was periodically reviewed and adjusted to meet up-to-date requirements (242).	-Piloting reform (e.g. PBF in Pwani region) (240,241). -Health personnel were trained on PBF principles to enhance their general knowledge and skills in PBF programs (240). -Periodic evaluation of provider performance data 30). -Implementing a routine monitoring through a health information system facilitated effective oversight of healthcare service delivery, including registration, claims processing, referrals, and broader population healthcare (242). -Insufficient funding, reliance on development partners, loans, and donors (240–242). -Payment delays to service providers (240). -Fragmented financing systems (disjointed payment mechanisms across diverse schemes) (241,242).	-Involvement of multiple stakeholders: public, private, faith-based, and donors (240,242). -Community involvement (community participation on the PBF governing board at facility level enhanced communication between the community and health facilities) (240). -Most health facilities experienced deficiencies in both medical and nonmedical human resources (240).
Uganda				

	-In 2017, a national PBF framework was launched (244). -To enhance the complementarity of roles, the government introduced the National Policy on Public Private Partnership in Health, subsidizing accredited private health providers, primarily religiously affiliated (244). -Inadequate legislation to support strategic purchasing (243,244). -Centralized health system bureaucratic procedures rendered lower-tier facilities nonautonomous (243,244).	-Clearly defined priority interventions, package, and performance indicators (linking bonuses to results) (243,244). -Reward and sanction systems intended to enhance appropriate provider behaviors lacked clarity and remained inactive in many facilities (243). -Informal pricing undermined transparency and accurate cost estimation (243). -PBF was linked with quality indicators, yet target specification was still developing in Uganda (244).	-Insufficient funding stemming from inadequate domestic financing and dependence on development partners via on- and off-budget support mechanisms (243,244). -Challenges arising from existing health system inadequacies, including insufficient healthcare personnel, low morale absenteeism, and inadequate infrastructure (243). -Lack of provider training and supervision (243). -Fragmented purchasing systems, with multiple concurrent financing systems (244). -Failure to coordinate actions, especially between purchasers and patients (e.g. lack of feedback and social accountability mechanisms) (244).	-Engaging diverse stakeholders: government, donors, and insurance schemes (predominantly private commercial and community-based) (243,244). -Poor public participation (lack of involvement of citizens or their associations) (244).
Multicountry (Ghana, Tanzania)	No findings.	-Lack of transparency in the selection of P4P indicators (e.g. ambiguity in provider performance measurement criteria) (245).	-Training providers for P4P reform enhanced their skills and task performance capabilities (245). -Mobilizing local resources to enhance sustainability of the scheme (245). -Regular supervision alerted providers to errors and ways to enhance their performance (245). -Concerns regarding the workload necessary for managing P4P schemes (245). -Insufficient funds, heavy dependence on donors (245). -Providers hesitated to engage due to incentive misalignment and doubted managers' capability to deliver P4P schemes (245).	-Involving healthcare providers in P4P scheme design enhanced their buy-in and reform endorsement (245).
Multicountry (Ghana, Mozambique)	-Establishing clear institutional roles and relationships, both desired and actual, to make it possible to identify who has the authority for which strategic purchasing policies and is accountable for implementing them (23).	-Mapping existing roles and relationships for strategic purchasing and identifying gaps or conflicts provided a solid foundation for effective planning (23). -A well-structured activity plan enabled informed decision-making and created an environment that supported reaching reform objectives (23). -Granting autonomy for health facilities to hire, fire, and assign staff improved reform management and enhanced cost efficiency (23).	-Presence of systems facilitating strategic purchasing process, including provider accreditation, empanelment contracting, and performance monitoring, proved instrumental in achieving reform objectives (23). -Targeted training to equip key stakeholders with the necessary knowledge and skills to carry out their roles (e.g. a trainer training program was developed for capitation reform in Ghana involving over 600 district NHIS staff) (23). -Lack of sufficient information systems/IT tools (e.g. Ghana's capitation lacked sufficient e-claims systems to automate claims data; providers continued to submit claims using Excel) (23).	-Involvement of multiple key actors (purchasers, providers, regulators, donors) (23). -Ensuring sufficient technical capacity for stakeholders to carry out their roles and responsibilities (23). -Poor public participation (lack of involvement of citizens or their associations) (23).

		-Using disparate payment methods increased financial strain and hampered efforts to achieve efficiency (23).		

SUPPLEMENTARY FILE-5:

Table S20. Interview guide (questions/prompts)
Version's number: [*1*]
Date:

Respondent's background	What is your professional background?
	How would you describe your role in practice?
PBF effects	How would you describe PBF in brief?
	How does the PBF scheme influence the health system performance? For example, its effects (including both benefits, risks and unintended consequences) on • Provider work/practice • Patient care/outcomes
	How would you describe your general perception of PBF in terms of success/failure? And why?
Factors influencing PBF success/failure	In your opinion, which factors are/were responsible for the success/failure of PFB?
	• What factors do you think influence the success or failure of the PBF, according to the following four domains? • Context (systemic factors that can influence reform) • Content (element of a particular reform that describes its constituent parts in detail) • Process (the way the reform was created, conveyed, put into practice, and evaluated) • Actors (all participants involved in the policy-making process)
In your opinion, could the PBF system be improved/modified?	
Anything else that you would like to add?	

Ethical Approval

UNIWERSYTET JAGIELLOŃSKI
COLLEGIUM MEDICUM
W KRAKOWIE

OPINIA
Komisji ds. Etyki Badań Naukowych
Uniwersytetu Jagiellońskiego – Collegium Medicum
nr 118.0043.1.10.2024 z dnia 15 lutego 2024 r.

Na posiedzeniu w dniu 15.02.2024 r. Komisja ds. Etyki Badań Naukowych UJ CM zapoznała się z wnioskiem z dnia 10.01.2024 r.

złożonym przez:
kierownik badania: **dr hab. Christoph Sowada, prof. UJ**
miejsce zatrudnienia: **Zakład Ekonomiki Zdrowia i Zabezpieczenia Społecznego**
Instytut Zdrowia Publicznego
ul. Skawińska 8, 31-066 Kraków

dotyczącym przeprowadzenia badania pt. ***„Finansowanie świadczeniodawców usług zdrowotnych na zasadzie 'opłaty za rezultat' w Rwandzie - jakościowa analiza perspektywy głównych interesariuszy".***

Komisja wyraża pozytywną opinię w sprawie przeprowadzenia wnioskowanego badania - na warunkach określonych we wniosku oraz dodatkowo zastrzegając:
1. obowiązek uzyskania pisemnej zgody każdej osoby wyrażającej wolę (gotowość) udziału w badaniu, zgodnie z obowiązującymi przepisami ***(jeśli dotyczy)***,
2. obowiązek przedstawienia Komisji:

- wszystkich zmian w protokole mających wpływ na przebieg oraz ocenę badania,
- zawiadomienia o przyczynach przedwczesnego zakończenia badania,
- corocznego sprawozdania z przebiegu badania,
- raportu końcowego.

Badanie może być prowadzone do dnia 31.10.2024 r.

Skład i działanie Komisji zgodne z Regulamin Komisji ds. Etyki Badań Naukowych UJ CM.

Komisja ds. Etyki Badań Naukowych
Uniwersytet Jagielloński – Collegium Medicum

dr hab. Monika Boeiąga-Jasik
Przewodnicząca

Kraków, dnia 15.02.2024 r.

JAGIELLONIAN UNIVERSITY
MEDICAL COLLEGE
IN KRAKÓW

This is to confirm that the project titled: "**Performance Based Financing of Healthcare Providers in Rwanda – a qualitative analysis of stakeholder perspective**" (in Polish: *Finansowanie świadczeniodawców usług zdrowotnych na zasadzie 'opłaty za rezultat' w Rwandzie – jakościowa analiza perspektywy głównych interesariuszy*) received on **15 February 2024** positive assessment **(ethical clearance no 118.0043.1.10.2024)** by the Research Ethics Committee of the Jagiellonian University Medical College (in Polish*: Komisja ds. Etyki Badań Naukowych Uniwersytetu Jagiellońskiego- Collegium Medicum*).

The project research team includes:

- Christoph Sowada, PhD, Jagiellonian University professor (PhD candidate supervisor) – Team Leader
- Costase Ndayishimiye, MD, MPH, PhD Candidate
- Katarzyna Dubas-Jakóbczyk, PhD (PhD candidate supervisor)

The consent is valid till 31 October 2024.

dr hab. Monika Bociąga-Jasik
President of the Commission

Kraków, 5 April 2024

REPUBLIC OF RWANDA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Kigali, 10th July 2024

N°: NCST/482/0124/2024

Mr. Costase NDAYISHIMIYE
Passport N°: PC583377

Dear Mr. Costase,

RE: Approval to Conduct Research in Rwanda

I am pleased to inform you that your request to conduct research in Rwanda entitled: **"Performance Based Financing of Healthcare Providers in Rwanda - a qualitative analysis of stakeholder perspective",** has been approved under research permit **No: NCST/482/0124/2024**.

This permission only covers research activities specifically related to the provided research project title, and project proposal submitted to the National Council for Science and Technology (NCST) for the period from **10th July 2024** to **10th July 2025**.

The research will be carried out under the affiliation of the **University of Rwanda, College of Medicine and Health Sciences (UR-CMHS)** under the supervision of **Dr. Richard Nduwayezu (+25088610373)**, Head of Department of Primary Health Care, UR-CMHS, and will take place in Kigali City.

As a requirement, you will be **required to prepare a power point presentation of your results, and present at NCST Stakeholders Scientific Conference and submit both the progress and final reports** after completion of your research activities to the NCST, UR-CMHS, and Kigali City.

Digitally signed by NCST(Executive Secretary)
Date: 2024.07.10 10:00:00 +02'00'

Dr. Eugene MUTIMURA
Executive Secretary

CC:

- Hon. Lord Mayor of Kigali City
- Principal, UR-CMHS
- Dr. Richard NDUWAYEZU, Supervisor of the study

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- *Assoc. Prof. Daiga Behmane, Mrs. Alina Dūdele – Riga Stradiņš University, Riga, Latvia*
- *Prof. Antoniya Dimova – Faculty of Public Health, Medical University - Varna, Bulgaria*
- *Assoc. Prof. Aleksandar Džakula – School of Medicine, University of Zagreb, Croatia*
- *Prof. Liubove Murauskienė, Ms. Barbora Erasti – Faculty of Medicine, Vilnius University, Lithuania*
- *Prof. Péter Gaál, Dr. Tamás Palicz – Data-Driven Health Division of the National Laboratory for Health Security, Health Services Management Training Centre, Semmelweis University, Budapest, Hungary*
- *Ms. Triin Habicht – World Health Organization Barcelona Office for Health Systems Financing, Barcelona, Spain*
- *Dr. Pavel Hroboň – Advance Healthcare Management Institute, Prague, Czechia*
- *Prof. Cristian Vlădescu, Dr. Gabriela Silvia Scîntee – National Institute of Health Services Management, Bucharest, Romania*

- *Mgr. Lenka Šlegerová – Institute of Economic Studies, Faculty of Social Sciences, Charles University, Prague, Czechia*

Many thanks to Dr. Richard Nduwayezu from the Department of Primary Health Care at the University of Rwanda for overseeing the research conducted in Rwanda and providing guidance on ethical clearance.

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To everyone who believed in me and contributed to this milestone, I am forever grateful.

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Authors' statements

With the exception of coauthor Erasti B (a coauthor of the CEE research), with whom contact was lost due to relocation abroad and who is no longer affiliated with the former institution at the time the respective papers were coauthored, all statements for the remaining coauthors are presented below.

Place, date: Riga, 22.02.2025.

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As the co-author of the publications listed below, I declare that my contributions to the research were as follows:

Ndayishimiye C, Tambor M, Behmane D, Dimova A, Dūdele A, Džakula A, Erasti B, Gaál P, Habicht T, Hroboň P, Murauskienė L, Palicz T, Scîntee SG, Šlegerová L, Vladescu C, Dubas-Jakóbczyk K. **Health care provider payment schemes and their changes since 2010 across nine Central and Eastern European countries – a comparative analysis**. *Health Policy* Volume 153, March 2025, 105261 https://doi.org/10.1016/j.healthpol.2025.105261

My contribution included:

1) Data curation
2) Validation
3) Writing– review & editing

Ndayishimiye C, Tambor M, Behmane D, Dimova A, Dūdele A, Džakula A, Erasti B, Gaál P, Habicht T, Hroboň P, Murauskienė L, Palicz T, Scîntee SG, Šlegerová L, Vladescu C, Dubas-Jakóbczyk K. **Factors Influencing Health Care Providers Payment Reforms in Central and Eastern European Countries**. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. 2024;61. https://doi.org/10.1177/00469580241287626

My contribution included:

1) Validation
2) Writing– review & editing

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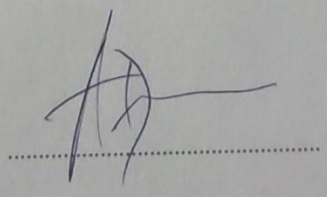
My contribution included:

1) Validation
2) Writing– review & editing



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My contribution included:
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My contribution included:
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Ndayishimiye, C., Nduwayezu, R., Sowada, C., & Dubas-Jakóbczyk, K. **Performance-Based Financing in Rwanda - Qualitative Analysis of Healthcare Provider Perspectives**. *BMC Health Services Research*, 2025. Doi: 10.1186/s12913-025-12605-z

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Ndayishimiye, C., et al. (2023). Barriers and facilitators to health-care provider payment reform – A scoping literature review. *Risk Management and Healthcare Policy*, 16, 1755–1779. https://doi.org/10.2147/RMHP.S420529	X	X	X		X	X	X	X	X
Ndayishimiye, C., et al. (2025). Health care provider payment schemes and their changes since 2010 across nine Central and Eastern European countries – a comparative analysis. *Health Policy*, 153, 105261. https://doi.org/10.1016/j.healthpol.2025.105261	X	X	X		X	X	X	X	X
Ndayishimiye, C., et al. (2024). Factors influencing health care providers' payment reforms in Central and Eastern European countries. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 61. https://doi.org/10.1177/00469580241287626	X	X	X		X	X	X	X	X
Ndayishimiye, C., et al. (2025). Performance-based financing in Rwanda: a qualitative analysis of healthcare provider perspectives. *BMC Health Serv Res*, 25, 418. https://doi.org/10.1186/s12913-025-12605-z	X	X	X	X	X	X	X	X	X

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Published papers

Published papers for Chapters 2, 3, 4, and 6 are attached below in their published form, as they appeared in the journals where they were originally published.

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Barriers and Facilitators to Health-Care Provider Payment Reform – A Scoping Literature Review

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REVIEW

Barriers and Facilitators to Health-Care Provider Payment Reform – A Scoping Literature Review

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Background: Changes to provider payment systems are among the most common reforms in health care. They are important levers for policymakers to influence the health system performance. The aim of this study was to identify, systematize, and map the existing literature on the factors that influence health-care provider payment reforms.

Methods: A scoping review was conducted. Literature published in English between 2000 and 2022 was systematically searched in five databases, relevant organizations, and journals. Academic publications and grey literature on health-care provider payment reform and the factors influencing reform were considered. An inductive thematic analysis was applied to map the barriers and facilitators that influence payment reforms.

Results: The study included 51 publications. They were divided into four categories: empirical studies (n=17), literature reviews (n=6), discussion/policy papers (n=18), and technical reports/policy briefs (n=9). Most of the studies were conducted in developed economy countries (n=36). The most frequently reformed payment method was fee-for-service (n=37), and the newly implemented methods included bundled payments (n=16), pay-for-performance (n=15), and diagnosis-related groups (n=11). This study identified 43 sub-themes on barriers to provider payment reforms, which were grouped into eight main themes. It identified 51 sub-themes on facilitators, which were grouped into six themes. Barriers include stakeholder opposition, challenges related to reform design, hurdles in implementation structures, insufficient resources, challenges related to market structures, legal barriers, knowledge and information gaps, and negative publicity. Facilitators include stakeholder involvement, complementary reforms/policies, relevant prior experience, good leadership and management of change, sufficient resources, and external pressure to introduce reform.

Conclusion: The factors that influence health-care payment reforms are often contextual and interrelated, and encompass a variety of perspectives, including those of patients, providers, insurers, and policymakers. When planning reforms, one should anticipate potential barriers and devise appropriate interventions.

Registration: The study was registered with the Open Science Framework.

Keywords: barriers, facilitators, health care provider, health reform, payment reform

Introduction

Health-care systems are constantly evolving to better meet the changing health needs of the population and to adapt to external pressures. Hence, reforms are an integral part of every health-care system. They can be defined as a sustained process of fundamental change in national health policy or institutional arrangements, often led by the government, to improve the functioning and performance of the health sector and ultimately the health status of the population.[1,2] Health system reform can be a complex process. Some authors describe it as a cycle that should go through six stages: defining the problem, setting the agenda, developing plans, formulating solutions, implementing them, and evaluating the results.[3,4] At the same time, it can be considered as a process that operates at different policy levels, including systemic (changing the institutional arrangements for regulating, financing, and delivering services); programmatic (setting system priorities); organizational (concerned with service provision); and instrumental (generating institutional intelligence to

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improve system performance).[5] The scope of reform may vary depending on how many aspects of the health-care system have changed and how much these changes deviate from past practices.[6]

Several factors can influence the process of health reform and determine its success.[7,8] As stated in institutional theory[9–11] and modified for primary care reform,[12,13] there are three main pressures and influences for health-care reform. These include coercive influences (laws, regulations, and policies), normative factors (professional influences and culture), mimetic factors (presence of trailblazers and successful leaders), and readiness for change in practice (perceptions and attitudes). The empirical evidence from the analysis of health-care reforms in 60 countries points to four sets of factors that can influence the success of reforms: the incremental approach ("acorn to oak tree principle"), use of IT and good-quality data ("data to information to intelligence principle"), involvement of relevant stakeholders ("many hands principle"), and putting the patient at the center of proposed changes ("patient as preeminent player principle").[7]

Provider payment system reforms are one of the most common reforms in health care today.[14,15] This involves, first of all, changes in the mechanisms used to transfer funds to health-care providers (provider payment methods), as well as alterations in supporting elements such as contracting, information management, and accountability mechanisms.[15] Ideally, payment systems help achieve health policy goals by incentivizing necessary medical services for patients, supporting the quality of care, promoting equity, and at the same time, enabling efficient use of resources. To achieve such goals, a variety of payment methods can be used, ranging from those that rely on available/used inputs, to methods based on outputs (services provided), and even mechanisms that reward health outcomes.[16,17] Each of them creates different incentives for health-care providers. The payments, whether determined prospectively or retrospectively, fixed or variable, can also shift the financial risk between providers and payers.[17] Thus, policymakers consider them one of the most important levers through which they can influence health system performance.[16]

The literature is replete with systematic assessments of the impact of specific provider payment methods on health system and/or patient outcomes.[18–20] A recent review focused on factors that influence the design, implementation, and adaption of value-based payment (VBP) models at the provider level.[21] The authors applied Greenhalgh et al's[22] framework on the diffusion of innovations in service organizations to classify facilitators and inhibitors to VBP models. Unlike previous research, our study identifies, synthesizes, and maps the literature on barriers and facilitators to provider payment reforms more broadly. Since we do not restrict the type of payment method and take an inductive approach to mapping factors influencing reform, our study covers a full range of factors that affect various provider payment methods. By following the general goals of scoping reviews,[23] we explore the breadth of existing evidence, build a knowledge base, identify potential research gaps, and provide implications for further research.

Methods

The scoping review followed the methodological guidelines developed by Peters and colleagues (2015, 2017, and 2020).[23–25] The process involves the following five steps: 1. Defining specific research questions; 2. Identification of relevant documents; 3. Study selection; 4. Data extraction; and 5. Data analysis and presentation of results. The study protocol was registered with the Open Science Framework (OSF) registries.[26]

Defining the Review Questions

The general research question is as follows: "What are the barriers and facilitators of health-care provider payment reform?" The specific review questions (RQ) are as follows:

- RQ1 – What types of literature on barriers and facilitators of provider payment methods can be identified?
- RQ2 – What types of payment reforms have been analyzed (including. ie, payment method, provider type, scope of reform)?
- RQ3 – What factors (barriers and facilitators) have been described as influencing health-care provider payment reforms?

Identifying Relevant Literature

We searched five databases: 1. Medline via PubMed, 2. Web of Science, 3. Scopus, 4. Business Source Complete via EBSCO, 5. Google Engine. The searches were conducted from 08 November 2022 to 24 January 2023. A combination of relevant keywords and synonyms from four main topics was used, namely "factor" AND "health care provider" AND "payment" AND "reform". They were searched in titles and abstracts. Table 1 shows the search query for the databases, including all keywords and synonyms used. The search strategy was developed using an iterative approach and tested in advance in Scopus, PubMed, and Web of Science. To complement the search in the databases, we conducted a manual search of the grey literature on the websites of (non-)government agencies, organizations, and research institutes that are active in this research field. In addition, references of the already included publications were scanned to find additional studies of interest to the research. As part of the Supplementary Materials, details of the search strategies for Scopus, Web of Science, PubMed, Business Source Complete, and Google Engine Search are presented in respective Tables S1-S5, while the list of manually searched organizations and journals can be found in Tables S6 and S7, respectively.

Selection of Studies

The retrieved records were deduplicated in Mendeley Reference Manager and then imported into Rayyan Desktop[27] for a two-stage screening. The first stage is title and abstract screening, and the second stage is full-text screening. In each stage, two independent researchers (CN and KDJ or MT) randomly screened 10% of the retrieved records, compared and discussed the results. Since the two researchers achieved a high level of agreement (over 85%), the remaining data was screened by one researcher (CN). The screening of the full texts was conducted based on pre-defined inclusion and exclusion criteria. Studies that addressed health-care provider payment reform and included an analysis of factors (barriers and/or facilitators) were considered. These were peer-reviewed empirical publications, policy briefs, theoretical papers, technical reports, books, chapters, or dissertations published in full text in English between 2000 and 2022. Conversely, studies were excluded from our analysis if they focused on other types of health-care reform (eg, evaluating other aspects of purchasing without analyzing payment methods), if they did not provide information on factors that influence provider payment reform, if they were not the appropriate types of publications (eg, conference abstracts, commentaries, letters to the editor, erratum, etc.), or if the full texts were in a different language.

Data Extraction

The data were extracted using an Excel template. It consists of three main parts related to the three specific questions of the review: 1. information on the included publication (reference, year, country, objective, and type of publication); 2. data on provider payment method reform (objective of reform, year, provider concerned, payment method, scope of reform, and reform phase in which the factor assessment was conducted); 3. information on the factors identified as

Table 1 Search Strategy and Keywords in Databases

Factor	Factor* OR barrier* OR obstacle* OR hurdle* OR imped* OR difficult* OR challenge* OR facilitat* OR promot* OR aid* OR enabl* OR help* OR reason* OR experienc* OR perception* OR determinant* OR influenc* OR constraint* OR issue*
AND	
Healthcare provider	"healthcare provider*" OR "care provider*" OR "health provider*" OR "health service provider*" OR "health practice*" OR "healthcare practice*" OR "medical practice*" OR "health institution*" OR "healthcare institution*" OR "health care institution*"
AND	
Payment	Pay* OR compensat* OR incentive* OR financ* OR reimburs* OR purchas* OR reward* OR bonus*
AND	
Reform	Reform* OR polic* OR chang*

influencing payment reform, either as facilitators, barriers, or both. The included publications were classified into four main categories: empirical studies (original, based on primary data, published in peer-reviewed journals); discussion/policy papers (published in peer-reviewed journals); literature reviews (published in peer-reviewed journals); and technical reports/policy briefs (eg, briefs published by advocacy organizations). For the classification of payment methods, the authors utilized two parameters: whether the payment rate was determined retrospectively or prospectively, and whether it was based on input (resources used or available), output (service provided), or outcome (health outcomes).[17,28] For the classification of reforms, the authors adapted the OECD classification[16] by coding whether the reform modified the existing payment method, introduced an additional payment method to the existing one, or replaced the existing method with a new one. Three reform phases were applied, namely: 1. planning, 2. implementation, and 3. assessment. Data mining involved randomly extracting a 10% sample of the studies by two independent investigators, CN and KDJ or MT, who are the authors of this study. The results were compared, and any discrepancies were discussed to ensure consistency. The two independent investigators achieved a high level of agreement, surpassing 85%. The remaining data was processed by one researcher (CN).

Data Analysis, Summary, and Presentation of Results

Both quantitative and qualitative (thematic analysis) methods were used for data analysis. Data on factors influencing reform were thematically analyzed and grouped inductively (manually). This was done in six steps: 1. we read and reread the data and noted initial ideas (familiarized ourselves with the data); 2. we coded initial features of interest (initial codes); 3. we grouped the codes into potential themes; 4. we reviewed these themes; 5. we refined the specifics of each theme; and 6. we produced the report in relation to the question under investigation.[29] This inductive, data-driven approach resulted in mapping the factors described as barriers or facilitators to provider payment methods based on the most prevalent themes/sub-themes. Naturally, the same factor (eg, providers' attitude) may act as a barrier (providers' opposition) or facilitator (providers' support). However, our approach was to map the existing evidence based on the descriptions provided by the authors of the included studies. The overall presentation of results follows the Preferred Reporting Items for Systematic reviews and Meta-Analyses extended checklist for scoping reviews – PRISMA-Scr,[30] supported by appropriate tabular and graphical presentations.

Results

Search results

Search results in five databases yielded 10,835 publications. Deduplication in Mendeley resulted in 5690 articles, out of which 128 remained after a screening process based on titles and abstracts. Forty-two publications were included after a full-text evaluation, based on predefined inclusion criteria. Of the 89 excluded articles, 41 analyzed factors affecting other types of health-care reforms, 29 studies were excluded because they did not analyze factors impeding and/or facilitating health-care provider payment reform, 14 studies were excluded because they were the wrong publication types (mainly commentaries and conference abstracts), and five studies were excluded because the full text was not accessible to us (we requested the authors for full texts, but we did not receive a response from them). The results of manual searches of selected organizations and journals yielded three studies, while reference checks yielded nine additional studies. A total of 51 publications were included in the final synthesis (refer to Figure 1). Information on all the included studies is presented in Table 2.

Overview of the Included Publications

Most studies were published from 2010 onward (n=43/51, 84.3%). In terms of publication type, discussion/policy papers were consistently high (n=18/51), followed by empirical studies (n=17/51), technical reports/policy briefs (n=9), and literature reviews (n=6/51) (Figure 2).

In terms of geographic distribution (Figure 3), 47/51 were conducted in individual countries, with the United States (USA) accounting for more than half of them (n=26/47). Consequently, most studies (n=27/47) were from North

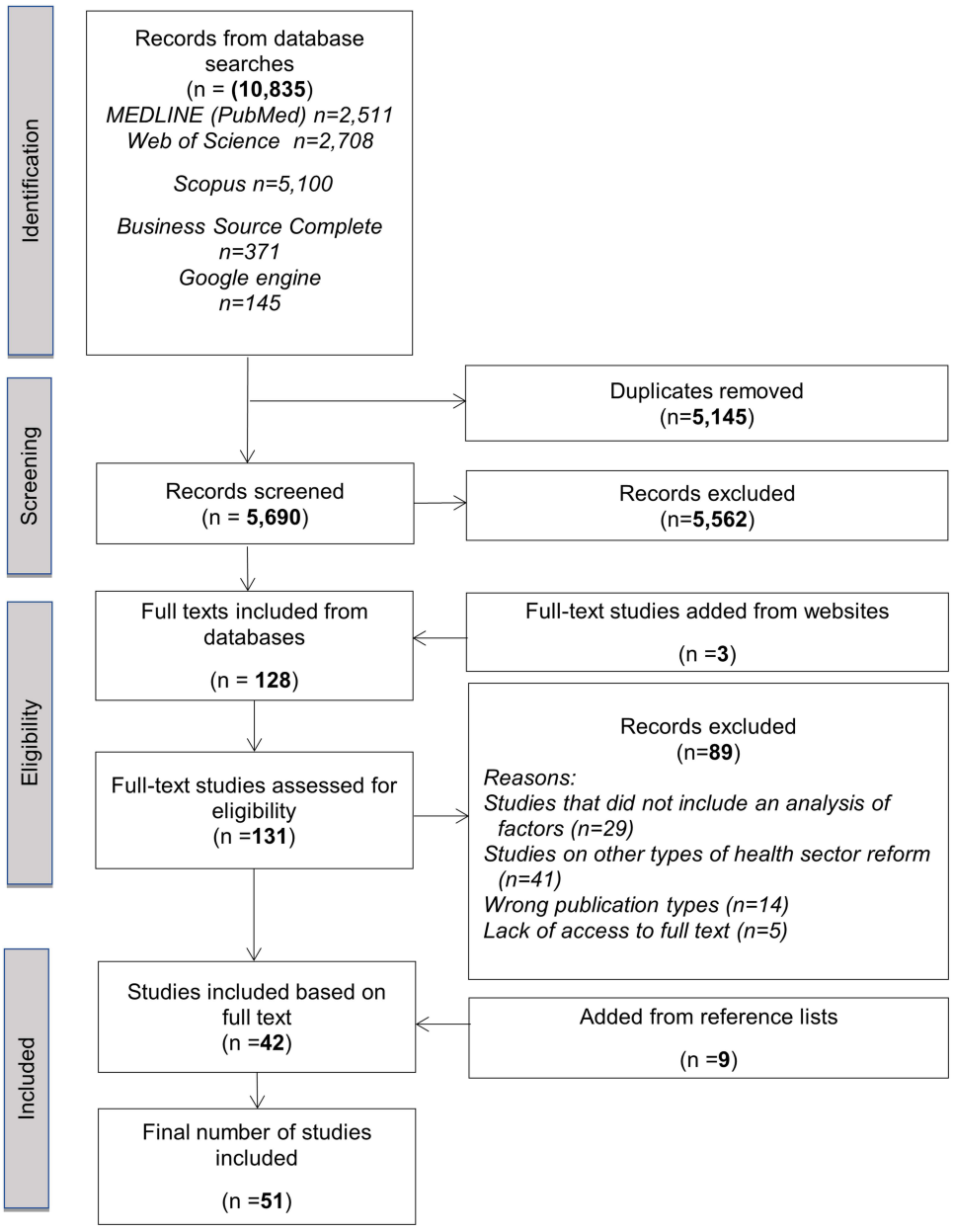

Figure 1 Presentation of the results following the PRISMA flowchart.

America, followed by nine from Europe, seven from Asia, and four from Africa. Thus, the majority of studies were from developed economies (n=36/47), while a few (n=11/47) were from developing economies.

The four studies[31–34] covered more than one country. The first[31] included Austria, France, England, the Netherlands, and Germany. The aim was to provide an overview of payment systems implemented to promote chronic disease integration. This was done by identifying facilitators and barriers to their implementation and assessing how stakeholders perceived their success. A second cross-national study[32] examined experiences of using Diagnosis-Related Groups (DRGs) in three Asian countries: Japan, Korea, and Thailand. This study focuses on technical issues and implementation challenges. Another study[33] looked at the experiences and factors of performance-based payment in Southeastern European countries, while the last study[34] provided a comprehensive overview of DRG-based hospital payment systems in low- and middle-income countries. It examines design and implementation issues as well as related challenges in these countries.

Table 2 General Overview of the Included Publications

Study Reference	Country	Publication Year	Focus of the Publication	Publication Type[a],*	Payment method Modified/ Implemented as Additional / Implemented to Replace	Care Provider	Modified/ implemented Payment Method Classification	Reform Classification[b],*	Reform Scope	Reform Stage[c],*
Wojtak and Purbhoo[35]	Canada	2015	Barriers and facilitators	Lit rev	Unstated method → bundled methods	Multiple	Prospective, input, output, outcome	Rep	Regional	1, 2
Zhang and Sun[36]	China	2021	Provider perspectives	Emp-QN	FFS → DRG	Multiple	Prospective, output	Rep	Pilot	2
Jin et al[37]	China	2015	Barriers	Lit rev	FFS → DRG	Hospitals	Prospective, output	Rep	National	2
Zhao et al[38]	China	2018	Facilitators	Dis/pp	FF → DRG- case-mix	Hospitals	Prospective, input, output	Rep	National	2
Duran et al[39]	Cote d'Ivoire	2020	Barriers and facilitators	Emp-QL	Unstated method + P4P	Primary care	Retrospective, outcome	Add	Pilot	1, 2
Or[40]	France	2014	Barriers	Dis/pp	Unstated method → DGR	Multiple	Prospective, output	Rep	National	2
Issahaku et al[41]	Ghana	2021	Stakeholder perspectives	Emp-QL	FFS, DRG, capitation → unstated VBP	Multiple	Prospective, output	Rep	National	1
Takyi and Danquah[42]	Ghana	2015	Barriers	Dis/pp	FFS, DRG → capitation	Primary care	Prospective, input	Rep	Pilot	2
Andoh-Adjei et al[43]	Ghana	2019	Provider perspectives	Emp-QN	FFS, DRG → capitation	Primary care	Prospective, output	Rep	Pilot	2
Nagy and Brandtmüller[44]	Hungary	2008	Barriers	Dis/pp	Capitation / adjusted capitation	Multiple	Prospective, input	Mod	National	1
Tan[45]	Indonesia	2019	Barriers and facilitators	Emp-mix	Unstated method → capitation	Primary care	Prospective, input	Rep	National	2
Babashahy et al[46]	Iran	2017	Analyze barriers	Emp-QL	Unstated method / adjusted capitation + DRG	Multiple	Prospective, output, retrospective, output	Mod, add	National	1

Kwon[47]	Korea	2003	Barriers	Dis/pp	FFS → DRG	Multiple	Prospective, input, output, outcome	Rep	Pilot	2, 3
de Vries et al[48]	Netherlands	2019	Barriers	Emp-QL	FFS → bundled methods	Multiple	Prospective, output	Rep	National	3
Tummers and Van de Walle[49]	Netherlands	2012	Barriers	Emp-QN	Unstated method → DRG	Mental health	Prospective, output	Rep	National	2
Chukwuma et al[50]	Romania	2021	Barriers and facilitators.	Tec/pb	Capitation/ adjusted capitation, FFS → bundled methods	Primary care	Prospective, retrospective, input, outputs, outcome	Mod, rep	National	3
Radu and Haraga[51]	Romania	2008	Barriers and facilitators	Lit rev	Unstated method → DRG	Hospitals	Prospective, input, output	Rep	National	1, 2, 3
Eriksson et al[52]	Sweden	2022	Provider perspectives	Emp-QL	Unstated method → bundled method +P4P	Spine surgery	Prospective, output, outcome	Rep, add	National	1, 2
Aktas[53]	Turkey	2022	Provider perspectives	emp-QL	FFS →mixed DRG, global budget	Hospitals	Prospective, output	Rep	National	1, 2, 3
Dredge[54]	UK	2008	Barriers and facilitators	Dis/pp	Global budget → DRG	Hospitals	Prospective, input, output, outcome	Rep	National	2
Doran[55]	UK	2008	Facilitators and barriers	Dis/pp	Unstated method +P4P	Primary care	Retrospective, outcome	Add	National	1, 2
Conrad et al[14]	USA	2014	Barriers and facilitators	Emp-QL	FFS / global + bundled methods	Multiple	Prospective, input, retrospective, outputs	Mod, add	Regional	1, 2
Hussey et al[56]	USA	2011	Barriers	Emp-QL	FFS → bundled methods	Multiple	Prospective, output	Rep	Pilot	1, 2, 3
Bokhour et al[57]	USA	2006	Stakeholder perspectives	Emp-QL	Unstated method +P4P	Multiple	Retrospective, outcome	Add	National	2
Kamath et al[58]	USA	2015	Provider experience	Emp-QN	FFS → bundled methods	Arthroplasty surgery	Prospective, input	Rep	Pilot	1, 2

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Table 2 (Continued).

Study Reference	Country	Publication Year	Focus of the Publication	Publication Type[a],*	Payment method Modified/ Implemented as Additional / Implemented to Replace	Care Provider	Modified/ implemented Payment Method Classification	Reform Classification[b],*	Reform Scope	Reform Stage[c],*
Whitcomb et al,[59]	USA	2015	Barriers and facilitators	Emp-QN	FFS → bundled methods	Joint replacement	Prospective, output, outcomes	Rep	Pilot	2, 3
Blustein et al[60]	USA	2011	Barriers	Emp-mix	Unstated method +P4P	Hospitals	Retrospective, input, output, outcome	Add	Regional	1, 2, 3
Miller[61]	USA	2012	Barriers	Tec/pb	FFS → bundled methods, Global payment	Multiple	Prospective, input, output	Rep	National	1,2,3
University of Washington[62]	USA	2015	Barriers and facilitators.	Tec/pb	FFS → capitation	Multiple	Prospective, input, outcome	Rep	Pilot	1,2,3
Hilary et al[63]	USA	2011	Barriers and facilitators.	Tec/pb	FFS → unstated VBP	Multiple	Not stated	Rep	National	1, 2
University of Washington[64]	USA	2015	Barriers and facilitators.	Tec/pb	Per visit method → capitation	Primary care	Prospective, output	Rep	Regional	1, 2, 3
Bencic et al[65]	USA	2016	Barriers	Tec/pb	FFS → bundled methods	Primary care	Retrospective, output	Rep	Regional	1, 2, 3
Crook et al[66]	USA	2021	Barriers and facilitators	Tec/pb	FFS → unstated VBP	Multiple	Not stated	Rep	National	1, 2, 3
Damberg et al[67]	USA	2014	Barriers and facilitators	Tec/pb	FFS → P4P, accountable care organizations (ACOs), bundled methods	Multiple	Prospective, retrospective, input, outputs, outcome	Rep	National	1, 2, 3
Dummit[68]	USA	2011	Barriers and facilitators	Tec/pb	FFS → bundled methods	Post-acute care	Prospective, output, outcome	Rep	Pilot	2, 3
Voinea-Griffin et al[69]	USA	2010	Barriers and facilitators.	Dis/pp	FFS +P4P	Dentistry	Retrospective, outcome	Add	National	1, 2

Bozic et al[70]	USA	2007	Barriers	Dis/pp	FFS +P4P	Orthopedics	Retrospective, outcome	Add	National	2
Randazzo and Brown[71]	USA	2016	Facilitators	Dis/pp	FFS → bundled methods	Chronic care	Not stated	Rep	Regional	1, 2
Lowder et al[72]	USA	2021	Barriers	Dis/pp	FFS → bundled methods, P4P	Multiple	Retrospective, outcome	Rep	National	1
McClellan et al[73]	USA	2017	Barriers and facilitators.	Dis/pp	FFS → unstated VBP	Multiple	Not stated	Rep	National	1, 2, 3
Bertko and Effros[74]	USA	2011	Barriers and facilitators	Dis/pp	FFS → capitation	Primary care	Retrospective, output	Rep	Pilot	1
Antonova et al[75]	USA	2015	Barriers	Dis/pp	FFS, DRGs → bundled methods	Hip fracture care	Prospective, input, output, outcome	Rep	Regional	1.2
Mcclellan[76]	USA	2011	Barriers and facilitators	Dis/pp	FFS + P4P, FFS → bundled methods	Multiple	Retrospective, prospective, output, outcome	Add, rep	National	1, 2, 3
Voinea-Griffin et al[77]	USA	2010	Barriers and facilitators	Dis/pp	Unstated method +P4P	Dentistry	Retrospective, output, outcome	Add	National	1, 2, 3
Seth Greenwald. et al[78]	USA	2016	Facilitators	Dis/pp	FFS → bundled methods	Multiple	Prospective, retrospective, input, output, outcome	Rep	Pilot	1, 2, 3
Hobbs Knutson et al[79]	USA	2021	Barriers and facilitators	Dis/pp	FFS → P4P	Behavioral health	Retrospective, output, outcome	Rep	Regional	1, 2
Tanenbaum[80]	USA	2009	Facilitators	Lit rev	Unstated method +P4P	Multiple	Retrospective, outcome	Add	National	1, 2
Tsiachristas et al[31]	Multi-country	2013	Barriers and facilitators	Emp-mix	FFS + P4P, Salary + pay-for-coordination (PFC), FFS → bundled methods	Integrated chronic care	Prospective, output, retrospective, outcome	Add, rep	National	1, 2
Annear et al[32]	Multicounty	2018	Barriers	Lit rev	FFS → DRG	Hospitals	Prospective, input, output	Rep	National	1, 2

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Table 2 (Continued).

Study Reference	Country	Publication Year	Focus of the Publication	Publication Type[a],*	Payment method Modified/ Implemented as Additional / Implemented to Replace	Care Provider	Modified/ implemented Payment Method Classification	Reform Classification[b],*	Reform Scope	Reform Stage[c],*
Donev[33]	Multi-country	2022	Barrier and facilitators.	Dis/pp	Unstated method +P4P	Multiple	Retrospective, output, outcome	Add	National	1, 2, 3
Mathauer and Wittenbecher[34]	Multicounty	2013	Barriers	Lit rev	Unstated method → DGRs	Hospitals	Prospective, output	Rep	Pilot, national	1, 2

Notes: [a],*(emp-QL: empirical study-qualitative, emp-QN: quantitative, or emp-mix: mixed; tec/pb: technical report/policy brief; dis/pp: discussion/policy paper; lit rev: literature review). [b],*(Mod: Modifying existing payment method; add: Implementing an additional payment method; rep: Replacing existing method with the new one). [c],*(1. Design; 2. Implementation; 3. Assessment; 4. Not stated).

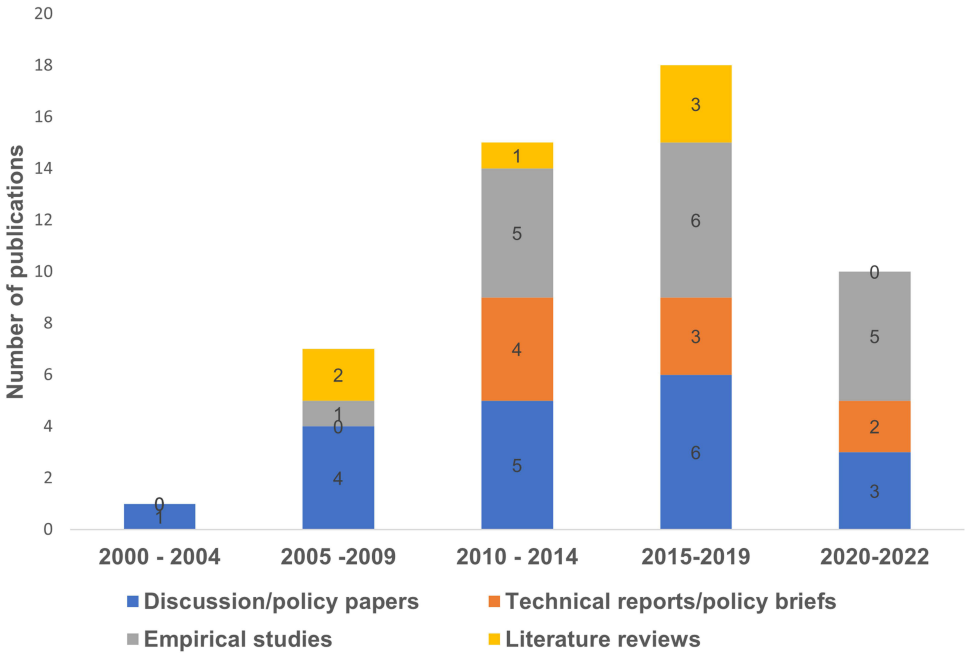

Figure 2 Included study types and publication period on a 5-year scale, starting with the oldest included study published in 2000 and ending with the most recent published studies in 2022. Publications include discussion/policy papers (blue), technical reports/policy briefs (Orange), empirical studies (grey), and literature reviews (yellow).

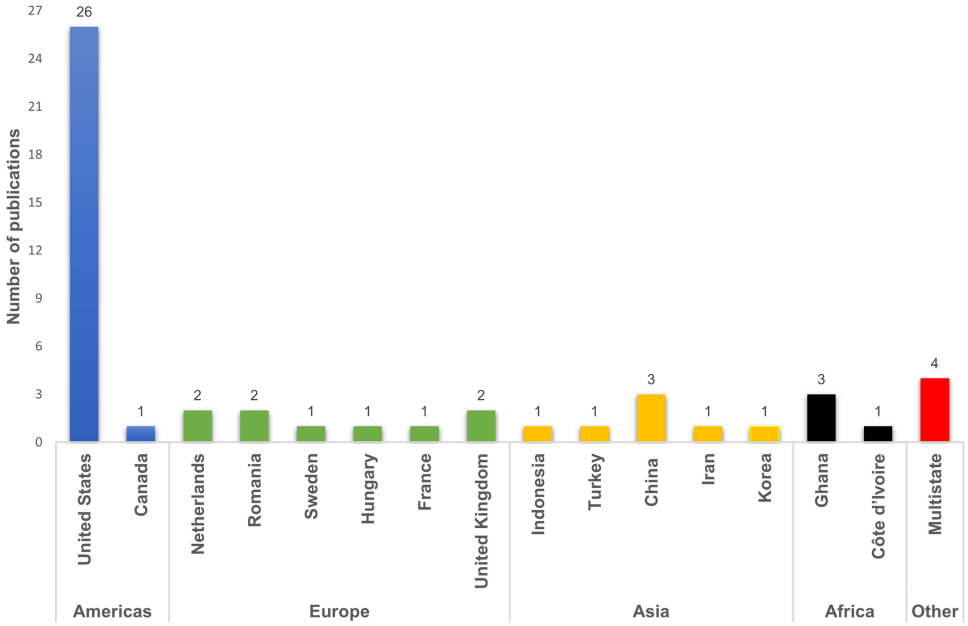

Figure 3 Study regions from which the included publications originated. Results are shown from left to right, starting with studies covering single countries from America (blue), Europe (green), Asia (yellow), and Africa (dark), and studies covering multiple countries (red).

In the vast majority of studies (44/51), the focus was on analyzing the factors (barriers and/or facilitators) that influence provider payment reform. In the remaining seven studies, the focus was more on the perspective of providers and/or other stakeholders regarding payment. These studies also included an analysis of barriers and/or facilitators. Of the 17 empirical studies, the majority (9/17) used a qualitative approach, primarily conducting interviews with various stakeholders involved in provider payment reform. For discussion/policy papers (18/51), the authors often relied on desk research and/or described experiences/opinions regarding a specific reform. However, in many cases, the methods used were not clearly presented or were only vaguely mentioned.

Regarding payment methods that were modified or implemented, almost one-third of studies reported adopting bundled payments (n=16/51). These methods were more commonly used for multiple providers (n=8/16) and specialties (n=7/16), such as surgery and chronic conditions. Pay-for-performance (P4P) programs were the second most commonly implemented schemes (n=15/51), used in a variety of provider settings (multiple n=6, primary care (PHC) n=4, specialist n=4, hospital n=1). 22% (n=11/51) of studies focused on DRGs, which were mostly used for hospitals (n=7/11). Additionally, 18% (n=9/51) of studies reported on capitation payments, which were more commonly associated with PHC (n=6/9).

The majority of studies (35/51) focused on reforms where existing payment methods were completely replaced by new ones, while in 13 studies, new methods were added to the existing ones. FFS was the most frequently changed payment method (72%, n=37/51). With regard to the scope and stage of reforms, the majority of studies focused on national-level provider payment reforms (n=30/51). Most of the included publications focused on the design and/or implementation of the reform (n=49/51), with over a third of them also including an evaluation (n=20/51).

Of the 51 publications included, only 47 provided details on the type of payment method implemented. Twenty-seven of these 47 were prospective, 13 were retrospective, and the remaining seven were a combination of both retro and prospective methods. There was also a wide variety in the classification of methods based on input, output, and outcome measures. Eight of the 47 publications used methods that were based on input, output, and outcome. Additionally, 14 publications used methods that were based solely on output, while seven used methods that were solely based on outcome. In general, outcome measures were used in more than half of the publications (n=24/47).

Mapping of the Barriers and Facilitators

The mapping of factors influencing provider payment reforms in the 51 studies included in the review revealed a variety of themes, which were sometimes interrelated or overlapping. The factors identified were often contextual and presented from a variety of perspectives, including patients, providers, insurers, and policymakers. We identified 43 subthemes of barriers, which we grouped into eight main themes (Table 3), and 51 subthemes of facilitators, which were grouped into six themes (Table 4).

Table 3 Barriers to Provider Payment Reform

Major Themes	Subthemes	References
Opposition/ reluctance by providers or other stakeholders	Provider reluctance due to dissatisfactory incentives (insufficient provider's incentives, misaligned incentives, financial instability, etc.).	[31,35,39,41,42,47–49,53,55,57,61,65,79]
	Provider opposition to being held accountable for outcomes they cannot control.	[41,43,48,49,55,57,61,65,70,79]
	Provider reluctance or opposition to reform initiatives seeming to compromise their professional/ clinical autonomy or ethics.	[31,33,37,39,52,53,55,57,69,80]
	Distrust due to previously failed reform attempts or between stakeholders (eg, care providers and government).	[33,41,43,47,48,62]
	Reluctance due to difficulty/the inertia of providers to adjust to the new structure in healthcare.	[14,47,52,61,74]
	Providers reluctance to adopt new payment models because they feel better familiar with the current one.	[14,31,41,61,65]
	Provider opposition to reform initiatives developed without evidence-based facts (clinical, cost, quality, etc.).	[33,43,49,77]
	Provider reluctance due to finding a method as confusing eg, because of the varieties of benchmarks being used for performance programs.	[40,46,52,69]
	Provider opposition to reform initiatives intending to expose client's privacy / seen as causing negative patient physician relationship.	[14,33,37]
	Provider opposition to reform initiatives they are not involved in arrangement.	[33]

(*Continued*)

Table 3 (Continued).

Major Themes	Subthemes	References
Challenges related to the reform design features	Unavailability of standards/benchmarks (quality, cost, risk-adjustment, etc.).	[34,39,42,56,60,61,63,65–69,72,73,75,77]
	Numerous or ambiguous or unaligned indicators/measures (eg, performance/outcomes).	[14,31,39,45,58,61,69,77]
	Administratively and operationally complex reform initiatives that do not fit the local context (eg, social, cultural or political).	[33,39,46,50,59,63,67]
	Reform initiative requiring substantial administrative tasks/ burden.	[31,39,50,52,59]
	Reform initiative requiring partial/complete redesign of healthcare service delivery.	[14,75,79]
	Differing payment reform design across health plans and providers.	[14,61,65]
	If the design affects too small of a patient population because of its narrow scope.	[55,63,79]
	Other design (technical) challenges: defining a bundle, determining accountability, tariffs, evaluation criteria, outliers, gaming, etc.	[14,31–33,40,51,53,55,56,58,59,67–70,74,75]
Hurdles in implementation structure of the payment system	Confusion due to conflicting/ administrative incongruence between major actors.	[14,33,41,45,47,55,75,76]
	Fragmented implementation structure of the payment system.	[35,39–41,62,69]
	The need to adapt implementation structures to reflect new reform specifics (eg, racial and ethnic disparities, equity, language barriers, etc.).	[35,44,60,63,66,69]
	Lengthy implementing or administrative structures/ bureaucratic process or regulatory delays).	[14,45,59,62,63]
Insufficient resource and capacity	Need for new infrastructure (IT, multi-stakeholder friendly systems, etc.).	[14,32,40,45,63,65–67,79]
	Limited funding/ budget constraints (new costs of data, indicators, staff training, additional payments, etc.).	[32,39,51,63,66,69,70]
	Need for new human resource recruitments (care providers, additional staff, IT personnel, etc.).	[32,34,39,63,65]
	Unequal distribution of human resources (urban Vs rural areas).	[45,68]
	Instability for hospital budgets following reform (eg, due to lack of hospital autonomy in spending).	[32,34,53]
	Having multiple initiatives under way deduce the resources and dilute the effort of any given reform.	[14]
Challenges related to the market structure	Market environments unable to incorporate diverse public and private stakeholders (eg, public and private markets operating under different IT/reporting systems).	[34,40,61,66,73,74,79]
	Market giving participating providers too small number of population (low-volume providers)	[55,63,65,68,79]
	Competing stakeholder priorities at the market.	[14,31,33,47]
	Market split among multi-payers can slow the progress of reform.	[14,63,69,79]
	Attention on the largest payer can limit the valiant efforts of smaller plans with less market share.	[63,66]

(*Continued*)

Table 3 (Continued).

Major Themes	Subthemes	References
Challenges related to legal/ regulatory framework	Autonomy mismatch at the central level vs for decentralized entities (eg, lack of fiscal autonomy for decentralized entities).	[33,34,39,45,48]
	Competing health policy and political priorities in legislation.	[33,62,73,76]
	Legal and privacy issues regarding data collection and sharing.	[14,66]
	Requirement for substantial amendments to the national law on health care.	[50]
	Intense political and judicial controversy.	[76]
Knowledge /information gap	Insufficient knowledge / Unfamiliar payment initiative for providers.	[14,33,36,39,43,58,60,73]
	Information asymmetry between stakeholders.	[33,41,43,48]
	IT/Data illiteracy (eg, inability to inputting data into the database; inability to use EMRs, etc.).	[14,34]
Negative publicity / reputation	Worsening reputation of stakeholders (eg, insurers).	[41,48]
	Negative media reportage and publicity (fueling negative provider perceptions to accept reform initiative).	[43,49]

Table 4 Facilitators to Provider Payment Reform

Support & engagement of stakeholders	High participatory efforts to engage diverse stakeholders (insurers, care providers, pharmacies, municipalities, citizen representative organizations, etc.)	[14,32,35,41,43,45,46,51,55,59,61,62,64,66,70,71,73,78]
	Support by larger shareholders	[14,33,38,48,51,53,63,64,73,76,78,80]
	Government interests to create a sense of urgency for a payment reform initiative.	[14,31,41,45,48,51,53,60,63,80]
	High level of commitment by politics/political parties or policymakers' rationales	[14,31,33,38,41,45,51,63,64,76]
	Clear mechanisms at play related to factors such as leadership, alignment of goals and incentives, shared norms and values as well as the relations between the actors	[33,48,51,54,63,64,71,73,78,80]
	Trust between stakeholders	[14,48,51,62,63,66,71,78,80]
	Reaching reform consensus among stakeholders	[14,41,51,55,73,78,80]
	Communications among stakeholders in coordinating the implementation of the payment system	[14,41,51,52,66,71,73,80]
	Robust support from provider and consumer organizations, major purchasers and health plans.	[41,51,63,64,73,78,80]
	Cohesive alliance structure among local and central actors in the reform implementation.	[14,45,51,66,73,78]
	Transparency in reform negotiations	[40,48,55,60,64,80]
	Involving trusted neutral entities that facilitate the design and implementation of payment reform.	[48,51,60,63,73]
	Willingness of providers to accept the new payment system.	[51,61,64,78,80]

(*Continued*)

Table 4 (Continued).

	Supportive community and social networks	[14,51,64,73,80]
	Community involvement	[39,60,66,78]
	Media information about the reform (publicity).	[62,80]
	High doctors' voices and strikes in a favor of a reform that influenced policymaker/ political views and priorities	[33]
Availability of complementary measures/ policies	Favorable market, social, legislative, and regulatory environments aligned with the reform goals.	[14,32,33,41,62,64,80]
	Complementary changes in other healthcare policies/simultaneous in efforts in the healthcare marketplace.	[14,44,51,73,76,80]
	Specific and worthy policies on ethical issues related to professionalism, patient-physician relationship, access to care and patient autonomy.	[32,33,36–38,55]
	Federal or state legislation encouraging payment innovation.	[14,32,64,76,80]
	Presence of regulatory mechanism for robust competition among payers and providers.	[14,64,76]
	Already existing regulatory systems and continuous assessments for reform health initiatives.	[62,63]
	Antitrust policies designed to prevent the exercise of market power.	[61,76]
	Clear policies and their enforcement to counteract anti-competitive behaviors by large providers.	[61]
Having prior experience & "know-how"	Having run pilot project/feasibility study before full adoption/ implementation of the real reform initiative.	[14,38,51,53,75,77]
	When the reform builds upon existing infrastructure or lessons learned.	[38,51,54,60,62,63]
	Already existing team and workforce (stability of the team)	[14,31,51,60,63]
	Long history of progressive health reform innovation	[14,51,60,62]
	Relevant experiences of participating organizations	[14,48,51,64]
	Prior experience with legislative, social and regulatory conditions for payment reforms.	[14,41,64]
	Building on the established early partnership	[51,54]
	Benchmarking - Build on and learn from best practices.	[51,54,60]
Sufficient resources	Proper infrastructure	[32,38,48,51,62,71,79]
	Pre-established software/IT systems (eg, electronic health record, data tools (cost, outcome measures)).	[32,34,38,51,71,79]
	Sufficient and trained IT staff	[32,34,51,63,71]
	Data sharing mechanisms and protection (privacy, etc.)	[48,51,75,78]
	Outside investment that enables increased needed resources	[14,51,63,66]
	Supplementary reform funding (grant, sponsorship, loan, etc.)	[14,51,62,64,66]

(*Continued*)

Table 4 (Continued).

Good quality leadership & management of change at the providers level	Leader who is instrumental in building and maintaining cohesive relations between the stakeholders.	[14,32,51,62–64,71]
	Flexibility and stable leadership able to analyze market conditions and stakeholder engagement and priorities shift over time.	[14,32,48,51,71]
	Having trusted leadership.	[14,48,63,64,78]
	Timely and consistent feedback management	[32,46,52,63]
	Opportune leadership across reform initiatives to share best practices with one another and explore solutions to challenges.	[14,46,51,78]
	Ability to retain major employees/or timely replacing crucially departing workers (eg, exodus of doctors).	[14,33,71]
	Senior executives' delegation of decision making to others in their organizations.	[14,31,71]
	Ability to timely handle negative staff attitudes and resistance (conflict resolution).	[32,33,51]
	Timely response to changes (eg, replacing the outdated guidelines/ practice)	[51]
	Explicit internal and external supervision	[51]
External pressures toward reform adoption	International interest in healthcare changes	[33]
	Political interests shifted in favor of health reforms due to political cycle	[80]

The first major theme of barriers to provider payment reforms was stakeholder opposition or reluctance, as reported in 27 out of the 51 included studies. Most examples (96.29%, n=26/27) related to provider opposition, although the reasons for opposition varied. 51.85% (n=14/27) of studies indicated that provider resistance was related to unsatisfactory incentives (eg, insufficient or misaligned incentives), while 37.03% (n=10/27) attributed provider resistance to being held accountable for outcomes they cannot control (eg, health outcomes that are more dependent on patient behavior). The latter was evident in payment systems that focused on meeting specific performance metrics, for which providers were rewarded or penalized. Examples of such systems include P4P programs and bundled payments. Provider resistance or reluctance was also evident when a payment method challenged their professional values (ie, professional ethics/clinical autonomy, cited by 37.03%, n=10/27), or they were reluctant to adopt new payment models because they were more familiar with the existing payment model (cited by 18.51%, n=5/27). Similarly, but generally across a wide range of stakeholders, 22.22% of studies (n=6/27) mentioned hesitancy when a new payment initiative was proposed, whereas previous attempts at reform had failed. An example of this can be seen in the Netherlands, where multiple stakeholders, such as insurers, PHC providers, and hospitals, expressed a lack of trust due to the failure of a previous shared savings program.[48]

Thirty-three studies mentioned obstacles related to the design features of the reform (second major theme). Many barriers were related to specific payment reforms, such as the implementing P4P and bundled payments. The majority of design problems arose because standards and/or benchmarks (quality, cost, risk balance, etc.) were not available (48.48%, n=16/33), or because there were numerous, ambiguous, or unreconciled indicators/measures (eg, performance/outcomes) (24.24%, n=8/33). Reform initiatives that were administratively and operationally complex and not tailored to the local context (eg, social, cultural, or political) were also less likely to succeed (21.21%, n=7/33), as evidenced in different countries, including the USA,[59] Côte d'Ivoire,[39] and Iran.[46] Some challenges were noted when the proposed reform required a partial or complete transformation of health-care delivery (n=3/33). One example is bundled payment for hip fractures in the USA, which required a change in the care delivery process.[75] Other barriers also occurred when payment reforms differed between health plans and providers (n=3/33). An evaluation of episodes of care for low-volume

Medicaid providers in Tennessee found that different design features, such as practice qualification standards and reporting measures, resulted in significant variations among payers. These differences discouraged many providers from participating.[65]

In 18 studies, the obstacles were related to the implementation structure of the payment system. These issues were related to confusion caused by conflicts and/or administrative mismatches among the main actors (mentioned in 50%, n=9/18) or due to the fragmented structure of the implementation system (in 33.33%, n=6/18). The aforementioned barriers were documented in various instances, such as the implementation of VBP in health care in Ghana,[41] capitation systems in PHC in Indonesia,[45] performance-based financing in Côte d'Ivoire,[39] and bundled payments in the home care system in Ontario.[35] One-third of the papers (n=6/18) also mentioned challenges that arose when implementation structures needed to be adapted to the unique characteristics of payment reform initiatives (eg, to address racial and ethnic disparities, equity, and language barriers). An example of this was when the state of Massachusetts revised its implementation structures to introduce a new approach that used P4P specifically to address racial and ethnic disparities in hospital care for Medicaid patients.[60] Some payment reforms have also been hampered by delays caused by lengthy regulatory, administrative, and/or bureaucratic processes (mentioned in five papers).

Barriers related to insufficient resources and capacity were cited in 16 studies. In more than half of these studies (n=9/16), the barriers were associated with the need for new infrastructure (eg, IT, and multi-stakeholder friendly systems). Many papers (n=7/16) also linked this to limited funding/budgetary constraints (eg, extra resources for new costs for data, indicators, staff training, additional payments, etc.), while about a third of the papers (n=5/16) mentioned the need to hire new human resources (service providers, additional staff, IT personnel, etc.). The latter was worse in reform areas where human resources were already unevenly distributed, eg, rural areas more so than urban areas. Regional inequities were reported, for example, in Indonesia, when policies were developed to introduce capitation payments for PHC.[45]

Sixteen studies mentioned challenges related to the structure of the health market. 43.75% (n=7/16) mentioned barriers that arose because the market environment was unable to engage different stakeholders. Such barriers occurred when the market structure for certain payment reforms, such as the bundled method, was unable to handle multiple stakeholders from both the public and private sectors (eg, because public and private markets operated under different systems). About one-third of the studies (n=5/16) reported barriers related to participating providers having too small number of populations (ie, low volume providers). A quarter of the studies (n=4/16) reported barriers related to competing stakeholder priorities in the market (n=4/16). Additionally, a few papers identified barriers related to market structure that gave advantages to the largest payers, ultimately limiting the efforts of smaller plans with smaller market share (mentioned by two studies).

Challenges related to the legal/regulatory framework were mentioned in 11 studies. In approximately half of the studies (n=5/11), the implementation of provider payment reform was hindered by a mismatch between the level of autonomy of central and decentralized entities (eg, a lack of decentralized fiscal autonomy). For example, the lack of autonomy of decentralized entities hindered the design and implementation of performance-based financing (PBF) in Côte d'Ivoire.[39] In more than a third (n=4/11), the obstacles arose from competing health policy and political priorities. In the USA, for example, the implementation of payment reforms to improve the quality of care and political efforts to contain the rise in health-care costs were at odds. This was evident in certain laws, such as the "Patient Referral Law", also known as the "Stark Act", which restricts financial relationships between hospitals and physicians.[76] Some legal and regulatory hurdles also restricted the right to collect and share data (eg, personal data). Such laws interfered with the implementation of the VBP to address social determinants of health in the USA.[66] Other payment reforms have been hampered by requiring substantial amendments to national health-care legislation. In Romania, for example, the introduction of a new payment method for PHC providers necessitates an amendment to the health reform law. This law permits only capitation and FFS as acceptable payment methods under the social security system.[50]

The last two major themes of barriers included knowledge/information gaps and negative publicity (mentioned in 11 and 4 studies, respectively). Knowledge or information gaps were mostly (72.72%, n=8/11) due to insufficient knowledge about the payment reform initiative (eg, among providers), different levels of information (ie, information asymmetry among stakeholders, mentioned by 36.36% n=4/11) or lack of specific knowledge among stakeholders, eg, IT/data illiteracy (mentioned in two studies). Some payment reforms were also affected by negative media coverage and

advertising. For example, negative media coverage increased opposition among some providers to the capitation reform introduced by the Ghana National Health Insurance Scheme.[43] Similarly, in the Netherlands, it amplified providers' voices opposing DRGs, ultimately leading to significant opposition to the introduction of this payment method.[49]

In terms of factors facilitating health-care provider payment reforms, the first major theme is stakeholder support and engagement (mentioned in 31 studies). In 58.06% (or n=18/31) of these studies, great emphasis was placed on actions aimed to engage various stakeholders. Support from larger stakeholders (eg, the Ministry of Health and provider associations) was one of the most principal factors mentioned in 11 studies. In 35.48% (n=11/35) and 32.25% (n=10/35) of studies, respectively, reforms were enabled by high-level engagement of politicians/political parties and policy-makers, as well as government interest in creating a sense of urgency for payment reform. For example, the Dutch government exerted more pressure for bundled payments for birth care and provided subsidies through its Ministry of Health for knowledge and tool development as well as for specific payment (infra)structures.[48] A number of studies (n=10/35) also found that clear mechanisms related to factors such as leadership, alignment of goals and incentives, shared norms and values, and relationships among stakeholders facilitated the success of payment reforms. Some studies reported that trust among actors and the achievement of a consensus on reform, as well as communication among them, were particularly beneficial for the successful implementation of reforms. In addition, reforms were facilitated by a coherent alliance structure between local and central actors during implementation and others were enabled by the involvement of trusted neutral bodies that facilitated both the design and implementation process. Despite previous barriers focused on provider resistance, the willingness of providers to accept the new payment system was identified as a key factor in the success of some reforms (n=5/31). In addition, transparency in reform negotiations was also cited as crucial for the success of payment reforms.

In 17 studies, it was found that the availability of complementary measures/policies facilitated payment reforms. In 41.17% of these studies (n=7/17), payment reforms were facilitated by a favorable market, social, legislative, and regulatory environment that aligned with the reform goals. In 35.29% (n=6/17) of the studies, reforms were facilitated by complementary changes in other health policies or simultaneous efforts in the health-care marketplace. Another 35.29% of studies pointed to specific and meaningful policies addressing ethical issues related to professionalism, patient-physician relationship, access to care, and patient autonomy. In 29.41% (n=5/17) of cases, reforms were supported by federal or state legislation encouraging payment innovation. Other facilitators included pre-existing measures and policies, such as antitrust measures to prevent the exercise of health-care market power, measures against anti-competitive behavior by large providers, and the existence of regulatory mechanisms for robust competition between payers and providers. Typical examples can be found in some countries, such as the USA, where there have been many complementary policies and measures. These include the Patient Protection and Affordable Care Act, commonly known as Obamacare, as well as various measures to prevent anti-competitive behavior and the exercise of market power.[61] Hungary's health sector has long prioritized equity in all health reform proposals. This has subsequently proved helpful in enabling related payment reform, for example, the introduction of a risk-adjusted capitation system.[44] Other areas of health policy have also facilitated payment reform for providers in other countries, such as the introduction of case-based DRGs in hospitals in Romania.[51]

Another major theme of facilitators for payment reforms is prior relevant experience and know-how, as highlighted in 14 studies. About half of the studies (n=6/14) indicated that conducting a pilot project/feasibility study before full implementation of the actual reform facilitated reform initiatives. For example, in the Netherlands, bundled payment for integrated chronic disease care was initially piloted for type 2 diabetes, which proved successful. It was later approved for nationwide implementation for diabetes, asthma, chronic obstructive pulmonary disease (COPD), and vascular disease.[48] Similarly, 42.85% of studies reported building reform on existing lessons learned or infrastructure, while 35.71% related to a long history of progressive health reform innovations. For example, the implementation of P4P in Massachusetts was successful due to its long history of health policy innovation and collaboration among different stakeholders. A system was already in place with hospitals, government payers, experts, and various committees (eg, quality and cost advisory boards).[60] More than a third of the studies (n=5/14) reported that reform was facilitated by the fact that there was already an existing team and staff (ie, stability of the workforce), that the participating organizations had relevant experience, that they built on early partnerships already in place or that they built on and learned from best

practices (ie, benchmarking). Also, previous experience with legal, social, and regulatory conditions was found to be helpful in implementing payment reforms, as reported in some studies (21.42%, or n=3). For example, a study of value-based reforms in six states across three regions of the USA found that prior experience in dealing with federal and state laws, such as the Patient Protection and Affordable Care Act, guided reform initiatives in many contexts, particularly in response to local market requirements.[14]

In 14 studies, the availability of sufficient resources was indicated as a facilitator for payment reform. In 50.0% of these studies (n=7/14), sufficient resources were cited as adequate infrastructure, 42.85% (n=6/14) related to software/IT systems (eg, electronic health records, data tools (cost, outcome measures)), 35.71% related to adequately trained IT staff, and 28.57% (n=5/14) related to data sharing and privacy mechanisms. In several other studies, it was purely related to financial factors, such as additional reform funding (grants, sponsorship, loans, etc.) and external investment that enabled an increase in needed resources (mentioned in 35.71%, n=5/14 and 28.57%, n=4/14 of studies, respectively).

Good-quality leadership and management of change at the provider level was described as important facilitators of payment reforms in 14 studies. The top five subthemes for this factor included 1) having a leader who is instrumental in building and maintaining cohesive stakeholder relationships (cited in 50% of studies, n=7/14), 2) flexibility and stable leadership that is able to analyze market conditions and stakeholder engagement and change priorities over time (cited in 35.71%, n=5/14), 3) appropriate leadership across reform initiatives to share best practices and find solutions to challenges (cited in 28.57%, n=4/14), 4) timely and consistent feedback management (cited in 28.57%, n=4/14), and 5) ability to retain key staff or replace departing staff in a timely manner (eg, physician attrition) (21.42%, n=3/14).

A few payment reforms were adopted and implemented due to external pressures, as mentioned by two studies. For example, the Macedonian Ministry of Health introduced P4P for hospitals despite opposition from physicians. This decision was influenced by the growing international debate and interest in this payment mechanism.[33] The adoption of reform was also related to shifts in political interests in favor of health reform due to upcoming presidential elections, parliamentary votes, and so on. One example is the Medicare P4P program, which received massive support from the 2008 presidential candidates and their parties.[80]

Discussion

Summary of Results

In our study, we identified, synthesized, and mapped the existing literature on barriers and facilitators to health-care provider payment reform. We reviewed 51 studies published between 2000 and 2022, mostly from developed economies, with a strong representation from the USA (50.98%, n=26/51). FFS was the most commonly replaced and/or supplemented method (72%, n=37/51), while newly introduced methods included bundled payments (n=16), pay-for-performance (n=15), and diagnosis-related groups (n=11). Forty-seven of the 51 publications that provided details on the type of payment method implemented, the majority were prospective (n=27/47) and generally based on outcome measures (n=24/47).

The barriers to provider payment reform can be categorized into eight main themes: stakeholder opposition, challenges related to reform design, hurdles in implementation structures, insufficient resources, challenges related to market structure, legal barriers, knowledge and information gaps, and negative publicity. The facilitators are grouped into six main themes: stakeholder involvement, complementary reforms/policies, relevant prior experience, good leadership and management of change, sufficient resources, and external pressure to introduce reform. The factors influencing payment reforms (barriers and facilitators) are often interconnected and can be context-dependent.

Comparison with the Literature

The study's findings, while narrowly focused on health-care provider payment reform, are consistent with the majority of the existing literature on facilitators and barriers to health-care reform in general.[7–12] The findings underscore the enormous importance of stakeholder engagement. This is consistent with previous studies,[7,21] particularly the "principle of many hands", which has been cited as one of the key success factors of health reforms.[7]

The key stakeholders in payment reforms are the providers themselves, payers, insurers, government agencies (eg, the Ministry of Health), physicians' associations, and patients/citizens. We found that the existing literature on barriers mainly focuses on the reluctance or resistance of providers and physician associations to reform. The strategy of involving stakeholders (eg, providers) early on in understanding the objectives of a reform program and their role in planning and implementation has proven successful in a number of health reform initiatives in avoiding individual and institutional resistance.[41,71] Stakeholder involvement and greater participation can help establish consensus and ultimately facilitate the successful implementation of reforms.

Our study found that patients are the least involved stakeholders in health-care provider payment reforms. This is consistent with previous research indicating a lack of community and patient involvement in health reforms in general.[12] In particular, it is consistent with the findings of researchers such as Doran, who found that patient involvement in the development of P4P systems was extremely limited.[55] On the other hand, the literature discusses the recognition of patients as important stakeholders in health reform,[81–83] particularly the successful reform principle of placing patients at the center of proposed changes.[7] Some researchers suggest that patient participation in today's health-care decision-making processes could be strengthened at both the individual and collective levels.[81,82]

Many of the themes and subthemes in our review align with the existing literature on three types of influences and pressures modelled in previous research on institutional change theory in health-care reform.[12,13] The first is coercive pressure, which originally stems from political influence and associated legitimacy.[9,12] It includes laws, regulations, and policies as determinants of change. In line with this, our study found that government support, political commitment from politicians, or their political parties are important for a successful payment reform process. We also found that reform is more likely to succeed if there are already well-established, complementary laws, regulations, and policies in place in the health sector. In addition, we found that political influence on reform can also come from outside the health system, eg, when political interests shift to support reform. This is consistent with coercive influences, according to which both formal and non-formal pressures can be external or imposed directly by organizations on which one depends on and/or by cultural expectations in society.[9]

The second category of factors falls under normative influences, which are mainly due to professionalization.[9,13] It is defined as the collective struggle of members of a profession to define and control the conditions and methods of their work, as well as to establish a cognitive basis and legitimacy for their professional autonomy.[9] In our study, several factors are associated with this category, particularly barriers to remuneration reform that arise when the proposed reform conflicts with health-care providers' professional values, such as ethics, autonomy, and their traditional or habitual ways of practicing health care. As mentioned earlier, some of these factors can lead to resistance or reluctance among health-care providers.

Importantly, the normative nature of influences highlights two aspects of professionalization. The first is education (eg, in-service training programs), and the second is the establishment and development of professional networks.[9] Regarding the first aspect, it can help to close the knowledge gap that hinders the proper implementation of payment reform, as indicated by our study. We found that stakeholders may face knowledge gaps, eg, IT/data illiteracy (eg, inability to enter data into the database, inability to use EMRs, etc.). Therefore, the first aspect is particularly helpful in acquiring the specific skills needed to implement payment reform. The second aspect, building networks, is one of the most crucial factors, as professional networks can help share information, including best practices, and learn from each other, all of which contribute to the success of payment reform. However, we have found that stakeholders' interests can compete and conflict. This is consistent with the findings of previous studies on barriers and facilitators to health-care reform, eg Levesque et al,[12] which show that members of networks may clash with their priorities, eg when the goals of some stakeholders in the networks (eg the government) and medical professional associations clash. These associations always strive to preserve the professional autonomy of their members.

The third category is mimetic influences, under which researchers such as Levesque et al[12] contend that the presence of innovators and champions (ie, successful leaders) who can play a key role in a multidisciplinary team significantly contributes to the success of health reform. The authors suggest that including providers in this role helps to reduce physician resistance to reform by giving more weight to the voice of their medical profession. In many ways, these findings are consistent with the results of our study. For example, we found that health-care providers may resist reform

initiatives in which they are not involved in organizing. Moreover, this overall perspective on the presence of successful leaders aligns with our research findings, which indicate that good-quality leadership and change management at the provider level are crucial in enabling payment reform. Proactive change management is particularly important because change can occur at any time and at any level. When introducing payment reform, it is essential for everyone on the team to understand the reasons behind the change, the expected benefits, and how it will impact their respective roles. They also need to be aware of the impact their interactions with others on the team can have. This means rethinking workflows, developing customized communication plans for each stakeholder, and carefully monitoring and managing team dynamics (such as addressing negative employee attitudes and resolving conflicts). Apart from innovators and champions, which are considered crucial factors, uncertainty is also recognized as a powerful force in mimetic processes, often stimulating imitation.[9] This is broadly consistent with our finding that the adoption of payment reforms can be influenced by international interest in health-care change (ie, imitation of what is being done abroad). The mimetic process also suggests modeling organizations on others when there is a poor understanding of a change, when goals are ambiguous, or when the environment creates symbolic uncertainty.[9] In our study, we also found that the success of payment reforms is enhanced by building on and learning from best practices (ie, benchmarking). This is also consistent with our other findings on the many barriers to payment reform that stem from hurdles in the design of reforms and implementation structures (eg, goals that are not embedded in the local context, ambiguous metrics, etc.). Benchmarking is, thus, a crucial factor in overcoming such challenges.

As in previous studies,[12] we indicate that health-care reforms are more effectively implemented when providers are more receptive to reform, meaning they have positive perceptions and attitudes. However, this is rarely the case due to their inertia in changing their past practices.[64] We found in our study that providers resist payment reform not only because they are unwilling to change their usual practices but also because they believe they will be exposed to risks they cannot control (eg, certain quality metrics and outcomes). Strong resistance can arise when the risks they are held accountable for lead to unsatisfactory incentives (eg, misaligned incentives and financial penalties). This is the case with most P4P systems, which have their roots in economic theory and behavioral psychology.[84] These systems require providers to align their behavior with specific performance indicators, particularly in terms of quality. Some providers complain that the quality is highly dependent on patients' adherence to physician recommendations (screening, treatment, lifestyle, etc.). They argue that they are unfairly penalized for patient behavior that is beyond their control.[55,57,61,65] Similar concerns may arise with other payment arrangements, such as bundled payments, because they often involve financial risks for providers.

Finally, but largely consistent with previous studies,[14,21,62,85] we found that sufficient resources (eg, additional funding, infrastructure, etc.) are an undeniable factor in facilitating provider payment reform. Previous researchers, such as Leao et al,[21] have found that sufficient infrastructure and advanced health information technology are key factors in the design, implementation, and applicability of VBP models. This is consistent with most of our findings, which indicate that payment reforms require adequate health information systems infrastructure and the associated costs (eg, IT tools, data, etc.). It is also emphasized in the "principle of data to information to intelligence" described by Braithwaite et al.[7] However, the increasing need for health information technology may also pose challenges for implementing provider payment reform, such as the introduction of complex metrics and standards.

Overall, our study has shown that despite some country- and/or region-specific characteristics of health system organization (eg, Europe vs the USA) and resulting payment policies, the issue of factors influencing provider payment reforms is to some extent universal in nature. For example, the issue of stakeholder involvement was mentioned (either as a barrier or facilitator) in studies from 20 different countries across all regions represented in the included publications (ie, North America, Europe, Asia, and Africa).

Strengths and Limitations

To the best of the authors' knowledge, this study is the first to identify and map the factors that have influenced diverse provider payment method reforms worldwide. Using an inductive, data-driven approach to map barriers and facilitators allowed for the inclusion of a variety of perspectives and provided a comprehensive overview of the existing evidence. Because we included all methods of paying providers (including P4P programs), we were not able to capture the specifics of reform or implementation of a particular method well. In addition, we focus on payment methods rather than solely on

changes related to payment systems. This includes supporting elements such as contracting, information management, and accountability. Some factors may be context-specific, eg, specific to systems with many payers. Furthermore, only English-language publications were considered, and the quality of the studies was not assessed. The latter is consistent with the methodological guidelines for conducting scoping reviews.[24]

Implications of the Study

Our findings suggest that there is a paucity of empirical research focused on identifying the barriers and facilitators to provider payment reforms, especially outside the context of the USA. This is consistent with issues raised by other authors[48] about the need to plan and conduct primary data research on factors that can support the successful implementation of reforms in various health-care settings. Further research could focus more on analyzing specific types of factors, such as stakeholder involvement, including patient/citizen participation in the design of provider payment reforms, or on the implementation of specific payment methods. Further research is also needed on integrating these types of reforms into the broader context of health-care system and addressing significant current challenges (eg, health-care workforce shortages;[86,87] digitalization;[86,88,89] changing models of care[87,90]). Future research on the factors that influence the success of reform may help in developing guidelines for a more evidence-based approach. The identified and mapped major themes of factors influencing reforms can serve as a starting point for research aimed at ranking the importance and level of priority of various types of determinants. This can lead to the development of a tool for evaluating reforms in health-care provider payment. Such a tool can assist policymakers in assessing potential barriers and devising suitable strategies to mitigate their negative impacts on the reform process.

Conclusions

The main barriers and facilitators to payment reform are interrelated. The same factor can act as a barrier or facilitator, depending on its characteristics. Although specific factors can be highly contextual, there are many commonalities in payment reforms worldwide. High levels of stakeholder engagement and support, government commitment, and political support, existing complementary health reform, sufficient resources and capacity, proactive change management, and previous experience in implementing reforms are all examples of facilitators. Barriers include strong resistance (usually from health-care providers), political unwillingness to reform, lack of appropriate IT systems and infrastructure, knowledge gaps, and legal, regulatory, and ethical challenges. These factors may affect different stages of reform – design, implementation, evaluation, or multiple stages simultaneously. More primary data research is needed on the specific factors that influence health-care provider payment reforms. A research gap exists, particularly in developing economies.

Disclosure

The authors report no conflicts of interest in this work.

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Health care provider payment schemes and their changes since 2010 across nine Central and Eastern European countries – a comparative analysis☆

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ABSTRACT

Health care provider payment schemes consist of a complex set of arrangements used to influence provider behavior towards specific health policy objectives. The study aimed at: 1) providing a structured, comparative overview of current payment schemes within the public health system in selected Central and Eastern European (CEE) countries for different health care providers; 2) identifying and comparing major changes in payment schemes since 2010. Methods included: 1) data collection form development; 2) desk research; 3) national experts' consultations; 4) comparative analysis. The results indicate that the nine CEE countries (Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania) show numerous similarities in provider payment method mix and in the general direction of the recent changes conducted in this field. Output-based payment methods prevail across all countries and types of providers. Primary health care (PHC) providers are characterized by the most diverse payment method mix. PHC and hospital inpatient care have experienced the most frequent changes in their payment schemes within the last 13 years. These focused mostly on modifying existing payment methods (e.g. detailing payment categories), and applying additional methods to pay for specific services or performance (e.g. fee-for-service, bonus payments). The objectives of conducted change were often similar, thus, there is high potential for a shared, cross-country learning.

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1. Introduction

Central and Eastern European (CEE) countries share many common characteristics in terms of financial and organizational aspects of their health systems [1–3]. This is related both to the common historical background, especially health systems transformation during the post-Soviet period [1,4,5], and more recent common reform trends [6–8]. Currently, among the 11 CEE countries that are European Union (EU) members (Bulgaria, Czechia, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia, Slovakia) the public health expenditures predominates, with the main role of the social health insurance schemes, though out-of-pocket payments are still high in some of the countries [9]. In most countries, a single, centralized public payer operates. CEE countries often face similar structural challenges within their health systems, including e.g. overcapacities in hospital care [7] with simultaneous deficits in long term-care provision (LTC) [10] and fragmented primary health care (PHC) [6]. Many recent common health reform trends focused on these challenges and included diverse efforts to improve hospital governance [7,11], strengthen PHC provision and implement coordinated and/or integrated care provision models [6,8,12]. Important elements of these reforms were changes to health care provider payment schemes.

The generic objective of health care provider payment schemes is to compensate providers for the services rendered. They consist of a complex and multidimensional set of arrangements. Payment schemes include payment methods (mechanisms for transferring funds from payers to health care providers) together with all supporting elements such as contracting rules, management information systems, as well as administrative and liability mechanisms [13]. A diversity of provider payment methods exists, and each of them has its own strengths and weaknesses in different contexts [13,14]. To counter the weaknesses of single methods, policymakers pursue an optimal payment method mix [15] that must be strategically aligned with the remaining payment system elements as well as other health system capacities and objectives [14]. Depending on its design, the payment scheme creates a set of specific incentives that can influence provider behavior towards the realization of pre-defined policy objectives (e.g. more efficient use of resources, enhancing the provision of specified services, better quality of care, or responsiveness to patient's needs) [14].

There are some previous studies that include elements of comparison of provider payment schemes and their reforms in different CEE countries [7,16–19]. However, these focused exclusively on specific sectors, e.g. hospitals [7,18], pharmaceuticals [17] or specific situations, e.g. payment adjustments during COVID-19 pandemics [19]. The **objectives of the present study** were: 1) to provide a structured, comparative overview of current payment schemes within the public health system in selected CEE countries for different health care providers; 2) to identify and compare major changes conducted in this field since 2010. The study focuses on arrangements between public payers and providers' institutions (legal entities) and excludes issues related to the employment and remuneration of individual medical workers by health care institutions. Following the general objectives of cross-country comparative studies, we aimed at mapping relevant, recent evidence for future health care provider payment reforms in CEE countries, to indicate common trends and potential areas for shared learning and future collaborative studies.

2. Material and methods

The methods used comprised four consecutive phases: 1) data collection form was developed based on the literature; 2) desk research was conducted to map existing provider payment schemes and recent payment reforms in 11 CEE countries (EU members); 3) national health policy experts were identified and asked to validate and update the findings of the desk research; 4) a comparative analysis was performed.

2.1. Data collection form

The literature provides examples of theoretical frameworks for both the classification of provider payment methods [13,16,20], and provider payment reforms [16]. For the former, inspired by the Langenbrunner et al. [13], we distinguished between payment methods based on: 1) inputs – available or used; 2) outputs – referring to the services provided; and 3) outcomes - rewarding or penalizing based on health outcomes. Within output-based category, we further distinguished between payment per capita, per case, and per unit of service (Table 1).

For mapping the provider payment method reforms, we developed a simple classification that distinguishes between three types of changes: 1) replacing the existing payment method with a new one ('REP'); 2) modifying the existing method (e.g. by changing the number or content of reporting/coding groups, changing tariff valuation rules, changing the scope of services covered by a given method) ('MOD'); 3) adding a new (additional) method to the existing one ('ADD'). We also distinguished between direct changes to the payment method and all related and/or complementary changes within the payment systems, including, for example, changes in the payer structure and contracting principles (e.g., contract timeframe, volume limits).

The data collection form was developed in accordance with the two pre-defined research questions. The first part focused on the current (as of May 2023) payment schemes for the four types of care providers: 1) PHC (general practitioners (GPs)/ family doctors practices including other medical professionals working within the practice); 2) specialized ambulatory care (focused on providers with medical specialties outside general practice); 3) hospitals (focused on curative care) and 4) LTC provided within health care sector (focused on care for people dependent on an extended period of time, including e.g. nursing and palliative care). For both hospitals and LTC providers, we have distinguished between outpatient services (including day and home care) and inpatient care (patient stay minimum 24 h). When possible, we aimed at indicating the dominant payment method for each provider type, i.e. one that covers the majority of providers or services or the value of the public payer budget. The second part aimed to map the major changes since 2010 (they were listed in a chronological order according to the four types of providers). We excluded COVID-19 related payment solutions/reforms that did not continue after the pandemic. Our study focused on payments for health services (we excluded capital investments). We also excluded payments for pharmaceuticals, medical products and dental services.

2.2. Desk research

A desk research of standardized data sources was conducted between March and May 2023. The objective was to complete the data collection forms for the 11 CEE countries (EU members). The sources included the following report series: Health System Reviews and Health Systems Summaries [21], Health System and Policy Monitor (HSPM) [22] and

Table 1
Payment methods classification overview.

Category	Method examples
Input-based	• Line-item budget e.g. fixed payments for salaries, global budget based on inputs
Output-based	• Per capita e.g. capitation in PHC • Per case e.g. diagnostic-related groups (DRGs), other case-based payments, pay for performance (P4P) elements when indicators include cases treated items; global budget based on cases treated • Per unit of service e.g. fee-for-service (FFS), per diem, per visit, P4P elements when indicators include services provided items, global budget based on units of services provided
Outcome-based	• P4P elements when indicators include health outcomes

Source: Based on the work of Langenbrunner et al. [13].

Country Health Profiles - State of Health in the EU, available through the European Observatory on Health System and Policies website [23]. These reports are based on standardized methodologies, have a publication format that allows cross-country comparisons, are regularly updated and available for all EU Member States. In addition, basic indicators characterizing health system funding and providers capacities in the analysed countries were retrieved from the Eurostat database [9].

2.3. National expert consultations

The partially completed data collection forms for each country were sent to the national experts selected on the basis of purposive sampling. We contacted the national representatives of the Health System and Policy Monitor Network [24], the vast majority of whom are also the authors of the reports screened during the desk research. These experts have in-depth knowledge of the organization and policy processes in their national health systems [24]. Each expert was invited to participate in the study or to indicate another national informant with relevant expertise (snowballing method). The national experts were asked to validate and update the findings of the desk research and to provide appropriate references if needed. The experts have been included as co-authors of this paper.

2.4. Comparative analysis

The validated and updated data collection forms were analysed by two researchers (CN and KDJ) in August 2023. Dedicated classifications (see Section 2.1.) were used for both the current payment methods and their reforms. The draft comparative results were shared with all national experts, with a request for further validation and clarification. Additional questions and ambiguities were clarified iteratively through further correspondence.

3. Results

During the desk research, basic data were collected for all 11 CEE countries (EU members). However, much more relevant information was available for some of the countries than for the others. Also, not all national experts responded to our invitation to participate in the study and/or provided adequate inputs. Consequently, nine countries were included in the final analysis of results: Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland and Romania.

3.1. General comparison of national health systems

Table 2 presents some general characteristics of the health systems of the nine countries in relation to the funding model and providers' capacities. In the majority of the included countries, an insurance-based health care funding model dominates with a single, centralized public payer. Latvia is the only country with a tax-based system, whereas Czechia is the only country with a multiple public payer's structure. In the case of the latter, although multiple payers exists, there is limited competition between them, and they all follow the same reimbursement regulation issued by the Ministry of Health [25].

Regardless of the funding model, in all nine countries, the share of total current health expenditure (CHE) in gross domestic product in 2021 was below the EU-27 average of 10.88 %. In the same year, the share of public expenditures in total CHE ranged from 64.95 % in Bulgaria to 86.42 % in Czechia, with the EU-27 average of 81.19 %. Public payers play a dominant role in purchasing health services in the

Table 2
Chosen health system characteristics of the analysed countries.

Feature	Bulgaria	Croatia	Czechia	Estonia	Hungary	Latvia	Lithuania	Poland	Romania
Dominant funding model	insurance based	insurance based	insurance based	insurance based	insurance based	tax based	insurance based	insurance based	insurance based
Main public payer structure	single payer, centralized (with 28 regional branches)	single payer, centralized	multiple payers, with limited competition	single payer, centralized	single payer, centralized	single payer, centralized	single payer, centralized	single payer, centralized (with 16 regional branches)	single payer, centralized
Total CHE as a share of GDP* (2021)	8.62 %	8.01 %	9.49 %	7.54 %	7.38 %	9.11 %	7.76 %	6.44 %	6.47 %
Share of public expenditures** in total CHE (2021)	64.95 %	85.50 %	86.42 %	76.12 %	72.45 %	69.47 %	68.78 %	72.46 %	78.33 %
Share of the main public payer/s expenditure*** in total CHE (2021)	49.14 %	76.07 %	70.97 %	63.41 %	57.93 %	69.47 %	56.62 %	57.33 %	60.11 %
Rate of generalist medical practitioners per 100,000 pop. (2021)	59.67	82.17	71.82	233.31	66.82	76.84	102.50	88.51	79.21
Rate of specialist medical practitioners per 100,000 pop. (2021)	396.87	288.94	337.43	256.36	262.09	258.96	344.97	255.61	271.63
Rate of available hospital beds per 100,000 pop. (2021)	792.28	567.54	665.51	439.44	678.56	516.43	605.43	627.18	720.56
Rate of available beds in nursing and other residential LTC facilities per 100,000 pop. (2021)	28.81	233.96	716.98	259.33	866.86	259.33	766.31	201.40	211.92

* CHE – current health expenditures, GDP – gross domestic product.
** government schemes and compulsory contributory health care financing schemes (SHA 2011 – HF1).
*** main financing scheme (SHA 2011 – government scheme (HF11) for Latvia and compulsory contributory health insurance (HF12) for remaining countries).
Source: based on: Country Health Profiles 2021 and Eurostat database (2024).

vast majority of countries. In 2021, Bulgaria was the only country where the share of the social health insurance payer expenditure in total CHE was slightly below the EU-27 average of 50.69 % (i.e. 49.14 % for Bulgaria). The values of indicators characterizing providers' capacities vary significantly between countries. For example, in 2021, the number of generalist medical practitioners per 100,000 inhabitants ranged from 59.67 in Bulgaria to 233.31 in Estonia. Majority of countries seems to have overcapacities in hospital care. In 2021, the number of available hospital beds per 100,000 inhabitants was above the EU-27 average of 524.76 in seven countries. At the same time, there was high diversity in the availability of LTC beds per 100,000 inhabitants, from only 28.81 in Bulgaria to 866.86 in Hungary (Table 2).

3.2. Mapping the current provider payment methods

Table 3 presents the results of mapping current payment methods for each provider type while Supplementary Table S1 shows these methods classification overview.

3.2.1. Primary health care

Primary healthcare providers are characterized by the most diverse payment method mix. In some countries, the methods used include those from all classification categories: 1) input based, 2) output based per capita, per case and per service, and 3) outcome based (Supplementary Table S1). Two common methods are capitation and fee-for-service (FFS). In most countries, these two methods are used together, and their proportions can vary. For example, Czech GPs are paid based on a combination of capitation and FFS with the: share of each method at 63 % and 37 %, respectively [26], while in Romania, the proportions are: 35 % and 65 %, respectively. In the majority of countries, these are supplemented by diverse P4P programs covering both output- and outcome-based indicators, with the prevalence of the former (see next paragraph). Some countries also use input-based methods. These include for example different forms of fixed payments for salaries in Hungary and Latvia, office maintenance expenses in Croatia, and payments for newcomers (for establishing a new practice) in Romania or distance care provision in Estonia.

In relation to P4P programs within the PHC, financial rewards can take a different form. For example, in Czechia, PHC physicians receive a higher capitation payment if they perform a complex examination of at least 30 % of the registered patients aged 40–80 years [25]. In Bulgaria, higher FFS rates are offered to PHC units that report a higher proportion of adult patients (above 60 %) covered by prophylactic examinations [27]. In Romania, an additional fixed payment is offered for achieving defined yearly target of the number of patients assessed for particular health risks. In Croatia, the bonus payment includes i.a. a fixed payment for salaries and office maintenance as well as increased capitation [28]. The indicators used within P4P in PHC can be calculated differently and apply different thresholds, however, patterns are similar across countries. In general, in many existing P4P programs, the measured indicators often relate to: 1) vaccination rates (e.g., the share of elderly population vaccinated against influenza in Hungary and Lithuania or children immunization rates in Latvia and Estonia); 2) cancer screening intensity (e.g., three pre-defined cancer types early diagnosis indicators in Lithuania or mammography rate in Hungary); and 3) chronic disease monitoring (e.g., the share of patients with hypertension, diabetes, and

Table 3
Payment methods* valid as of May 2023, per country and provider type.

Type of care & provider / Country	Primary health care	Outpatient specialized care (outside hospitals)	Hospitals		Long term care (within health sector)	
			Outpatient specialized care (inside hospitals)	Inpatient hospital care	Inpatient LTC	Outpatient/day/ home LTC
Bulgaria	Capitation + FFS, P4P	FFS	Case payment	Case payment	Case payments (for acute episodes), Per diem (for psychiatric care)	Not covered
Croatia	Capitation + FFS, P4P, Fixed payment,	FFS	FFS, Case payments	Global budget, DRGs, Case payment	Per diem	FFS
Czechia	Capitation + FFS, P4P, Fixed payments (for emergency care shifts)	FFS + case payments (day surgeries), P4P elements (dialysis providers)	FFS + Case payments (day surgeries), P4P elements (dialysis providers)	Global budget (based on DRGs), DRGs, Fixed payment (for palliative care)	Per diem	FFS
Estonia	Capitation, FFS, P4P, Fixed payments (e.g. for distance, second nurse)	FFS + P4P elements (video consultations)	FFS + P4P elements (video consultations)	DRGs, FFS, Per diem, Fixed payments, Bundled payments (for stroke patients)	Per diem, FFS	FFS
Hungary	Capitation, Case payment, P4P, Fixed payments (for salaries and group practices)	FFS + Fixed payment (for salaries)	FFS + Fixed payment (for salaries)	DRGs + Fixed payment (for salaries)	Per diem + Fixed payment (for salaries)	Per diem (hospice home care), Per visit (specialist home care)
Latvia	Capitation, FFS, Fixed payment (for salaries), P4P	FFS, Case payment, Fixed payment (for salaries)	FFS, Case payment	DRGs, Case payment, Per diem, Fixed payment (for emergency care), FFS	Fixed budget, Per diem	Case payment, FFS,
Lithuania	Capitation, FFS, P4P, Fixed payment (for special needs patients)	Case payment	Case payment, FFS (for expensive procedures and examinations)	DRGs, FFS	Per diem, Case payment (palliative care)	Per diem, FFS, Fixed payment (nursing at home), Case payment (palliative care)
Poland	Capitation + Per visit/ consultation, FFS (for diagnostic tests and within coordinated care), Fixed payment (for rural/low density population)	Per visit payment (groups adjusted for number and type of services provided) + FFS	Per visit payments (groups adjusted for number and type of services provided) + FFS, P4P elements (oncological network)	Global budget (based on DRGs) for hospital included in network + DRGs, P4P elements (for stroke patients), FFS, per diem	Per diem (differentiated based on health and care needs)	Per diem (differentiated based on health and care needs)
Romania	FFS + Capitation, P4P, Fixed payment (for newcomers)	FFS	FFS	DRGs + Case payment, Fixed payment (for salaries)	Per diem	FFS, Case payment

* If a dominant payment method exists (one that covers the majority of providers or services or the value of the public payer budget) it is listed first following by other, additionally used methods after '+' sign. If not dominant payment method can be defined, all methods applied for a given type of provider were listed.

asthma tested for predefined clinical indicators in Latvia or indicators related to correct medicine prescriptions in chronic illnesses in Estonia and Hungary). For the latter dimension, some countries also apply outcome-based indicators. For example, in patients with diabetes mellitus, the level of glycosylated hemoglobin is monitored (with the rate set at equal or below 7 % on two occasions during the reporting period in both Hungary and Lithuania, and below 7.5 % in 60 % of patients in Latvia). Also, in relation to the chronic disease management dimension, some countries apply indicators that can be classified as both output- and outcome-based, e.g. the share of avoidable hospital admissions for a

Table 4
Overview of main changes to payment methods*, per country and provider type, since 2010.

Type of care & provider / Country	Primary health care	Outpatient specialized care (outside hospitals)	Hospitals		Long term care (within health sector)	
			Outpatient specialized care (inside hospitals)	Inpatient hospital care	Inpatient LTC	Outpatient/day/ home LTC
Bulgaria	**'MOD'** (ongoing: new capitation tariffs, age adjusted FFS, FFS tariff modification) + **'ADD'** (2022: P4P elements for prophylaxis)	**'MOD'** (new tariffs valuation)	**'MOD'** (2016: new ambulatory procedures, new tariffs)	**'MOD'** (increased no of clinical pathways)	'NO CHANGES'	'NO CHANGES'
Croatia	**'ADD'** (2013: P4P)	'NO CHANGES'	**'MOD'** (2015: introducing diagnostic procedures)	**'MOD'** (2015: refined DRGs)	'NO CHANGES'	'NO CHANGES'
Czechia	**'MOD'** (ongoing: increasing capitation, expanding the scope of services financed via FFS) + **'ADD'** (2016: fixed bonus/payment for emergency care shifts)	**'MOD'** (ongoing: new FFS tariffs, expanding the scope of services financed via FFS) + **'ADD'** (2019–2020: P4P for dialyses providers, 2023: case payment for day surgery)	**'MOD'** (ongoing: changes in reimbursement formula, expanding the scope of services financed via FFS) + **'ADD'** (2019–2020: P4P for dialyses providers, 2023: case payment for day surgery)	**'MOD'** (2012: activity based global budgets, 2019: DRGs modifications) + **'ADD'** (2023: fixed payment based on number of insured for palliative care) + **'REP'** (2021: CZ-DRGs)	**'MOD'** (2016: ongoing tariffs differentiation, new reimbursement rules)	**'MOD'** (2018–2019: expanding scope of services financed via FFS)
Estonia	**'MOD'** (2012: new capitation groups, ongoing: tariff valuation changes) + **'ADD'** (2013: FFS for e-consultations; 2015: P4P, 2017: fixed payment for group practice)	**'ADD'** (2021: video consultations P4P)	**'ADD'** (2021: video consultations P4P)	**'ADD'** (2020: fixed payment for emergency care; 2021: bundled payment for stroke patients)	**'MOD'** (ongoing tariffs differentiation)	**'MOD'** (ongoing tariffs differentiation)
Hungary	**'ADD'** (2021: fixed payment to encourage group practices, 2021: fixed payment for salaries)	**'ADD'**(2021: fixed payment for salaries)	**'ADD'** (2021: fixed payment for salaries)	**'MOD'** (ongoing tariffs adjustments) + **'ADD'** (2021: fixed payment for salaries)	**'ADD'**(2021: fixed payment for salaries)	'NO CHANGES'
Latvia	**'ADD'** (2013: FFS and P4P)	**'MOD'** (ongoing tariffs adjustments)	**'MOD'** (ongoing tariffs adjustments)	**'REP'** (2011: DRGs) + **'MOD'** (DRGs modifications)	**'MOD'** (ongoing: changes in the scope of services financed via given method)	**'MOD'** (ongoing: changes in the scope of services financed via given method)
Lithuania	**'MOD'** (expanding the scope of services financed via FFS and P4P)	**'MOD'**(new tariffs, expanding the list of services financed via case payments; 2016: extended consultations)	**'MOD'**(new tariffs, expanding the list of services financed via given methods; 2016: extended consultations)	**'REP'** (2012: DRGs) + **'MOD'** (2015: country specific DRGs weights)	**'MOD'** (2018–2022: ongoing tariffs differentiation)	**'MOD'** (2019: new tariffs for palliative care)
Poland	**'MOD'** (adjusted capitation groups, expanding scope of services financed via FFS) + **'ADD'** (2019: fixed payment for rural areas)	**'REP'** (2011: per visit) + **'MOD'** (new tariff valuation rules, new rules for reimbursement calculation)	**'REP'** (2011: per visit) + **'MOD'**(new tariff valuation rules, new rules for reimbursement calculation) + **'ADD'**(2017–2022: global budget, 2015: P4P elements within oncological network, FFS for oncological coordinated care)	**'MOD'** (new tariff valuation rules, new rules for reimbursement calculation) + **'ADD'** (2017: global budget; 2015: P4P elements within oncological pathways, FFS and per diem for oncological coordinated care, 2022: P4P elements within stroke program)	**'MOD'**(2015: gradual tariffication of services, differentiation of per diem payment depending on health needs)	**'MOD'**(2015: gradual tariffication of services; differentiation of per diem depending on health needs)
Romania	**'MOD'** (expanding the scope of services financed via FFS) + **'ADD'** (2023: P4P)	**'MOD'** (ongoing changes to the tariff valuation rules)	**'MOD'** (extending the list of services financed via FFS, ongoing changes to the tariff valuation rules)	**'MOD'** (new tariff rules for DRGs in Romanian context 2020) + **'ADD'** (2017: additional, fixed payment for salaries increase)	'NO CHANGES'	**'MOD'** (2014: changes to tariffs calculation methods for home care) + **'ADD'**(2018: payment for outpatient palliative care)

* Major changes to payment methods, including four options: 'NO CHANGES' (no change in the payment methods since 2010 as well as no major modification to its content); REP' – replacing previous method to new one; 'MOD' – modifying the existing method (e.g. by changing number of DRGs/capitation groups, modifying costing groups by making them more detailed, changing tariff valuation rules, expanding the scope of services financed via given method); 'ADD' – adding new (additional method) to the existing one.

group of pre-defined chronic conditions in Croatia and Lithuania.

3.2.2. Outpatient specialized care

In all analysed countries, specialized outpatient care relies on output-based payment methods, mostly FFS and case payments (Table 3). In most countries, there are no major differences in payment methods for services provided outside or within hospital settings. FFS is used in all countries. In three countries, elements of P4P are used for: video consultations in Estonia, dialysis providers in Czechia, and meeting diagnostics time targets for oncological patients in Poland. In Hungary and Latvia FFS is supplemented by an additional fixed salary budget.

3.2.3. Hospital inpatient care

Diagnostic related groups (DRGs) are the most commonly used payment method for hospital inpatient care. Bulgaria is the only country without a dedicated DRGs scheme – case payments based on clinical pathways are used instead [29]. In most of the remaining eight countries, DRGs are supplemented by other output-based payments (e.g., per diem, FFS) and/or fixed payments (Table 3 and Supplementary Table S1). In the case of the latter, for example in both Romania and Hungary fixed payments for salaries are used. In Hungary, they constitute approximately 40 % of the total income of providers [30]. In Czechia, a fixed payment is used for palliative care provision in hospitals (calculated based on number of insured population) [31], while in Latvia it covers emergency care (calculated based on the number of emergency care doctors). In Poland, P4P elements are used within the coordinated care model for patients with acute myocardial infarction. Hospitals that decide to participate receive financial bonuses which take the form of an increased refund from the payer (depending on the share of patients included in the program) or an additional bonus payment for each patient who is able to return to work within four months of discharge from the hospital [32,33]. Estonia also introduced a coordinated care program for stroke patients, with bundled payments covering the entire course of treatment and related complications for a period of 365 days. The covered services include acute treatment, rehabilitation, follow-up visits, and nursing care [34].

3.2.4. Long-term care

In the case of long-term care services provided within the health care system the vast majority of countries rely on simple output-based methods, mostly per diem and FFS (Table 3). Bulgaria is the only country, where outpatient LTC is not exclusively covered by public payer. All nine countries use per diem for LTC inpatient care (either as a solo method or in combination with: case payment in Bulgaria and Lithuania, FFS in Estonia and fixed payments in Hungary and Latvia). The same type of methods is common for LTC outpatient, day and home care. In general, the specific LTC payment methods are often chosen to the specific scope of services and disease categories. For example, in Latvia, home palliative care for oncological patients is covered by case payments, while inpatient care for patients with mental disorders is financed via fixed budgets.

3.3. Changes in provider payment schemes since 2010

Table 4 presents an overview of the main changes in payment methods conducted since 2010 per country and provider type (Supplementary Table S2 presents extended version of this table, with description of the main motivations behind each change). Table 5 shows a clustered overview of the motivations behind the changes in payment methods, while Table 6 lists the major changes to other payment system's elements.

3.3.1. Primary health care

In the case of primary care providers, the majority of countries modified existing payment methods and/or added new (additional) ones (Table 4). In the former case, changes often focused on adjusting costing

Table 5
Overview of the main motivations behind payment methods changes*, per provider type, since 2010.

Type of care & provider		Motivations → examples of payment method changes
PRIMARY HEALTH CARE		• Better reflection of actual costs → MOD: age adjusted capitation and FFS; capitation and FFS tariffs increase • Expanding the scope of PHC services → MOD: capitation/FFS tariffs increase; expanding scope of services financed via FFS; ADD: P4P • Enhancing disease prevention activities → MOD: expanding scope of services financed via FFS; expanding scope of services included in P4P; ADD: P4P • Encouraging setting up group/ multidisciplinary practices → ADD: fixed payment • Encouraging provision of services for rural populations → ADD: fixed payment • Encouraging PHC doctors to work in emergency care → ADD: fixed payment • Better care coordination (for chronic conditions) → MOD: expanding scope of services financed via FFS; ADD: P4P • Covering regulatory wages increase → ADD: fixed payment
OUTPATIENT SPECIALIZED CARE (outside hospitals)		• Better reflection of actual costs → MOD: FFS and case payment tariffs' modification; REP: introduction of adjusted per visit payments • Encouraging more services being provided in outpatient settings → MOD: expanding scope of services financed via FFS and/or case payments and updating their tariffs, ADD: P4P, case payment • Improving access and quality of care → ADD: P4P • Covering regulatory wages increase → ADD: fixed payment
HOSPITALS	**Outpatient specialized care (inside hospitals)**	• Better reflection of actual costs → MOD: FFS and Case payment tariffs modifications; REP: introduction of adjusted per visit payments • Encouraging more services being provided in outpatient settings → MOD: expanding scope of services financed via FFS and/or case payments and updating their tariffs; ADD: P4P, case payment, global budget • Improving access and quality of care → ADD: P4P • Covering regulatory wages increase → ADD: fixed payment • Better care coordination: ADD → P4P, FFS, bundled payment
	Inpatient hospital care	• Better reflection of actual costs → MOD: DRGs' and tariffs' modification, case payments groups and tariffs' modification • More effective resources use → REP: introducing DRGs; MOD: DRGs' modification • Better flexibility of the types of services provided → MOD:

(continued on next page)

Table 5 (*continued*)

Type of care & provider		Motivations → examples of payment method changes
		activity-based budgets; ADD: global budget • Better care coordination: ADD → P4P, FFS, bundled payment • Encouraging provision of specific services → ADD: fixed payment • Covering regulatory wages increase → ADD: fixed payment; MOD: adjusting tariffs valuation
LONG TERM CARE (within health sector)	**Inpatient LTC**	• Better reflection of actual costs → MOD: FFS, per diem, case payment tariffs' modification • Covering regulatory wages increase → ADD: fixed payment
	Outpatient/day/ home LTC	• Better reflection of actual costs → MOD: FFS, per diem, case payments tariffs modifications • Encouraging more services being provided in outpatient/day/home settings → MOD: expanding the scope of services financed via activity-based payments (FFS, per diem, case payments); ADD: case payments

* 'REP' – replacing previous method with the new one; 'MOD' – modifying the existing method; 'ADD' – adding new (additional method) to the existing one.

items (e.g. capitation and FFS) and changing tariffs valuation rules to better reflect actual costs. Increasing tariffs valuation as well as expanding the scope of services financed via FFS usually aimed at encouraging more PHC services provision. Six countries added P4P schemes while in two countries, these were already in place prior to 2010. P4P programs often focused on enhancing disease prevention activities and/or improving care coordination (for chronic conditions). These two objectives were also pursued by expanding the list of services financed via FFS (e.g. in Poland). Several countries introduced an additional fixed payment, yet often with different objectives (e.g. Poland to encourage the provision of services for rural/low population density areas; Hungary and Estonia to encourage the establishment of group GPs practices; Czechia to encourage PHC doctors to take emergency department shifts) (Table 5 and Supplementary Table S2).

3.3.2. *Outpatient specialized care*

The main motivations behind the changes in payment methods for outpatient specialized care (provided both in- and outside hospitals) were focused on better reflection of actual costs and encouraging more services being provided in outpatient settings (Table 5 and Supplementary Table S2). The majority of countries modified the existing payment schemes by adjusting tariffs valuation rules and/or expanding the list of procedures provided in outpatient or daycare settings. Some countries added new payment methods. For example, in 2021, Hungary introduced an additional fixed payment for salary increases, whereas Estonia introduced additional performance payments (within P4P program) for video consultations. In both countries, additional payments covered all publicly funded outpatient specialist visits, both outside and inside hospitals. Improving access and quality of care was pursued by implementing P4P elements in Czechia (for dialyses providers) and Poland (within the oncological network). In the case of outpatient specialized care provided in hospitals, the objective of better care coordination was pursued by introducing bundled payments for stroke patients in Estonia, P4P elements and new FFS for oncological and stroke patients in Poland (Tables 4 and 5). Changes in payment methods were complemented by changes to other payment scheme principles (Table 6). For example, Estonia, Hungary, and Poland changed the rules for calculating the volume limits that covered outpatient services provided both inside and outside hospitals. In Poland, volume caps were initially removed in 2019 for selected ambulatory procedures, while from 2021, volume caps for both specialist consultations and diagnostic procedures were completely removed with the objective of encouraging service provision in the outpatient setting and mitigating the problem of long waiting times. In Hungary, the methods for calculating output volume limits for specialist care providers have been changed several times (in 2011, 2014, and 2021). From 2023 onwards, the following parameters are used to plan the annual performance limit: the historical performance in two years prior to the COVID-19 outbreak, the health needs of the local population, and the structure of medical specialties in the hospital.

3.3.3. *Hospital inpatient care*

Payment schemes for hospital inpatient care appeared to have undergone the most substantial reforms since 2010. Three countries replaced the dominant method: Latvia introduced DRGs (based on the Nordic system) in 2011, Lithuania a year later (based on the Australian system), while Czechia implemented its new version 'CZ-DRG' (under the DRG restart program) in 2021 (Table 4). In all three countries, the main objective was to improve the efficiency of hospitals (more effective use of resources) and transparency of the payment scheme. The majority of countries modified the existing payment method by expanding and/or changing the reporting group categories (e.g., by making them more detailed) with the objective of assuring better reflection of the actual costs of services. Also, most countries made efforts to improve tariff valuation methodology (e.g., by changing the DRGs costing base and/or adjusting tariffs to the national/local context). For example, in Romania, these were preceded by dedicated research projects [35], whereas in Poland, a dedicated Tariffication Agency was launched in 2015 [36]. The issue of increasing salaries for medical staff had a strong impact on the changes in payment schemes in some countries. In Poland, the new

Table 6
Overview of additional main changes within the payment system, per provider type, since 2010.

Primary health care	Outpatient specialized care (outside hospitals)	Hospitals		Long term care (within health sector)	
		Outpatient specialized care (inside hospitals)	Inpatient hospital care	Inpatient LTC	Outpatient/day/ home LTC
• new contract rules to support multidisciplinary care/ group practices (Estonia, Hungary) or coordinated care (Poland) • new rules for P4P (Lithuania)	• ongoing changes to volume limits settings (Estonia, Hungary, Poland) • capped total reimbursement (since 2016 in Czechia)	• ongoing changes to volume limits settings (Estonia, Hungary, Poland) • expanding contracts timeframe (Lithuania, Poland) • new administration system, shifting from fragmented to comprehensive contracts (Lithuania)	• ongoing changes to volume limits settings (Estonia, Hungary, Poland); caps on admissions (Bulgaria) or expenditure (Croatia) • expanding contracts timeframe (Estonia, Lithuania, Poland) • new administration system, shifting from fragmented to comprehensive contracts (Lithuania)	• no major changes	• ongoing changes to volume limits to home care (Romania)

central regulation on annual increases in medical staff wages was passed in 2017 [37], but only since 2022 these wage increases have been included in the new tariff valuation methodology. In Romania and Hungary, additional fixed payments for salary increases were introduced (in 2017 and 2021, respectively). The objectives of greater flexibility in the types of services provided was pursued by modifying (in Czechia) or introducing (in Poland) hospital global budgets, while better care coordination (especially with out-patient care) was pursued by bundled payments in Estonia and P4P elements and new FFS for oncological and stroke patients in Poland (Table 5).

Changes in payment methods for inpatient hospital care were often accompanied by changes to other payment principles (Table 6). In both Poland and Lithuania, the timeframe of hospital contracts with public payers was extended (from one year to four and three years respectively). In Estonia, the contract period is five years (and the previously existing timeframe difference between private and public hospitals was eliminated). In Poland, the change was part of the broader hospital network reform implemented in 2017, which aimed to improve the organization of hospital services [38]. In Lithuania, the shift from annual to three-year contracts was accompanied by updating the rules for contracting procedures. In most countries, the issue of hospital care volume limits was an important element of the reforms, often focused on limiting hospital expenditures and/or more effective resources' use. In Bulgaria, for example, there were formal ceilings on hospital admissions per hospital and for each clinical care pathway between 2015 and 2018, while in 2018, a ban was introduced for public payer contracting with new hospitals and for new hospital activities [39]. In Croatia, a ceiling for hospital expenditure has existed since 2015 (hospitals started to be paid upfront and report subsequent care episodes) [28]. In Poland, one of the indirect objectives of the 2017 hospital network reform was to eliminate the problem of hospitals providing services above their contracted limits. Under the new payment model (global budget), a hospital can only receive limited reimbursement for services provided above the budget value on the condition that other hospitals in the region have not utilized their budgets [38]. Similarly in Hungary, a degressive zones were introduced in 2010 with the aim of more efficient resources' allocation and improved access to care (services provided above the limits were reimbursed, yet covering only part of their costs).

3.3.4. *Long-term care*

Changes in payment schemes for long-term care services (provided in the health sector) were the least common. Countries that introduced changes often focused on modifying or recalibrating tariffs aimed at better reflection of actual costs and/or expanding the scope of services financed via given method, often to incentivize the provision of LTC services in out-patient, day or home settings.

4. Discussion

Our study shows numerous similarities between the nine CEE countries, both in terms of current payment methods per provider type and the main changes implemented in this field since 2010. Capitation is used for paying PHC providers in all nine countries, yet constitutes the dominant method in only four of them. For the remaining providers, output-based payment methods, calculated per unit of service (e.g. FFS, per diem) and per case treated (e.g. case payment) prevail across all countries (Table 3 and Supplementary Table S1). Payments based on available inputs usually take the form of dedicated fixed payments (e.g., for salaries), while outcome-based methods can be partially embedded into existing pay-for-performance programs in PHC (when reported indicators refer to health status).

All nine countries have implemented changes within healthcare provider payment schemes since 2010. Reforms seemed to occur more frequently in PHC and hospital inpatient care than in the remaining types of providers. The most frequently conducted changes to payment methods focused on modifying existing methods ('MOD'), followed by adding a new (additional) method to the existing ones ('ADD') (Table 4). The main motivations behind conducted changes were often similar, including e.g. better reflection of actual costs (common objective across all provider types); expanding the scope of PHC services (often focusing on disease prevention, care coordination, and multidisciplinary care); shifting emphasis from in- to outpatient care provision (for both hospitals and LTC units), improved efficiency of hospital care (Table 5). In some countries, changes to payment methods were accompanied by changes to other elements of the payment scheme. These often included: introducing, changing, or removing volume limits for specific types of services, as well as changing contracting principles (Table 6).

Our findings are consistent with previous literature showing that output-based payment methods (per case and per unit of service) are prevalent across all types of healthcare providers worldwide [14] and specifically in the CEE region [14,15]. This was related to a common trend to strategically move away from paying for resources (input-oriented methods) to paying for outputs, which could better reflect the actual costs of services [14]. Although output-based methods prevail, some of the analysed countries have quite recently reintroduced input-based payment in the form of fixed budget for salaries. In most cases it was related to the growing pressure of health workforce deficit and the need to secure continuous health services provision. Our results show that outcome-based payment models are rarely used in practice (mainly as single indicators in P4P programs in PHC). This is also in line with the findings of previous studies, which claim that, although outcome-based payment models have gained traction in recent years, they are used with limited scope [40,41], often narrowly focusing on specific diseases or conditions [40,42,43]. This is usually preferred when clear and unambiguous indicators are available to avoid penalizing providers based on (outcome) indicators beyond their control. The latter has been shown to be one of the most common reasons why healthcare providers resist such payment methods, although a number of other barriers, such as the complexity of measurements, data availability and infrastructure, and lack of standardization, pose additional challenges [42–44].

Owing to different payment methods providing different set of incentives for providers, policymakers strive to balance diverse, often conflicting incentives within the provider payment schemes, to achieve some pre-defined health system goals. Our study found that, CEE countries follow international trends by using mixed health care provider payment methods. They often combine input-based fixed payments with a variety of output-based methods and usually single outcome (health) indicators within P4P programs. The existing literature indicates that blended payment methods are necessary to optimally balance the multiple objectives of "pure" provider payment methods such as cost and quality [15,45–48]. Evidently, not all provider payment methods are combinable. For instance, when output-based payment (e.g. capitation, per case) is combined with a line-item budget, there may be conflicting incentives. The provider might want to use staff more efficiently under capitation (or case-based), but also want to scale up the number of higher-paid staff to get a higher supplemental pay (i.e. salary allowance) in their budget [14]. Studies provide evidence on better ways for blending provider payment methods [14,16,46,49]. Consistent incentives are crucial both within individual payment scheme and in the relationships between all payment schemes in use [14,46]. Typical examples in the literature include capitation payments for PHC plus FFS for priority interventions. For episodic care, for example, FFS is used in combination with P4P, and DRGs are used in combination with global budget [50]. Finally, bundled payments are used to keep track of the interface and continuity of care (i.e., the continuum between primary, secondary, and/or tertiary care), especially for continuous and coordinated care for chronic conditions [46,50]. While using blended payment methods for health care provision is a common practice, it also contributes to significant administrative and evaluation challenges (e.g. assessing the impact of a given payment method while controlling for the incentives driven by other methods) [49].

Our results indicate that P4P has been adopted in practically every country, particularly in PHC. While these programs focus on similar areas (e.g. supporting preventative interventions, cancer screening, and chronic illness surveillance) and most often apply output based indicators, the choice of specific objectives, metrics (and/or their thresholds) as well as the form of financial incentive varies between countries. This is in line with previous studies indicating that P4P programs in PHC often focus on process-of-care dimension, yet can be very heterogeneous in terms of specific priorities, indicator choices, and financial reward design [51]. Although in the case of our group of countries the evaluations of P4P programs are scarce, the available international evidence points towards their limited effectiveness in achieving the defined objectives, especially in the long term [43,51–54]. The design of P4P programs and administrative capacity in the health care system play a crucial role in the success of these reforms [53,54]. The choice of monitored indicators should allow for objective and comprehensive performance measurement (that would for example not discriminate against specific providers) while the financial incentive should provide adequate motivation (too low would not motivate desired behaviour, while too high might lead to wasteful spending). Finally, the administrative burden of the program must also be taken into consideration [53]. In consequence, decision-makers should regularly evaluate P4P programs, monitor providers' behaviours and introduce adequate revisions, optimally agreed in cooperation with providers.

For a given payment method to provide the expected incentives, service tariffication/pricing must be correct (reflecting actual costs) [20]. Our study indicated that modification of tariffs/price-setting principles to better reflect actual cost was common across all provider types as well as all types of payment methods. These processes require i. a. access to a reliable data infrastructure, adequate institutional capacities, and rigorous and transparent methodologies [20]. CEE countries follow international trends in this field [55] by launching dedicated research projects, and pilot studies supervised by dedicated institutions. At the same time, although the trends are similar, countries can choose diverse approaches and be at different levels of advancement. For example, in Poland, the dedicated cost accounting standards for hospitals providing services under contract with public payer were adopted by the government in 2021 [56] while in Estonia, the first initiatives on activity-based costing have been implemented by hospital associations almost two decades ago. This is in line with existing literature indicating that the regulatory frameworks for health services price-setting can vary significantly between countries, as well as within the same country for different types of providers or payers [20]. Available international evidence also indicates that while initiating reforms aimed at improving the price setting process, the policymakers should carefully balance the trade-off between the cost-data accuracy and the available infrastructure/system feasibility constraints [57].

Payment schemes are used to influence provider behavior towards the realization of predefined health policy objectives [14]. Our study showed that, although policymakers across the nine CEE countries might have introduced different changes to the payment methods, the general objectives of these changes were often similar. Efforts have focused i.a. on strengthening PHC provision by supporting disease prevention activities (via dedicated P4P programs and/or expanding the scope of FFS), shifting emphasis from inpatient to outpatient care (by expanding the scope of services financed via FFS, case payments and modifying their tariffication process, modifying or introducing global budgets, adding P4P) and implementing coordinated care models (via adding P4P, FFS or bundled payments). These findings are in line with previous studies on general trends of health reforms in CEE countries [6,7,12]. Also, although our study focused mostly on changes in payment methods, we have also mapped complementary, additional changes in payment system. These focused on volume limits and contracting principles (e.g. extending the contact time from for hospital providers). Volume limit changes could have provided an additional set of incentives to steer provider behavior. For example, in Poland removing volume limits for day care procedures in connection with increasing tariff valuation for these procedures led to significant shift in the procedures settings (e.g. the share of cataract surgeries performed in day care settings in total number of these procedures increased from 24.5 % in 2011 to 93.6 % in 2021 [9]). The policy objective of the reform – shortening waiting time and limiting inpatient care for defined procedures was achieved, yet in the long run the payer was unable to secure regular reimbursements (the payments for unlimited services were delayed) [58]. This strongly impacted providers' financial security and limited their willingness to offer outpatient procedures. The Polish example emphasises the importance of properly planning payment reforms (i.e. securing payer's budget), monitoring and conducting adequate adjustments.

Our study has several limitations. First is the potential influence of arbitrary and/or subjective factors while updating the data collection forms by the national experts. This risk was mitigated by referring to relevant literature whenever available, but it could not be entirely eliminated. Second, our study was limited to mapping changes in provider payment schemes since 2010. Consequently, we excluded similar payment reforms that might have taken place in some countries prior to 2010 (e.g., introduction of P4P in primary care in Hungary and DRGs in hospital care in Poland). We have only covered the public health system and payment schemes between public payers and providers' institutions (legal entities) and thus, excluding issues related e.g. to payments within voluntary health insurance systems as well as direct salary payments for medical staff (relations between health care institutions and their employees). This limitation indicates that we have only analysed part of the picture in terms of the interplay between economic incentives provided by different payment methods (i.a. those used by public payers vs. those used by health care institutions to pay their medical staff vs those used in private sector). We have also excluded issues related to payments for pharmaceuticals, medical products, and dental services, which could have shown an even more complex picture of the existing payment methods mix. Finally, although during the data validations process, we aimed at identifying literature references related to specific reforms the evaluation studies were scarce. As a consequence, we have provided mostly narrative descriptions of the changes, without details of their impact assessment.

Regardless of these limitations, our study constitutes a unique, structured comparison of provider payment schemes in public health system across nine CEE countries and provides implications for both policy and research. Health policymakers in CEE countries can learn by comparing international experience. However, the prerequisite is the availability of specific reform evaluations, including reforms impact assessment studies as well as analysis of factors that influenced the success or failure of a given reform. This drives strong implications for future research. Although evaluations of payment reform effectiveness (especially blended payment schemes) are extremely difficult to conduct [45,46,49], they constitute the basis of evidence-informed health policy processes. A description of the evaluation process can be included as part of the reform plan. Regardless of whether it is designed prior to or after reform implementation, the evaluation must be based on a rigorous methodological approach, including the assurance of appropriate data availability and an adequate timeframe for the impact assessment. Research-based knowledge on barriers and facilitators of specific payment reforms can also help in planning adequate mitigating or supporting actions [44,59]. While our study covered only part of the existing health care providers payment schemes, future studies could focus on the interplay between economic motivations of specific payment methods for providers at two levels (organizations and individual health workers) as well as those between public and private payers. Future collaborative, cross-country studies can concentrate on the identified similar reform trends e.g. economic incentives to enhance disease prevention in PHC; reforms aimed at shifting from in- to outpatient care provision or best practices in developing activity-based costing standards for the tariffication purposes.

5. Conclusions

The nine Central and Eastern European countries, Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania, show numerous similarities in terms of the current healthcare provider payment methods mix as well as the general objectives of the changes conducted in this field since 2010. Output-based payment methods prevail across all countries and types of providers. Primary health care providers are characterized by the most diverse payment method mix. PHC and hospital inpatient care have experienced the most frequent changes in their payment schemes within the last 13 years. Although the changes varied across countries, the general objectives of conducted reforms were often similar. They focused on: improving tariffication processes for better reflection of actual costs; expanding the scope of PHC services (with focus on disease prevention, care coordination, and multidisciplinary approach); shifting emphasis from in-patient to outpatient care (for both hospitals and LTC institutions), improved efficiency of hospital care. There is a huge potential for shared learning between CEE countries in terms of provider payment scheme reforms, yet the prerequisite is the availability of robust evaluation studies.

CRediT authorship contribution statement

Costase Ndayishimiye: Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Marzena Tambor:** Writing – review & editing, Supervision, Methodology, Data curation, Conceptualization. **Daiga Behmane:** Writing – review & editing, Validation, Data curation. **Antoniya Dimova:** Writing – review & editing, Validation, Data curation. **Alina Dūdele:** Writing – review & editing, Validation, Data curation. **Aleksandar Džakula:** Writing – review & editing, Validation, Data curation. **Barbora Erasti:** Writing – review & editing, Validation, Data curation. **Péter Gaál:** Writing – review & editing, Validation, Data curation. **Triin Habicht:** Writing – review & editing, Validation, Data curation. **Pavel Hroboň:** Writing – review & editing, Validation, Data curation. **Liubove Murauskienė:** Writing – review & editing, Validation, Data curation. **Tamás Palicz:** Writing – review & editing, Validation, Data curation. **Silvia Gabriela Scîntee:** Writing – review & editing, Validation, Data curation. **Lenka Šlegerová:** Writing – review & editing, Validation, Data curation. **Cristian Vladescu:** Writing – review & editing, Validation, Data curation. **Katarzyna Dubas-Jakóbczyk:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare no conflict of interest.

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Supplementary materials

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Factors Influencing Health Care Providers Payment Reforms in Central and Eastern European Countries

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Abstract

Central and Eastern European (CEE) countries have recently implemented reforms to health care provider payment systems, which include changing payment methods and related systems such as contracting, management information systems, and accountability mechanisms. This study examines factors influencing provider payment reforms implemented since 2010 in Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania. A four-stage mixed methods approach was used: developing a theoretical framework and data collection form using existing literature, mapping payment reforms, consulting with national health policy experts, and conducting a comparative analysis. Qualitative analysis included inductive thematic analysis and deductive approaches based on an existing health policy model, distinguishing context, content, process, and actors. We analyzed 27 payment reforms that focus mainly on hospitals and primary health care. We identified 14 major factor themes influencing those reforms. These factors primarily related to the policy process (pilot study, coordination of implementation systems, availability of funds, IT systems, training for providers, reform management) and content (availability of performance indicators, use of clinical guidelines, favorability of the payment system for providers, tariff valuation). Two factors concerned the reform context (political willingness or support, regulatory framework, and bureaucracy) and two were in the actors' dimension (engagement of stakeholders, capacity of stakeholders). This study highlights that the content and manner of implementation (process) of a reform are crucial. Stakeholder involvement and their capacities could influence every dimension of the reform cycle. The nine countries analyzed share similarities in barriers and facilitators, suggesting the potential for cross-country learning.

Keywords

healthcare providers, payment systems, health care reform, hospitals, primary health care, Eastern Europe

*** What do we already know about this topic?**
Health care provider payment reforms constitute one of the most important tools through which policymakers can impact health system performance.

*** How does your research contribute to the field?**
This study identifies and maps factors (barriers and facilitators) influencing recent health care provider payment reforms across nine Central and Eastern Europe countries by applying health policy triangle framework.

*** What are your research's implications toward theory, practice, or policy?**
The study's findings can help policymakers in better planning payment reforms and assist researchers in conducting evaluation and/or comparative studies in this area.

Introduction

Healthcare reforms are commonplace and are driven by changing health needs and the goal of enhancing accessibility, affordability, and patient-centeredness.[1-3] They can be defined as efforts or activities aimed at improving the performance of the healthcare system by making changes in the way healthcare is organized and financed and how legal mechanisms regulate care.[4,5] One of the most critical focuses of current healthcare reform efforts concerns changing payment systems for healthcare providers.[3,6] In a broader sense, a provider's payment system includes the payment method (mechanism for transferring funds to providers) as well as ancillary elements such as contracting, management information systems, and accountability mechanisms, which form an integral complement to the payment method.[7,8] They can help to steer providers' behaviors toward the realization of predefined health policy objectives.[6,7]

Central and Eastern European (CEE) countries have been actively implementing reforms in their health care provider payment systems.[8-13] Recent research has identified both similarities in the current payment methods across various types of health care providers and similar trends in reforms conducted in this field in recent years.[8] CEE countries are following international trends in payment reforms: they are increasingly using blended payment methods with a prevailing scope of activity-based payments, while add-on payments are often used for priority interventions. Primary health care (PHC) and hospital inpatient care have experienced the most frequent changes in their payment schemes in recent years.[8] The reforms have often aimed to expand PHC services—particularly in disease prevention, care coordination, and multidisciplinary care[8,13]—and improve hospital care efficiency.[9-12]

There is little original research on the factors that influence the successful implementation of such reforms. Two recent literature reviews focused on identifying factors that may influence the success of provider payment reforms in general.[14,15] The results showed that these factors span multiple dimensions. Both reviews included studies from around the world, but only a limited number of research results came from Europe, with only a few examples from CEE. The aim of the present study was to identify and map, using a pre-existing framework, factors influencing provider payment reforms conduced since 2010 in nine CEE countries: Bulgaria, Croatia, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Romania.

Methods

A mixed-methods approach was employed. Initially, a data collection form was developed, and a desk research phase utilizing standardized data sources to identify and describe recent payment reforms across nine CEE countries. In the third phase, consultations with national health policy experts from these nine countries were conducted to validate and enhance the compiled data. The final phase involved a qualitative analysis of the gathered data using a thematic analysis approach. The specific details of each step are elaborated below.

Data Collection Form

The data collection form was developed based on the Health Reform Monitor guide,[16] which provides a structured way to describe and compare health reform initiatives. For each country, the data form included the following sections: the payment reform timeline, official objectives, categories of care providers, the reform content (including changes in payment schemes), attained or anticipated results, and the factors—barriers and facilitators—that impacted the reform.

Desk Research of Standardized Sources

The objective of the desk study, which spanned from March to May 2023, was to enter available information into data

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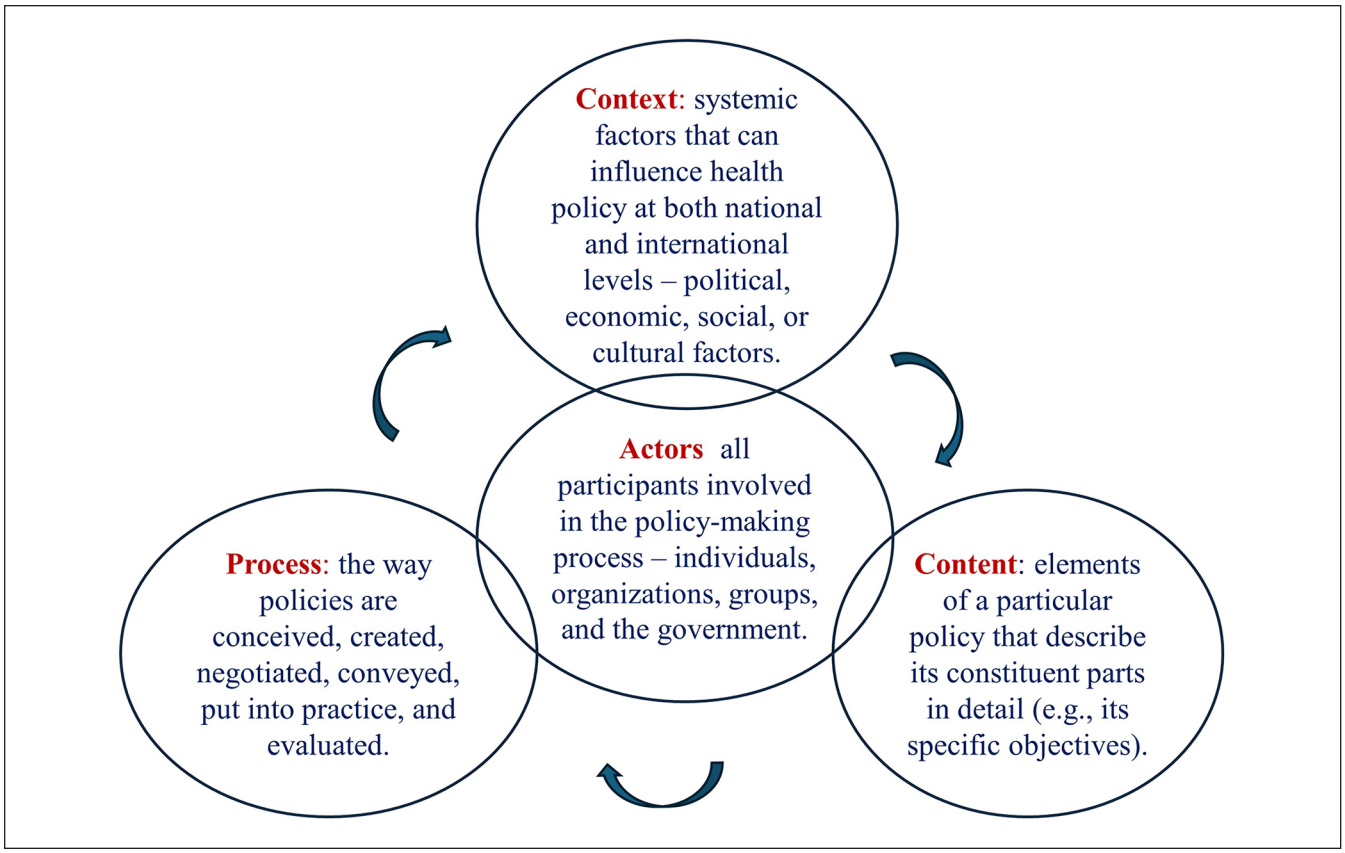

Figure 1. Components of the health policy triangle (own drawing based on the literature[22-25]).

collection forms. We focused on selected healthcare provider payment reforms in the public health system implemented from 2010 onward. The criteria for choosing the reforms were as follows: (1) the most relevant reforms with significant impact; (2) reforms for which evaluations are available. A minimum of two and a maximum of four reforms per country were considered, depending on data availability. COVID-19-related payment reforms that were halted after the pandemic were excluded.

Key sources of information included the following report series: Health System Reviews and Health Systems Summaries,[17] Health System and Policy Monitor (HSPM),[18] and Country Health Profiles – State of Health in the EU, available on the website of the European Observatory on Health Systems and Policies.[19] These reports, which apply to all EU Member States, follow a defined methodology, standardized structures for cross-country comparisons, and undergo regular updates.

National Expert Consultations

Experts from nine countries were purposefully selected and sent pre-filled data collection forms via email. These experts, who had largely authored the included country reports and were members of the Health Systems and Policy Monitoring Network, possessed in-depth knowledge of their countries' health systems.[20] In cases of non-participation, they were asked to recommend another qualified informant (snowball method). The instructions focused on validating and/or updating details of up to four recent and key provider payment reforms, with special emphasis on factors that contributed to the reform's implementation and success. The experts were specifically asked to provide relevant references where available. Three rounds of contact occurred. If necessary, additional questions and ambiguities were addressed iteratively through further correspondence. The national experts are listed as co-authors of this work.

Thematic Analysis

Two researchers (CN and KDJ) analyzed the data using inductive thematic analysis with a manual coding strategy[21] and identified major themes related to factors influencing payment reforms. For each theme, specific examples of reform cases were matched. The identified themes were then analyzed deductively using a pre-existing analytical framework known as the health policy analysis model or "health policy triangle." This framework includes "context," "content" and "process" as the three sides of the triangle, with "actors" at the center[22-25] (Figure 1). A recent review study

has demonstrated that this framework is widely used in the literature and is employed to rigorously analyze health-related policy decisions from multiple perspectives at all stages[25]

The outcomes derived from the deductive analysis were also reviewed and finalized by reaching consensus among all co-authors.

Results

Overview of the Analysed Payment Reforms

A total of 27 payment reforms were analyzed. The reforms targeted different healthcare providers: hospitals (ie, inpatient and outpatient care provided by hospitals, n = 13), primary care (n = 9), specialized care outside of hospitals (n = 4), and multiple providers (n = 1). In hospitals, the reforms often aimed to incentivize collaboration and coordination between healthcare providers, reduce unnecessary hospitalizations, and improve the quality and efficiency of healthcare services. In primary care, the focus was primarily on specific preventive services and, in some cases, on encouraging the establishment of multidisciplinary practices. The reform content included changes in payment methods of varying scope (eg, introducing a new method or modifying an existing one), often accompanied by complementary changes within the other elements of the purchasing system (eg, contracting rules). Supplemental Table S1 provides an overview of the analyzed payment reforms.

Inductive Thematic Analysis of Factors Influencing Payment Reforms

By applying inductive thematic analysis, we identified 14 major thematic factors. The number of payment reforms affected by each factor, where it was identified as either a barrier or a facilitator, ranged from 2 to 7, coming from a minimum of two and a maximum of six CEE countries (see Table 1). These factors share common characteristics and are often interlinked or overlapping.

Six reform examples from Czechia, Estonia, Croatia, and Lithuania highlight the importance of **clear performance/measurement indicators within the payment system**. For instance, in Lithuania and Croatia, the introduction of DRGs for inpatient hospital care was facilitated by well-developed monitoring and control mechanisms for coding. Lithuania further improved its PHC reform by revising the methodology P4P indicators. This revision helped establish a median value for each performance measure and included calculating the total number of national units for each indicator, with adjustments for the target age group (patients/enrollees).[26] On the other hand, Czechia introduced internationally refined DRGs (IR DRGs) as the base payment mechanism in acute inpatient hospitals in 2012 but faced challenges due to the lack of clear indicators and a standardized definition of DRG groups and codes in both clinical and economic terms. This led to inconsistencies in performance reporting, treatment disparities, and unpredictable costs (ie, actual costs did not reflect the diagnosis classification and could not be predicted with sufficient accuracy).[27]

The **availability and use of clinical guidelines for reporting parameters** were mentioned in two reform examples from Latvia and Estonia. In Latvia, the lack of such guidelines impeded the implementation of a pay-for-quality program in PHC in 2011. In Estonia, adherence to standardized guidelines set by the International Consortium for Health Outcomes Measurement (ICHOM) was essential for implementing bundled payments for stroke patients in 2020/21. These guidelines were designed to assess and report the quality and outcomes of stroke interventions. They include measurements from administrative and clinical data, as well as patient-reported information.[28]

Seven reform examples from Czechia, Estonia, Latvia, Lithuania, and Poland reported on the **motivation and favorability of the payment system for healthcare providers**. In most cases, obstacles arose due to the perception of the payment system as demotivating or disadvantageous for healthcare providers. However, in Estonia and Poland, incentives within the payment system were perceived as rewarding by providers, facilitating reform. For example, in Poland, the implementation of a coordinated care model with Fee-for-Service (FFS) financing in 2022 rewarded providers with relatively high fees.[29] Additionally, the introduction of P4P elements in 2017 provided clear financial incentives, effectively motivating healthcare providers.[30,31]

A further seven reform examples from Bulgaria, Estonia, Poland and Romania demonstrated factors stemming from **stakeholder support and engagement**. Notably, inadequate involvement of relevant stakeholders impeded reforms in these countries. In Bulgaria, for example, the ban on public payer contracting with new hospitals, activities, and medicines in 2018 to 2019 triggered strong criticism from stakeholders. This law incited numerous protests, particularly against the ban on medicines, led by patients, supported by non-governmental organizations (NGOs), and various political parties.[32] Similarly, in Romania, a reform initiative within the broader healthcare reform framework of 2008 to 2012 faltered primarily because stakeholders failed to reach a consensus due to technical reasons. Additionally, the lack of a structured campaign for public consultations, coupled with general public discontent in response to austerity measures, contributed to the initiative's failure.[33] In contrast, successful reform cases demonstrated inclusive stakeholder involvement and fair consideration of their interests. Estonia's 2020-2021 implementation of bundled payments under coordinated care for stroke patients involved various stakeholders,[28] while Poland's 2017 introduction of P4P elements in a coordinated care model for patients with acute myocardial infarction was strongly supported by cardiology experts, who were fully engaged in the reform planning.[30,31]

Table 1. Factors that influenced selected health care provider payment reforms conducted in CEE countries since 2010.

Factor	Example of reform where factor worked as barrier	Example of reform where factor worked as facilitator
Availability of clear performance indicators within payment scheme (n = 6 examples, 4 countries)	• **Czechia**: 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (lack of uniform DRG groups/codes led to non-standardized reporting of services, inequalities in treatment, unrealistic/unpredictable costs). • **Estonia:** 2015/16 – Upgrade of the Quality Bonus Scheme (QBS) for PHC (key dimensions performance such as clinical outcomes or patient experience were of limited use).	• **Croatia**: 2015 – Refined hospital payment parameters (clear and regularly published parameters for all hospitals enabled benchmarking and reporting). • **Estonia**: 2020/21 – Bundled payment for stroke patient (used international stroke metric to evaluate quality and outcomes). • **Lithuania**: 2012 – Introduction of DRGs for hospital care (surveillance and control on coding mechanisms were well developed). • **Lithuania**: 2022 – Revised methodology of calculating P4P indicators for PHC.
Availability/use of clinical guidelines on reporting parameters (n = 2 examples, 2 countries)	• **Latvia**: 2011 – Pay for quality (P4P) for PHC (lacked officially endorsed clinical guidelines or pathways).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (used standardized guidelines for stroke embedded in the international standards; these enabled reporting and comparability of stroke metrics).
Motivation/favorability of payment system for providers (n = 7 examples, 5 countries)	• **Czechia:** 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (the previous DRG system was not motivating eg, it was very unfavorable reimbursement for some healthcare). • **Estonia:** 2015/16 – Upgrade of the Quality Bonus Scheme (QBS) for PHC (QBs offers fewer opportunities to exempt patients from inclusion in the scheme, which penalize family doctors caring for patients with unusually complex needs). • **Latvia:** 2011 – Implementation of the Nord-DRG system (compliance with the DRG system in the purchasing process was low, leading to frustration among providers). • **Lithuania:** 2012 – Introduction of DRGs for hospital care (deemed unfavorable due to unreasonable variance of payments among some hospitals and/or clinical areas).	• **Estonia:** 2020/21 – Bundled payment for Stroke Patient (it was made favorable by carefully identifying high-risk providers and helping them identify opportunities to reduce costs and improve outcomes). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with acute myocardial infarction (financial incentives were clear and strong enough to encourage providers participation). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (high financial benefits motivated providers).
Support/engagement of stakeholders (n = 7 examples, 4 countries)	• **Bulgaria**: 2018/19 – Ban on public payer contracting with new hospitals/activities/medicines (lack of stakeholder involvement provoked criticism and protests). • **Estonia**: 2017 – New contracts to support multidisciplinary PHC reform – (solo practices and potential integration with hospitals led to resistance). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lack of involvement of key stakeholders impacted planning and implementation). • **Romania**:2008 to 2012 – General health reform (failure to reach an agreement among stakeholders led to the dismissal of a reform).	• **Estonia**:2020/21 – introducing bundled payment under coordinated care for stroke patients (different stakeholder engagement and balancing their interests). • **Poland**: 2017 – Introduction of P4P elements in a coordinated care model for patients with acute myocardial infarction (strong support from cardiology experts, involved in reform planning). • **Poland**: 2022 – New payment model within coordinated PHC (support of the largest association of PHC providers).
Capacity of stakeholders (n = 7 examples, 4 countries)	• **Croatia**: 2013 – Performance based payment for PHC (physicians and nurse shortage). • **Croatia:** 2015 – Changes in hospital payment model (lack of quality improvement programs; over-or-under capacity of some hospitals to meet service limits). • **Latvia:** 2011 – Implementation of the Nord-DRG system (incapacity of assigned "wrong" strategic purchaser). • **Lithuania:** 2012 – Introduction of DRGs in hospital care (lack of capacity for costing and economic evaluations among hospitals). • **Lithuania:** 2010 to 2023 – Gradual development of combination of payment methods in PHC (lack of: capacity to provide cost-effective, high-quality health care, measures to strengthen the "gatekeeping" role of GPs). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (medical personnel shortage; heavy physician workload; and lack of capacity to undertake additional tasks).	• **Lithuania**: 2010 to 2023 – Gradual development of combination of payment methods in PHC (the expansion of the PHC team members facilitated the implementation).
Political willingness/support (n = 7 examples, 7 countries)	• **Romania**: 2008 to 2012 – General health reform (was considered politically unfeasible and withdrawn). • **Bulgaria:** 2015 to 2022 – Diverse hospital payment reforms (lack of political will and government stability hindered changes proposed by the health policy experts).	• **Hungary:** 2016 – Cost weight adjustments of the Hungarian DRGs (the government established a committee to plan and oversee the process). • **Latvia:** 2011 – Implementation of the Nord-DRG system (to facilitate the implementation the Latvian MoH sought technical assistance from external experts and provided strong leadership for the reform). • **Lithuania**: 2010 to 2023 – Gradual development of combination of payment methods (government provided strong leadership to enhance performance payment). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (majority government strongly pushed toward reform implementation). • **Czechia**: 2023 – Introducing case payment for day surgery (the MoH supported the reform).

(continued)

Table 1. (continued)

Factor	Example of reform where factor worked as barrier	Example of reform where factor worked as facilitator
Piloting/feasibility study (n = 6 examples, 4 countries)		• **Estonia:** 2020/21 – Bundled payment for Stroke Patient (piloted before system wide implementation). • **Estonia:** 2013 – Remunerating new innovative e-consultations between GPs and medical specialists (piloted in ophthalmology). • **Lithuania:** 2012 – Introduction of DRGs for hospital care (pilots in selected hospitals before national implementation). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with acute myocardial infarction (initial program was evaluated and adjusted). • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (a pilot for PHC tested some solutions). • **Romania:** 2020 to 2023 – Improving Romania's DRG system for hospital inpatient services (piloted in 50 hospitals).
Comprehensive approach/ coordination of implementation systems (n = 4 examples, 3 countries)	• **Croatia**: 2013 – Performance based payment (lack of coordination and integration with secondary care). • **Croatia**: 2015 – Changes in hospital payment model (fragmentation of care ie, inside hospitals and between primary and secondary care, lack of adequate reforms in LTC). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lack of coordination with other ongoing reforms).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (combination of centralized and local implementation was functional and well-coordinated, contributing to the successful piloting and system-wide implementation).
Availability of funds/investments (n = 3 examples, 2 countries)	• **Hungary**: 2011 to 2014, 2021 – Changing the method of setting the output volume limit for Specialist care providers (insufficient funding to complete the reform process).	• **Estonia:** 2017 – New contracts to support multidisciplinary PHC reform (long-term funding security; access to capital investment and lowering its costs helped overcome barriers faced by small, risk-averse providers). • **Estonia:** 2020/21 – Bundled payment for Stroke Patient (an innovation fund was established).
IT systems/tools (n = 3 examples, 2 countries)	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (challenges stemmed from lack of documentation systems/tools capable of incorporating multiple providers).	• **Estonia**: 2020/21 – Bundled payment for Stroke Patient (strong IT systems to collect data, measure outcome/ performance, benchmarking). • **Estonia**: 2015/16 – Upgrade of the Quality Bonus Scheme (electronic billing data collection system ensured proper monitoring of GPs' activities). A prerequisite for e-consultation was also an e-health system (data exchange between PHC and specialists)
Regulatory framework/ bureaucracy (n = 3 examples, 2 countries)	• **Poland**: 2017 – Changes to hospital payment under the hospital network reform (there were legal barriers for hospitals to open new ambulatory clinics and thus follow the reform financial incentives). • **Poland:** 2022 – Implementing coordinated care model with services financed with FFS (bureaucratic barriers – the need to submit a complex application to participate in the model). • **Estonia**: 2017 – New contracts to support multidisciplinary PHC reform (hindered by the lack of the revision of the regulatory framework and formalization of the expanded scope of PHC).	
Trainings for providers (n = 3 examples, 3 countries)		• **Lithuania**: 2012 – Introduction of DRGs for hospital care (facilitated by training/teaching materials for hospitals). • **Estonia**: 2020/2021 – Bundled payment for stroke patients (stakeholder workshop helped develop and refine metrics). • **Poland:** 2022 – Implementing coordinated care model with new services financed with FFS method (enabled by training of healthcare providers).
Determining base rates/tariff valuation (n = 6 examples, 4 countries)	• **Czechia**: 2012 – Introduction of IR DRG as the base payment mechanism in hospitals (discrepancy in base rates eg, individually negotiated with insurers). • **Latvia:** 2011 – Implementation of the Nord-DRG system (limited by reliance on historic case-mix volumes and cost weights per DRG). • **Poland**: 2017 – Changes to hospital payment under the hospital network reform (insufficient valuation of tariffs to cover actual hospital costs).	• **Estonia:** 2010 onward (all payment reforms) – Existence of dedicated costing methodology (defined by regulations) used for regular tariff adjustments. • **Poland**: 2022 – Implementing coordinated care model with new services financed with FFS method (beneficial financing for providers: fee-for-service, relatively high fee levels, that results from the negotiations). • **Czechia**: 2021 – Replacing IR DRG with CZ DR ensured the use of newly recalculated DRG tariffs after a DRG restart project launched in 2015.
Reform management/evaluation (n = 5 examples, 3 countries)	• **Poland**: 2017 – Changes to hospital payment under the hospital network reform (lacked formally defined indicators to measure its realization). • **Poland**: 2017 – Introduction of P4P elements within coordinated care model for patients with acute myocardial infarction (lacked better reporting data needed to evaluate clinical success of the program). • **Croatia**: 2015 – Changes in hospital payment model (affected by lack of reform management and evaluation). • **Croatia**: 2013 – Performance based payment (affected by lack of the reform management and evaluation). • **Lithuania**: 2012 – Introduction of DRGs for hospital care (affected by lack of sound evaluation of implementation/outcomes/impacts).	

Stakeholder capacity was noted as another critical factor, as evidenced by seven reform examples in Croatia, Latvia, Lithuania, and Poland. The reforms were hindered by the insufficient capacity of some stakeholders. For example, in Lithuania, the introduction of DRGs in inpatient hospital care (2012) was affected by a lack of capacity among stakeholders in costing and economic evaluations,[34] while stakeholders lacked capacity in terms of workforce (eg, physician and nurse shortages) during the implementation of performance-based payments for PHC in Croatia in 2013.[35,36] In Poland, barriers to implementing a coordinated care model with new services financed with the FFS method included shortages of medical personnel, heavy physician workloads, and insufficient capacity to take on additional tasks.[31,37]

Factors related to **political willingness and support** were reported in seven reform examples from Romania, Bulgaria, Hungary, Latvia, Lithuania, Poland, and Czechia. In most cases, strong political support served as a facilitator. This was evident in instances where a majority government actively pushed for the adoption of reforms (eg, the Polish hospital network reforms[38]) or where the government took a proactive approach to planning and demonstrated strong leadership during implementation (eg, the implementation of DRGs in Latvia and Hungary). Conversely, a lack of political willingness and government stability impeded the implementation of recent hospital payment reforms in Bulgaria, despite support from health policy experts. In Latvia, it is acknowledged that while the payment system should promote service efficiency, the introduction of P4P and value-based healthcare (VBHC) models requires greater political support and a long-term strategy.

Piloting/feasibility studies (reported in six reform examples) proved to be crucial reform facilitators in Estonia, Lithuania, Poland, and Romania. In all cases, conducting reform pilots before nationwide implementation supported reform efforts. For example, in Poland, the introduction of P4P elements within a coordinated care model for patients with acute myocardial infarction (AMI) underwent a regional pilot in 2017. Subsequently, the initial pilot was evaluated, leading to program adjustments, including an increase in financial incentives for hospitals' participation.[30,31] Romania conducted a pilot study in 2020 to refine the methodology for hospital cost collection and analysis, aiming to enhance the DRG system.[39] Lithuania piloted DRGs for inpatient hospital care in selected hospitals in 2012.[40] Estonia also piloted bundled payment for stroke patients from 2020 to June 2021, before the full-scale implementation of the system in mid-2021.[28,41]

Four reform examples of factors associated with a **comprehensive approach and coordination of implementation systems** were mentioned in reforms in Croatia, Poland, and Estonia. In Estonia, the successful implementation of bundled payments for stroke patients in 2020/21 was facilitated by a well-coordinated combination of centralized and local implementation. This effective coordination contributed to the successful piloting and system-wide implementation.[41] Conversely, in Croatia, the fragmentation of care, both within hospitals and between primary and secondary care, impeded changes to the hospital payment model in 2015.[35] In Poland, changes to hospital payments under the 2017 hospital network reform were adversely affected by a lack of coordination with other ongoing reforms.[38]

Factors related to the **availability of funds/investment** were mentioned in three reform examples from Estonia and Hungary. For instance, in Estonia, it acted as a facilitator in the implementation of bundled payments for stroke patients (2020/21). The Estonian Health Insurance Fund (EHIF) launched an innovative service delivery fund through a two-part solicitation process. Initially, hospitals applied for 15,000 euro planning grants to develop demonstration concepts, form provider teams, and create detailed plans, including IT solutions. The second round involved competitive bidding for higher grants (up to 300 000 euros) to implement and refine proposed solutions. This grant system played a pivotal role in establishing infrastructure, facilitating collaboration, and measuring outcomes across the project team. In contrast, in Hungary, changing the method of setting the output volume limit (2011-2014, 2021) faced challenges resulting from the lack of sufficient funding to complete the process.

The presence of dedicated **IT systems/tools** was identified as another factor influencing the success of payment reforms, as reported in three reform examples from Estonia. For instance, the electronic billing data collection system, which enabled the monitoring of family physicians' activities without additional data collection, was a key facilitator in the implementation of the upgraded (mandatory) performance-based payment system in 2015/2016 (known as the Quality Bonus Scheme, QBS).[42]

Three reform examples from Poland and Estonia concerned issues stemming from the **regulatory framework and bureaucracy**. For example, in Poland, legal impediments prohibiting the establishment of new ambulatory clinics had a consequential impact on the implementation of hospital network reform in 2017, thus hindering hospitals from following the reform's financial incentives to move toward outpatient care.[38] Similarly, in Estonia, the lack of revision of the regulatory framework and the formalization of an expanded scope of PHC through amendments to the Law on Health Organization were identified as barriers to implementing new contracts aimed at supporting multidisciplinary PHC reforms in 2017.[43]

Training for healthcare providers facilitated payment reforms in Estonia, Poland, and Lithuania (as shown in three reform examples). A stakeholders' workshop was convened as part of the implementation of bundled payments for stroke patients in Estonia (2020/2021). This workshop played a pivotal role in fostering stakeholder engagement and contributed to the development and refinement of metrics.[44] In Poland, the Federation-led training initiative for healthcare

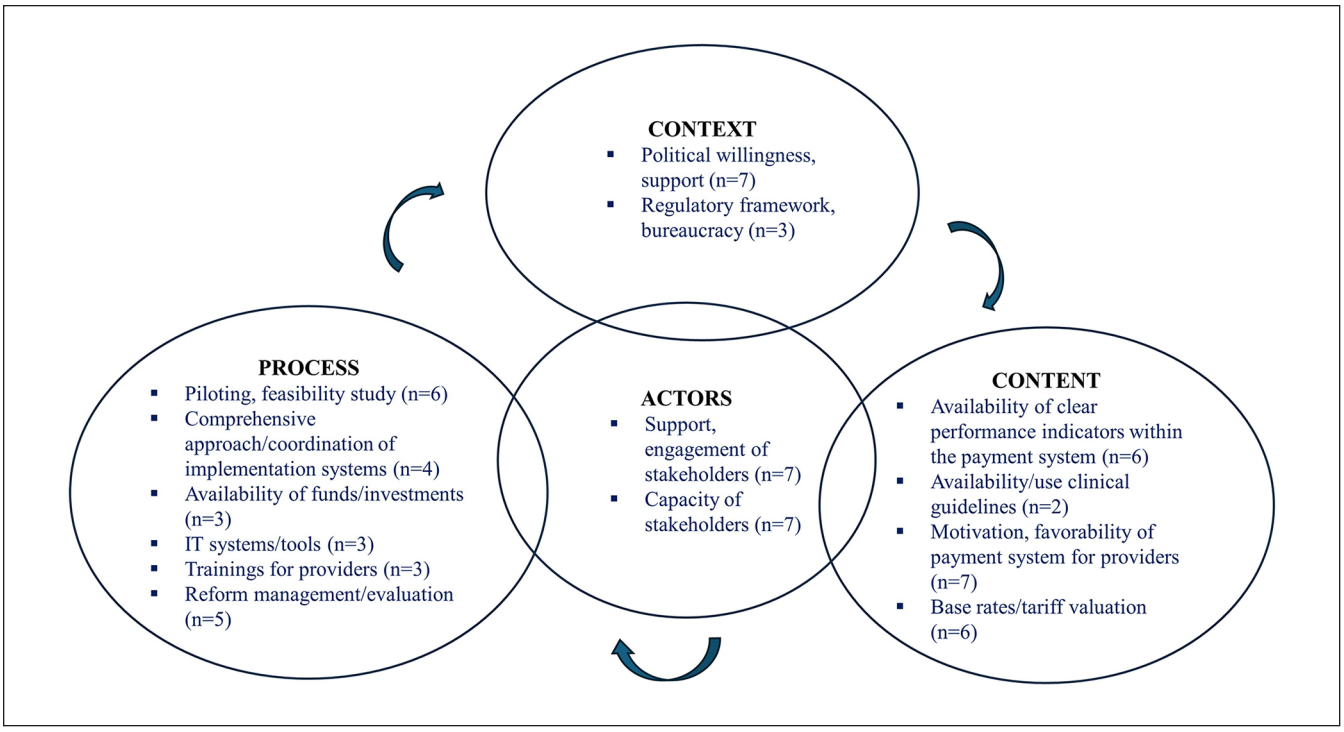

Figure 2. Health policy triangle of factors influencing health care provider payment reforms in CEE countries (n = number of reform examples in which a given factor was identified as either a barrier or a facilitator).

providers– the Zielona Góra Agreement – played a crucial role in facilitating the implementation of a coordinated care model with new services financed through the FFS method in 2022.[45] In Lithuania, the facilitation of training and provision of teaching materials for hospitals, organized by the National Health Insurance Fund (NHIF), played a key role in enabling the implementation of DRGs for inpatient hospital care in 2012.[34]

Determining base rates/tariff valuation represented another set of factors described in six reform examples from Czechia, Estonia, Latvia, and Poland. A key obstacle was the lack of standardized and reliable cost reporting and inadequate tariff valuation. For example, in Czechia, the introduction of IR DRG as the base payment mechanism in inpatient acute care hospitals (2012) was impacted by the disparity in base rates attributed to "individual base rates" (IZS) negotiated with the insurer.[27] In 2021, the issue was mitigated by replacing IR DRG with Czech refined DRG (CZ DRG) with newly recalculated DRG tariffs embedded in the latter. In Poland, the implementation of changes to hospital payment under the hospital network reform (2017) encountered insufficient valuation of tariffs to cover actual hospital costs.[38] Similarly, the successful implementation of the DRG payment system is hindered by the tariffs, which do not cover current costs in all cases, and hospitals must invest a lot of effort to justify their current expenses. In contrast, Estonian payment reforms from 2010 onward (encompassing all payment reforms) reported the existence of a dedicated costing methodology defined by regulations, which was employed for regular tariff adjustments.

Finally, five reform examples from Poland, Croatia, and Lithuania included factors arising from **reform management and evaluation**. For example, the implementation of DRGs for hospital inpatient care in Lithuania in 2012 faced challenges due to the absence of a robust evaluation of its implementation, outcomes, and impacts.[34] Similarly, in Croatia, the implementation of performance-based payments for primary/ambulatory care in 2013 lacked proper management and evaluation of the reform, with only limited financial controls in place.[35]

Deductive Thematic Analysis of Factors Influencing Payment Reforms

The 14 major factor themes identified were deductively categorized into 4 dimensions of the health policy triangle framework (Figure 2). While certain factors were interrelated and had characteristics that could correspond to more than one category, they were assigned to the most appropriate dimension based on the definitions of the health policy framework used (defined in Figure 1). The number of reform examples in which a given factor acted as either a barrier or a facilitator can serve as a proxy indicator of the factor's relevance in influencing the reform. Consequently, the reform process appears to be the most frequently affected dimension. There are six main theme factors with a total of 24

reform examples. The factors with the largest proportion of examples are reform piloting/feasibility study (n = 6), reform management/evaluation (n = 5), and comprehensive approach/coordination of implementation systems (n = 4). The reform content is represented by 21 reform examples under four main theme factors, where the three most common factors are motivation/favorability of the payment system for providers (n = 7), the availability of clear performance indicators within the payment system (n = 6), and the determination of base rates/tariff valuation (n = 6). Reform context and actors represent the least affected dimensions, with two main theme factors each (included in 10 and 14 examples, respectively). The most frequently listed factor for the former is political willingness or support (n = 7), while for the latter, both stakeholder support/engagement and stakeholder capacity were equally often mentioned (n = 7 each). Nevertheless, the "actors" dimension revealed the potential to influence all three remaining framework dimensions.

Discussion

The aim of this study was to identify factors that have influenced health care provider payment reforms conducted in nine CEE countries since 2010. The inductive analysis identified 14 major factors, which were then deductively classified into four categories of the "health policy triangle" framework: context (political willingness/support, regulatory framework, and bureaucracy), content (availability of clear performance indicators within the payment scheme, availability/use of clinical guidelines, motivation/favorability of the payment system for providers, determining base rates/tariff valuation), process (piloting/feasibility study, comprehensive approach/coordination of implementation systems, availability of funds/investments, IT systems/tools, training for providers, reform management/evaluation), and actors (support, engagement of stakeholders, capacity of stakeholders).

Our results are broadly consistent with current findings in the literature that highlight the diversity of factors influencing the success of provider payment reforms worldwide.[14,15] The deductive classification shows that most identified factors (and the reform examples where they were observed) were related to the reform process. This suggests that how the reform is implemented is crucial to its success. Within this dimension, conducting a pilot/feasibility study might be considered the most relevant factor for reform. This may be partly because it facilitates reform adjustments before widespread implementation. In general, research suggests that without an enabling reform process, efforts to reform health care provider payment systems may fail because they require systematic and coordinated actions, collaboration among agencies, and a strategic approach where various interventions align and reinforce one another.[12] However, previous studies indicate that policymakers tend to focus more on the content dimension of health reform rather than its process.[23,46-48] This might be because the reform content heavily relies on the presence or absence of evidence data, which is essential to inform and persuade decision-makers.[48,49] In our study, the factors associated with the content dimension were also influenced by the availability of evidence (eg, availability of performance indicators/clinical guidelines that can be used within the P4P programs or a robust methodology for the tariff valuation process).

The literature indicates that the reform context is influenced by a range of factors, such as changes in political regimes, ideologies, historical experiences, and cultural influences.[23,46,47,50] This is aligns with our results, particularly our finding that political willingness/support is the most relevant factor influencing reforms in CEE countries. This observation is consistent with previous studies indicating that healthcare provider payment initiatives that are not adapted to local political environments are less likely to be successful.[14,51] This is because these reforms typically require significant participation from politicians, political parties, and/or policymakers.[14,51,52] Further research shows that such reforms often involve political compromises, as they can alter financial flows within the system. They therefore require political negotiations that can weaken or hinder reform implementation.[52]

Regarding the actor dimension, we found that stakeholders play a vital role in provider payment reform as they impact multiple dimensions simultaneously. Stakeholder engagement might influence both the reform context (eg, when there is strong lobbying or public pressure for or against reform), content (eg, when they are involved in reform planning and payment scheme construction), and its process (eg, when providers participate in piloting prior to full-scale reform implementation or when their resource capacities are aligned with the reform content). This is consistent with previous studies highlighting the enormous importance of stakeholder engagement in payment reforms.[14,15,53] The major limitations of this study include potential bias from the subjective perspectives of country informants. To address this, we encouraged informants to provide references and sought to verify their input through additional data sources. We also assumed that the number of reform examples corresponded to their relevance, though this approach has limitations. Factors identified by experts may be subjective and vary by reform; a factor frequently noted in one country may be less relevant in others. Moreover, a factor with frequent occurrence but minimal impact might be less significant than one with rare occurrence but substantial effect. Future studies should aim to measure and rank the relevance and priority of these factors throughout various stages of reforms, from planning through implementation and evaluation. Research could focus on developing a framework to assess and rank factors affecting reform success. In our study, by combining both inductive and deductive analyses, we capture diverse perspectives on factors influencing health care provider payment reforms in CEE countries. We

enriched the framework that can be used to better plan future payment reforms with various elements that need to be taken into account. This can aid policymakers in designing, implementing, and evaluating payment reforms, and support researchers in conducting evaluations and comparative studies in this field.

Conclusion

Central and Eastern European countries share common patterns when implementing healthcare provider payment reforms, and the factors influencing these reforms are comparable. Our study shows that the reform process might be critical for success (eg, reform piloting/feasibility study, reform management/evaluation, and comprehensive approach/coordination of implementation systems), followed by its content (eg, motivation/favorability of the payment system for providers and availability of clear performance indicators within the payment system). However, dimensions with fewer factors, such as the reform context and actors, are also crucial. Therefore, focusing solely on one or a few aspects of reform might be insufficient. For a successful reform of healthcare provider payment systems, a comprehensive consideration of all reform dimensions with careful consideration of their interconnectedness is essential.

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Author Contributions

Study conception, design/methodology, formal analysis and interpretation of results: **CN, MT, KDJ**; Data collection: **CN**; Writing - original draft preparation: **CN, KDJ**; Validation and writing – review and editing: **MT, DB, AD, AD, AD, BE, PG, TH, PH, LM, TP, GSS, LS, CV, KDJ**; Supervision: **KDJ, MT** All authors reviewed the results and approved the final version of the manuscript.

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Performance-based financing in Rwanda: a qualitative analysis of healthcare provider perspectives

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Abstract

Results-based healthcare financing policies have been adopted in countries worldwide, including those with limited resources. We conducted a retrospective, semistructured interview study to evaluate healthcare providers' experiences with Rwanda's performance-based financing (PBF) policy and the factors influencing its implementation. Guided by the health policy evaluation model—context, content, process, and actors—as a deductive framework supplemented by inductive coding, we analysed data from 21 participants (doctors, $n=13$; nurses, $n=5$; midwives, $n=3$). Providers described PBF as a key motivator, supplementing incomes, increasing accountability, and fostering teamwork to meet performance targets. PBF was credited with improving patient outcomes, particularly in incentivized services; however, concerns arose regarding disparities in service prioritization. Key facilitators of and barriers to the implementation of PBF were identified, providing insights into its operational dynamics. Strong political commitment and integration into national strategies, such as Imihigo, along with decentralization through district steering committees, were key contextual enablers, enhancing the program's flexibility and alignment with local priorities. The content factors centred on a two-tiered contracting system, combining national accreditation processes with individual performance incentives. Process factors supporting PBF were characterized by decentralized evaluations, audits, and multilevel communication, which collectively bolstered accountability mechanisms. The engagement and capacity of stakeholders were highlighted as crucial to the success of PBF. Nonetheless, significant barriers, such as payment delays, manual documentation, untimely evaluations, insufficient training, limited provider participation in decision-making, and the exclusion of patients as stakeholders, were identified. These findings offer practical recommendations for policymakers aiming to improve or adapt provider payment mechanisms in similar contexts.

Keywords Performance-based financing, Health financing, Hospital accreditation, Performance indicators, Healthcare providers, Health policy, Rwanda

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Background

Healthcare provider payment methods are essential to strategic purchasing, a key health financing approach aimed at achieving universal health coverage (UHC), especially in resource-limited countries [1]. In Africa, this approach has been incorporated into major health plans and financing strategies [1, 2]. In 2001, the governments of the African Union signed the Abuja Declaration, urging countries to allocate 15% of their budgets to health [3]. Later declarations, such as the Ouagadougou Declaration on Primary Health Care and Health Systems in Africa, emphasized the need for renewed health financing policies [4]. These commitments have driven important reforms in health financing. Many countries have adopted results-based financing policies, also known as performance-based financing (PBF), as key tools for achieving UHC [5–7]. PBF is a health financing approach designed to offer financial rewards to healthcare providers when they meet predefined quantitative and/or qualitative performance targets [1].

Rwanda adopted PBF early, starting a pilot in 2001 and scaling it up nationwide by 2006 [8, 9]. Since then, the government has made PBF a national priority, integrating it into key policies such as the Health Sector Strategic Plan 2009–2012 (HSSP-II), aligned with the Millennium Development Goals (MDGs) by 2015 and the Vision 2020 [9–12], the Economic Development and Poverty Reduction Strategy (EDPRS) (2008–2021) [10, 11], and the Health Financing Strategic Plan (2018–2024) [11, 12]. HSSP-II set objectives and outputs to create an enabling environment for service delivery to be optimally effective and efficient, with the PBF scheme serving as a crucial instrument to reward health facilities and staff for good performance (increased utilization and quality of services, focusing on output financing models rather than input financing) [10]. The EDPRS II (2013–2018) highlighted PBF's role in advancing health sector goals by focusing on improving healthcare service quality, including facility management, while expanding both geographical and financial access. PBF was seen as a tool to foster healthy competition among facilities, encouraging healthcare providers to innovate, enhance service quality, and advocate for increased service utilization, ultimately increasing both income and personal incentives [12]. These efforts have standardized PBF models across the country as part of Rwanda's strategic purchasing initiatives [13]. The program was primarily implemented in public and government-assisted facilities, which constitute most of the health sector [2]. In 2010, PBF was extended from health facilities to the community level to provide financial incentives to community health workers (CHWs) [13, 14].

A major reform in 2014 integrated the PBF program with the hospital accreditation system at the provincial and district levels. The linkage aimed to avoid duplication of efforts in implementing the two programs and, as such, promote and achieve greater efficiency [12, 13, 15]. Both programs share complementary goals of improving health facility performance by addressing intrinsic and extrinsic motivational factors among healthcare providers and managers. They also rely on third-party verification to assess performance against defined standards or targets. To ensure transparency and effective implementation, the Ministry of Health (MoH) developed a detailed PBF Procedures Manual for Health Facilities, covering both hospitals and health centers [12].

Currently, PBF remains a key mechanism for incentivizing healthcare providers in Rwanda. The scheme seeks to increase both the quantity and quality of healthcare services. The purchasers within the PBF scheme (the Ministry of Finance and Economic Planning (MINECOFIN) and its partners), in collaboration with the regulator, the MOH, pay healthcare providers on the basis of a set of quantitative indicators adjusted for the overall quality of services delivered at the health facility [12, 13]. Performance indicators can be categorized into two groups: visit and outreach indicators (e.g., curative care visits, prenatal visits, contraceptive visits, facility deliveries, and child growth monitoring) and content of care indicators (e.g., timely vaccinations, malaria prophylaxis, and appropriate emergency referrals) [13, 16]. Quantitative indicators are evaluated monthly under the leadership of the District Steering Committee, with monitoring and supervision of health facilities reinforced through peer reviews, while quality assessments are conducted quarterly [12]. Since 2014, assessments of qualitative indicators at the district and provincial hospital levels have been integrated with accreditation assessments. Internal hospital self-assessments are conducted biannually by hospital staff, and certified accreditation surveyors carry out external assessments annually [12, 15].

The value of financial incentives varies across indicators, with the MoH and the Rwanda Biomedical Centre (RBC) determining payments on the basis of specific criteria. Key factors influencing these decisions include current coverage levels of each indicator—those indicators with lower achievement rates may receive higher funding to encourage improvement—and government priorities (referred to as "imihigo"), where indicators that have already achieved significant progress may receive reduced funding [12]. At the facility level, individual contracts are established between facility management and employees (e.g., individual providers), specifying bonuses for meeting agreed-upon goals. These contracts include both basic indicators and strategic intervention measures aligned with the facility's action plan [12, 13].

Previous reports claim that Rwanda's PBF policy has increased the utilization of health services and quality [2,

8, 9, 11–13, 16, 17], with most studies focused primarily on quantitative analyses [2, 8, 9, 16, 17]. For example, Gertler and Vermeersch reported a 20% increase in productivity and notable advancements in child health [16], whereas Basinga et al. reported a 23% increase in institutional deliveries and higher rates of preventive care visits for young children [17]. While these findings underscore PBF's measurable benefits, quantitative research often falls short of explaining why policies succeed or fail, leaving critical gaps in understanding the lived experiences and challenges of those directly impacted [18]. Healthcare providers, as the primary beneficiaries of PBF, play a pivotal role in its implementation; however, their perspectives remain underexplored.

To address this gap, the present study examines healthcare providers' views on PBF through in-depth interviews guided by an established health policy framework [19]. By emphasizing the factors that drive PBF success and identifying its challenges, the findings offer actionable insights for policymakers and stakeholders in other contexts seeking to implement or refine similar provider payment mechanisms.

Methods

Design and setting

We conducted a retrospective, semistructured interview study to gain detailed insights into healthcare providers' perspectives and experiences regarding the implementation of PBF. Given that PBF has been widely implemented across Rwanda's health system, we did not restrict the study to a specific geographic location or type of provider. Ethical approval for conducting this research was granted by the National Council for Science and Technology (NCST) of Rwanda (Research Permit No. NCST/482/0124/2024) and the Research Ethics Committee of Jagiellonian University Medical College (No. 118.0043.1.10.2024). Study procedures and methods were conducted in accordance with the Declaration of Helsinki guidelines. Written and verbal informed consent was obtained from all study participants.

Participants

We randomly sampled 25 healthcare providers (i.e., individuals directly involved in delivering health services) from various healthcare facilities across the four provinces of the country and Kigali city, inviting them to self-nominate for participation. To further expand the participant pool, we sent official request letters to two prominent professional associations in Rwanda: the Rwanda Medical and Dental Council (RMDC) and the National Council of Nurses and Midwives (NCNM). Additionally, we employed a snowball sampling method by asking interviewed participants to recommend other eligible candidates.

The enrolment process began with an email invitation sent to potential participants, providing a brief overview of the study's objectives and procedures. Participants were assured of confidentiality and anonymity throughout the study. Interested individuals received detailed information about the study, including its purpose, potential risks, benefits, and rights as participants. Informed consent was obtained from all participants prior to conducting the interviews.

The eligibility criteria required participants to be healthcare providers with direct experience working in facilities implementing PBF schemes. Proficiency in Kinyarwanda and/or English was also mandatory to ensure effective communication during data collection (respondents could choose their preferred language for the interview).

Data collection

After providing consent, face-to-face interviews were conducted at locations chosen by the participants—usually their workplaces—or virtually between July 2024 and October 2024. The interviews were conducted by the principal investigator (CN), a PhD researcher with three years of training and research experience in healthcare provider payment reforms at the Faculty of Health Sciences, Department of Health Economics and Social Security at Jagiellonian University. While the principal investigator is a medical doctor (MD) with prior knowledge of the Rwandan healthcare system, he had no direct relationship with participants before the study commenced.

The interview guide consisted of seven key questions (see the Supplementary Material). Each interview began with introductory questions to provide an overview of the discussion and create a comfortable environment for participants. These initial questions focused on healthcare providers' professional backgrounds, a brief description of their roles at their respective health facilities, and their general understanding of the PBF policy. Subsequently, specific questions and probes were used to examine their perceptions of the PBF scheme's impact, including its benefits, risks, and unintended consequences for provider work and patient care. The participants were also asked to discuss the factors—both challenges and facilitators—that contributed to the success or failure of PBF implementation. The interviews concluded with an opportunity for participants to offer recommendations or suggestions for potential improvements to the PBF system and highlight areas that needed attention.

Seventeen of the 25 initially invited participants agreed to participate in the study, but one later declined due to unavailability. Nine additional participants were identified through snowball sampling, but after interviews with five participants, recruitment stopped as no new ideas

or codes emerged. In total, 21 healthcare providers were included in the study. Twelve interviews were conducted in person (usually at participants' work offices), two by phone, and seven via WhatsApp. The average interview time was 37 min. All the interviews were conducted in Kinyarwanda, except for two in English.

Data analysis

The interviews were recorded and transcribed verbatim (by CN). The interviews conducted in Kinyarwanda were then translated into English (by CN). The transcripts were subsequently anonymized and checked for accuracy (by RN). To protect participant anonymity and the confidentiality of their institutions, detailed sociodemographic information was excluded. The names and locations of health facilities were also omitted, as most Rwandan districts have only one hospital, making it easier to identify specific institutions or participants. Moreover, participants in prominent roles, such as clinical directors, could be easily recognized if facility names were disclosed. QDA MINER software (v3.0.6) was used to manage the interview data, and a thematic approach was employed for the analysis. Initial coding was deductive, on the basis of predefined themes from the interview guide (Supplementary Material), with additional codes generated inductively through a six-step process: (1) familiarizing with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the manuscript/report [20]. Codes were grouped into overarching themes and refined iteratively throughout the analysis. Recruitment and interviews continued until no new codes emerged.

The factors affecting PBF were classified using an existing health policy framework [21–23], which was previously used to analyse barriers to and facilitators of payment reforms [19]. This framework describes four dimensions of the health policy spectrum. The first dimension, *Context*, addresses systemic factors that can influence reforms, such as political commitment and regulatory frameworks affecting PBF. The second dimension, *content*, describes the specific elements of the reform, such as clearly defined performance indicators, the use of clinical guidelines, the suitability of the PBF payment system for providers, and tariff valuation. The third dimension, *Process*, relates to how the reform was developed, communicated, implemented, and evaluated, including pilot studies, coordination of implementation systems, availability of funds, IT systems, provider training, and management of the reform. The final dimension, *Actors*, includes all individuals involved in the policy-making process, with a focus on stakeholder engagement and capacity [19].

Results

Respondent background

All the participants confirmed having direct experience with PBF while working at public health facilities. Of the 21 participants, 12 were male and 9 were female. The majority were doctors ($n = 13$), followed by nurses ($n = 5$) and midwives ($n = 3$). Many participants were healthcare providers without managerial roles ($n = 16$), whereas five also held managerial roles, including clinical directors ($n = 4$) and a chief nurse ($n = 1$). The participants worked in diverse healthcare settings, including both urban and rural facilities. The majority of participants reported PBF experience across multiple facilities due to frequent rotations, part-time roles, or transitions to teaching hospitals for specialization.

PBF effects

Influence on provider work/practice

All the participants agreed that PBF significantly influenced their work. A majority of respondents reported increased accountability and documentation requirements, driven by the system's emphasis on linking individual and facility performance to financial incentives. Many participants highlighted that PBF motivated them to work harder, knowing that their performance directly affected their income. Additionally, PBF was reported to encourage teamwork and communication among staff, as meeting hospital-wide targets required collective effort. The participants emphasized that the program played a critical role in sustaining performance. However, delays or the absence of PBF payments were associated with reduced morale and diminished service quality.

> *"PBF is essentially about motivating us to achieve better outcomes. It makes us think about quality more deliberately."* (Participant 8, Doctor)

> *"Yes, it definitely impacts the work. For example, when employees do not receive PBF on time—or sometimes not at all, as happens in some hospitals where staff can go a year without it—it leads to negative consequences. Employees become demotivated, and the quality of services declines. However, in hospitals that provide PBF regularly, employees work with greater commitment and effort. [Those] hospitals generate more revenue and deliver better services, which leaves patients well cared for."* (Participant 3, Clinical Director)

Influence on patient care/outcomes

The participants generally agreed that PBF contributed to improved patient outcomes, citing increased vaccination rates and greater utilization of maternal health services as examples. Timely PBF payments were widely regarded

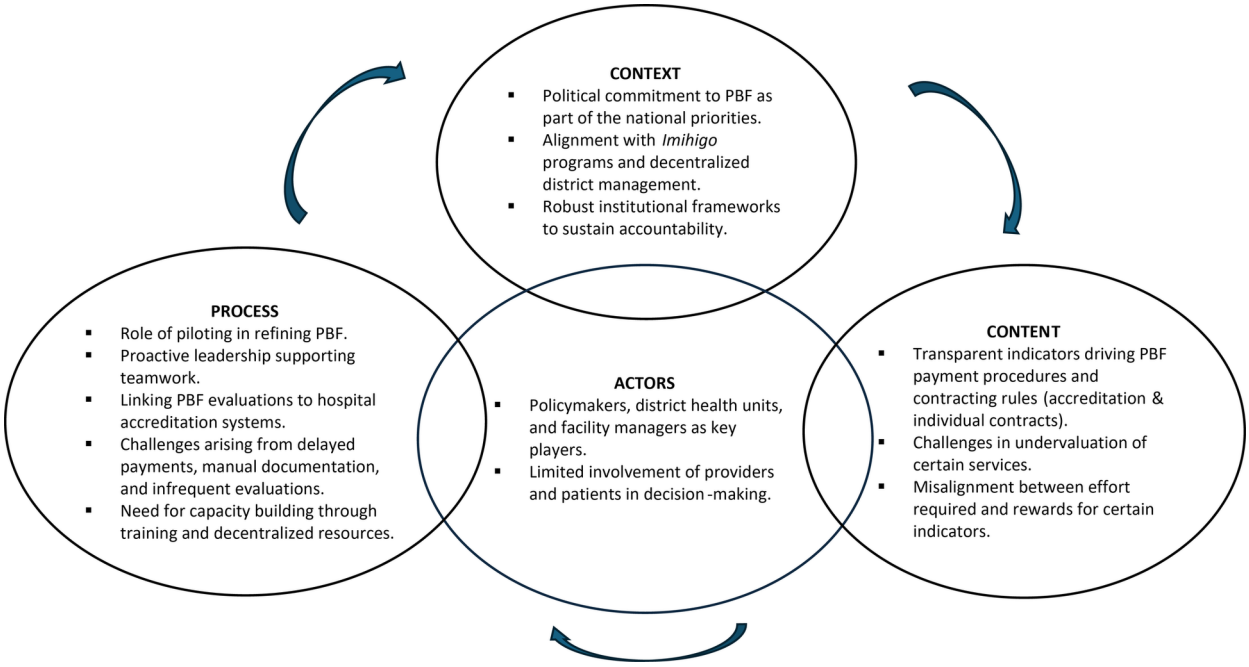

Fig. 1 Facilitators and barriers to performance-based financing in Rwanda

as enhancing patient care and satisfaction. However, participants also noted potential downsides, such as disparities in attention given to services on the basis of their associated incentives. Some services received less focus because they provided little or no financial reward.

> *"We've seen an increase in women seeking prenatal care since this hospital implemented the PBF program, which I believe is directly related to the incentives provided to healthcare providers. The PBF amount here is relatively high and fairly consistent compared with what my colleagues at other hospitals receive."* (Participant 15, Chief of Nursing)

Additionally, some participants reported that PBF indirectly influenced the volume of services provided, including the number of diagnostic tests ordered and the number of medications prescribed.

> *"The PBF system encourages us to be more thorough with patient care, which can sometimes mean ordering more lab exams or routinely offering various services, even if they aren't of high importance for every patient. It's a balance, though, as I always try to ensure it aligns with my patients' needs. But [it] is important because this hospital benefits from PBF through more billing."* (Participant 21, Doctor)

While this 'more billing' often resulted in increased PBF payments to health facilities, it also raised concerns about the potential overutilization of resources and unnecessary services offered to patients. Nevertheless, some participants mentioned that facilities cannot exceed a specific ceiling on PBF payments, citing this restriction in connection with the MoH guidelines. However, the exact limit was neither clearly defined nor consistently reported by participants.

Perceptions of success/failure factors

Respondents indicated diversity of factors that influenced the PBF success. They were assigned to the four dimension of the health policy triangle (Fig. 1).

Context

Political willingness was consistently cited as a key driver of Rwanda's success in implementing and scaling up PBF. The participants emphasized the government's strong commitment to improving health system performance, reflected in policy prioritization, resource allocation, and the institutionalization of PBF within the national health strategy.

> *"The government's leadership was instrumental. They recognized early on that PBF could address some problems in the health system and were willing to support it, both politically and financially."* (Participant 6, Clinical Director)

The participants highlighted that Rwanda's postgenocide governance reforms created an enabling environment for innovative approaches such as PBF. The government's emphasis on results-oriented policies ensured that PBF

received high-level support from the MoH and local governments. The integration of PBF into broader *Imihigo* performance programs at the district level further demonstrated the political commitment to achieving health targets. This alignment reinforced accountability and helped sustain political momentum for PBF.

> *"The country's leadership showed remarkable foresight by adopting PBF as a national policy. It wasn't just about healthcare but about building accountability into service delivery."* (Participant 19, Clinical Director)

> *"The fact that PBF targets are part of the government's performance programs 'Imihigo' with district leaders shows how serious they are about this program."* (Participant 3, Clinical Director)

The participants confirmed that the government has established robust frameworks to support PBF implementation. This included incorporating PBF into the National Health Strategic Plan and standardizing its operational tools and performance indicators. The establishment of a clear institutional framework was cited as a critical factor in ensuring accountability and coordination across all levels of the health system.

> *"The Ministry of Health played a vital role in developing policies and guidelines for PBF implementation, which made it easier for everyone to understand their responsibilities."* (Participant 3, Clinical Director)

Additionally, participants noted the government's efforts to decentralize PBF management, allowing district health units (known as district steering committees) to oversee performance monitoring, data validation, and financial disbursements. This decentralization was viewed as a key enabler of flexibility and responsiveness in addressing local health priorities.

> *"The district health office plays a central role in managing PBF, but we also have the flexibility at the facility level to determine how funds are distributed based on our performance."* (Participant 19, Clinical Director)

> *"The decentralization of PBF has been a game changer. District health teams can adapt the program to fit local contexts, which has improved its impact on the ground."* (Participant 6, Clinical Director)

Content

The content dimension revealed diverse opinions among participants. While the majority admitted that they were not fully aware of the specific indicators used to determine their PBF payments, they readily identified activities they performed that were excluded from the payment scheme. Health education sessions were frequently mentioned as essential but not incentivized under PBF, and certain indicators were noted to qualify for PBF only for specific patient groups.

> *"Screening HIV for a male patient does not qualify for PBF at our facility. Regardless of how many you screen, even several hundred, you do not receive any payment for this. However, for female counterparts, this indicator is part of the quantitative criteria for the award of PBF."* (Participant 20, Midwife)

The participants holding nonmanagerial roles, such as nurses and doctors, were generally more familiar with their individual performance scoring metrics in their personal performance contracts (Imihigo)—agreements between providers and their respective health facilities specifying the required individual achievements. Nevertheless, they consistently identified the facility's accreditation score as the primary determinant of PBF payments. They acknowledged that facility financing depended on accreditation levels, which directly influenced PBF payments from the government. However, the majority of these participants admitted that they had limited knowledge of the broader facility-level contracting rules and the specific metrics outlined in the facility agreements with the MoH.

> *"PBF is awarded to facilities on the basis of their accreditation levels I, II, and III, with level I receiving the lowest amount and level III receiving the highest. For individual providers, PBF is distributed on the basis of their performance contract achievements 'Imihigo', graded out of 100%: those achieving more than 90% receive full payment; those scoring between 70% and 90% receive reduced payments accordingly; and those scoring below 70% do not receive any payment."* (Participant 8, Doctor)

> *"I know that my PBF payment depends largely on the hospital's accreditation score, but I don't truly know how the score is calculated or what the process involves."* (Participant 2, Doctor)

In contrast, participants in managerial roles demonstrated a better understanding of PBF content beyond the individual provider level. They emphasized the alignment of PBF contracting with the country's *Imihigo*

performance contracts, which involve agreements with both administrative districts and health facilities. Nonetheless, these participants also highlighted the strong linkages between PBF and hospital accreditation performance scoring.

> *"The way hospital accreditation is linked to PBF is a powerful driver for change. It's a key factor that shapes how our facility prioritizes and implements PBF, ensuring that quality is consistently measured."* (Participant 3, Clinical Director)

On the other hand, the participants appreciated the structured implementation of the PBF system but highlighted the need for greater transparency and inclusiveness in selecting and weighting performance indicators. Some participants suggested that actively involving providers in these processes could better align the PBF program with on-the-ground realities, enhance providers' sense of ownership, and improve its overall effectiveness.

> *"The PBF system is well structured, but there needs to be more transparency and inclusiveness in how performance indicators are selected and how their importance is determined for financial rewards. If we were more involved in this process, it would align the program better with what's actually happening on the ground, give us a sense of ownership, and ultimately make the system more successful."* (Participant 10, Doctor)

Providers expressed mixed feelings about the motivational impact of PBF. While most viewed it as a strong motivator owing to the financial incentives it provided alongside their regular salaries, dissatisfaction stemmed from the irregularity of payments and significant variations in the amounts received among providers and across health facilities. As one participant remarked,

> *"PBF payments are not consistent, and what we receive can vary a lot, even when we're doing the same work. This makes it hard to rely on the money."* (Participant 12, Nurse)

Some providers felt that the payment system did not fully reflect the workload or complexity of the services they provided. Irregularities in the amounts received—largely influenced by the overall facility accreditation score—contributed to a sense of inequity in how the PBF system rewarded their efforts. Managerial participants noted that while defined performance indicators and unit costs exist, the valuation of specific indicators did not always capture the effort needed. This sentiment extended to preventive and community-based services, which were viewed as undervalued despite their significance for patient outcomes.

> *"Some indicators are undervalued compared with the effort they require. This discourages providers from prioritizing these services, even when they are important"* (Participant 16, Doctor)

Process

The process dimension encompassed frequent themes related to how PBF was implemented, communicated, and monitored within healthcare facilities. Only one participant elaborated on the piloting of PBF, noting that its initial implementation in selected districts—including their hospital—was critical in refining the system before national rollout. This participant explained that the pilot phase allowed for the identification of potential challenges, adaptation of performance indicators, and development of standardized processes. However, providers who joined the health system after the national implementation of PBF expressed limited knowledge about the pilot phase.

Leadership within health facilities emerged as a critical factor in the PBF implementation process. The participants working under proactive and supportive leaders reported better teamwork, greater motivation, and more consistent performance outcomes.

> *"Our success with PBF is largely due to our leadership. They motivate us and ensure that we work together as a team to achieve our goals."* (Participant 2, Doctor)

Evaluation mechanisms were widely discussed, with participants describing a bottom-up approach for individual assessments. Monthly evaluations were conducted by first-line managers, such as unit heads or service directors, who assigned scores to individual providers. These scores were reviewed by the comité de gestion (COGE) and approved by the hospital's director general. The participants emphasized the importance of integrating PBF evaluations with hospital accreditation systems.

> *"The PBF evaluation process begins with a monthly evaluation by your first-line manager (service director), such as the nursing service manager for nurses, who assigns the score. The score is then reviewed by the director of nursing and midwives before being submitted to the hospital's director general for final approval. The individual provider's score, along with the facility's score on the basis of its level of accreditation, determines the amount awarded to the provider."* (Participant 3, Clinical Director)

At higher levels, PBF monitoring was decentralized, with districts playing a key role in aligning PBF plans with national health priorities and broader government objectives such as *Imihigo.* Providers noted that district health units oversaw performance monitoring through field visits, peer reviews, and compliance checks.

> *"The district health office ensures that we are meeting our targets and evaluates our hospital performance. They conduct field visits and audits to verify compliance, but sometimes their limited capacity affects how effectively they oversee the process."* (Participant 15, Chief Nurse)

However, the participants highlighted three key challenges associated with linking PBF with accreditation evaluations. The first challenge was the potential manipulation of evaluations, particularly concerning accreditation. Since accreditation assessments are infrequent and predictable, some facilities focus on meeting requirements only when the accreditation cycle approaches, which may not accurately reflect the facility's true quality or operational reality. The participants suggested more frequent external independent evaluations to ensure that facilities consistently work toward agreed-upon targets rather than only during the accreditation cycle.

The second challenge was the potential aggravation of inequitable financing among facilities. Facilities were assessed via uniform accreditation criteria that did not account for significant differences among hospitals. Most participants emphasized that different hospitals cover large patient populations, serve broader geographical areas, or have limited resources, such as fewer hospital beds and workforce. While such disparities influenced how facilities performed in meeting accreditation targets, these differences were not considered. Yet hospital financing was based on accreditation outcomes without adjusting for such variations.

> *"Linking PBF with accreditation was a good idea, but we see unintended consequences. Hospitals with high accreditation scores receive substantial funding—not necessarily through PBF but also from other financing sources. These are often not the hospitals that need money because they serve smaller populations, cover smaller geographic areas, or have many beds and equipment that help them generate more revenue. Moreover, hospitals that are overburdened with large patient loads and limited resources receive less funding. We see this a lot in urban hospitals, especially in Kigali."* (Participant 8, Doctor)

The third challenge, closely related to the second challenge, was inequitable financial rewards for individual providers working in hospitals with low accreditation scores. Some participants expressed frustration that their PBF payments were significantly reduced due to the overall hospital accreditation score, despite their personal efforts. They cited external factors, such as high patient loads and understaffed facilities, as reasons for poor hospital performance, which they felt were beyond their control.

> *"Can you imagine working harder—much harder—than your colleagues in other hospitals, yet receiving half their PBF payments because your hospital scored low during accreditation? I left my first hospital because the workload was overwhelming due to the high number of patients we served. Despite our efforts, our accreditation score was low, and our PBF payments were much lower than where I work now."* (Participant 10, Doctor)

The availability of resources, including IT systems and tools, was another frequently discussed area. Many participants expressed concerns about the reliance on manual processes in their facilities, which increased workloads, delayed performance evaluations, and reduced time for patient care. They emphasized the need for digital tools to streamline documentation and improve timeliness.

> *"Digital tools would make an enormous difference. Right now, we spend too much time on paperwork, which takes away from patient care."* (Participant 18, Nurse)

> *"If we had more digital tools, it would simplify the process and make evaluations more timely and accurate."* (Participant 20, Midwife)

The participants also commented on the consistency and timeliness of PBF payments. Delays in payments were a common grievance, with some attributing delays to facility-level inefficiencies and others pointing to external factors such as funding gaps. Providers noted differing causes for these delays. Nonmanagement staff attributed delays to facility leaders not processing documentation promptly, whereas managers cited external factors, such as late payments from health insurance partners. Additionally, facilities often used PBF funds for both operational costs/utilities and provider incentives, leading to potential delays or reductions in payments when operational expenses exceeded available funds.

> *"Health facilities receive PBF payments quarterly, which are used to provide performance-based incentives to healthcare providers and/or cover health facility operational costs."* (Participant 6, Clinical Director)

Notably, PBF is provided in most, but not all, public health facilities. Additionally, two participants reported having worked in facilities receiving PBF funds from multiple sources, including donor-funded programs, but still perceived these funding sources as unreliable. Four participants (doctors, participants 16, 2, and 4, and nurses, Participant 9) also expressed reluctance to work at hospitals that did not offer PBF incentives. Participant 4, Doctor, believed that this worsened the quality of care in such institutions:

> *"Hospitals without PBF funding struggle to attract and retain skilled providers, which can exacerbate inequities in the Rwandan healthcare system."* (Participant 4, Doctor)

The majority of participants recommended three key ideas on this issue. First, they emphasized that PBF should be extended to all public hospitals. Second, they suggested linking PBF directly and fully to government funding and incorporating it into regular salaries rather than depending on monthly facility revenues. Finally, a few participants proposed that extending PBF incentives to all hospitals would help address workforce shortages in facilities that are unable to attract providers due to the inconsistency or absence of PBF incentives.

> *"To increase the effectiveness and sustainability of the PBF system, it is essential to link disbursements directly to government revenues and ensure timely funding. This will stabilize hospital finances and ensure consistent payment for healthcare providers, regardless of fluctuations in hospital-generated incomes."* (Participant 3, Clinical Director)

Training emerged as another key area of concern among participants. Many providers reported insufficient training on PBF processes, leading to confusion about expectations. Even those who attended training noted that it was infrequent and often focused more on hospital accreditation than on PBF specifics.

> *"We did not receive much training on how PBF works in practice. It felt like we were learning on the job, which led to a lot of confusion initially."* (Participant 1, Doctor)

Actors

The engagement and capacity of stakeholders were identified as crucial to the success of PBF. Most participants emphasized the importance of involving key actors—providers, facility managers, and policymakers. They particularly commended policymakers for their foresight and consistent efforts to improve the PBF system at both the central and local levels through decentralized policies. A commonly cited example was the role of district health units. These units were highlighted as essential for ensuring accountability and consistency in the implementation and evaluation of PBF. They also facilitated the integration of community perspectives by establishing community health committees, which provided oversight for public health facilities. Furthermore, quality improvement committees at the hospital level were created to coordinate quality improvement activities in collaboration with the MOH. These efforts reinforced accountability, aligned PBF activities with national priorities, and strengthened the representation of users' voices in health services.

However, many noted that the limited engagement of providers in decision-making processes posed a significant barrier to PBF effectiveness. While providers played a strong role in delivering services to meet PBF targets, they often felt excluded from influencing PBF decisions.

> *"Providers need to be part of the PBF decision-making process. When we're excluded, it feels like [such] policies do not reflect our realities."* (Participant 11, Doctor)

The participants also raised concerns about the exclusion of patients as key actors, despite their central role as beneficiaries. They highlighted the potential benefits of engaging patients in the design and implementation of PBF to better address their needs and improve the program's effectiveness.

> *"Patients are not included in any decisions regarding PBF, yet these decisions affect them the most. Engaging patients could help us understand their needs better and improve the PBF program."* (Participant 17, midwife)

Building the capacity of stakeholders was also emphasized as a critical determinant of PBF success. The participants highlighted the need for targeted training and resource allocation to strengthen both the technical and the operational capacity of all involved actors.

> *"The success of PBF depends on how well-equipped the stakeholders are to manage it. Training and resources are key to ensuring this."* (Participant 6, Clinical Director)

Discussion

This study provides new insights into healthcare providers' perceptions of PBF implementation in Rwanda, shedding light on its successes and challenges. Using a structured framework, the findings offer a comprehensive

understanding of PBF's role in incentivizing providers. The participants highlighted how linking financial incentives to performance metrics fosters accountability, motivation, and adherence to service delivery standards as well as improved provider attraction and retention. These findings align with prior research in Rwanda and other low-resource settings, where PBF has been notably linked to improved provider engagement, performance, and service efficiency [7, 16, 17, 24, 25].

One of the notable strengths of Rwanda's PBF system is its integration into national health strategies, such as Imihigo, which aligns health sector goals with broader government priorities. This integration underscores the strong political commitment to accountability and results-based management, a feature frequently highlighted in comparative studies of PBF programs in sub-Saharan Africa [1]. The participants in this study attributed much of PBF's success to structural and policy-level support, emphasizing their role in reinforcing sustainability and ensuring alignment with national priorities.

On the other hand, delayed payments emerged as a significant barrier, undermining provider morale and service delivery. The respondents largely attributed these delays to the manual processing of PBF documentation and, in some cases, to slow reimbursements from health insurance providers. Similar challenges have been documented in other PBF implementations, where inefficiencies in financial flows disrupt program effectiveness [6, 7]. Streamlining payment mechanisms through the adoption of digital tools could address these delays by improving the speed and accuracy of reimbursements. Research on digital technologies for health financing (DTHF) in low- and middle-income countries suggests that these tools offer promising solutions to such challenges [26, 27]. While specific digital (pilot) programs in Rwanda and other low- and middle-income countries are not well-documented, most countries use them for revenue raising and pooling, with few applying them for purchasing or provider payment. For example, the Philippines uses machine learning (ML) for fraud detection in claims, North Macedonia uses digital tools for claims management and e-contracting, and Estonia uses digital solutions for multiple purchasing purposes, including digital claims management, automated claims reviews, ML for claims evaluation, and cost-sharing aggregation [27]. Digitalization could also improve PBF evaluations by addressing the infrequency and irregularity of assessments reported by participants, ensuring more consistent and timely feedback. Previous research on healthcare digitalization and pay-for-performance incentives in financing (smart) hospitals revealed that such a move towards digitalization created an enhanced information feedback mechanism that could move healthcare delivery towards results-based practice and help make more efficient use of scarce resources [28].

Another potential challenge pertains to equity. Reliance on facility accreditation scores to determine payments disproportionately disadvantaged providers in resource-limited, low-graded facilities. This aligns with critiques emphasizing inequitable resource distribution in standardized PBF frameworks [5]. For example, a study in Rwanda reported that PBF improved efficiency but not equity in most health services [29]. Linking PBF to facility accreditation scores effectively creates a 'Group Incentive Plan,' which ties rewards to collective performance and fosters collaboration. However, this approach weakens the connection between individual effort and rewards, undermining perceptions of fairness [24, 30, 31]. Employees often struggle to see how their efforts influence group performance metrics, leading to perceived inequities, particularly compared with individual incentive plans [25]. Individual-level measures are seen as more achievable since they are within direct control, making individual PBFs preferred by providers [24, 25, 30, 31]. Providers tend to resist accountability for factors beyond their control, as shown in prior research [32].

The participants also raised concerns about limited involvement in the design and refinement of performance indicators. This exclusion may hinder the program's adaptability and alignment with ground-level realities. Similar critiques have been made in other settings, where greater stakeholder engagement has been recommended to enhance PBF relevance and provider buy-in [33]. Expanding participatory mechanisms, such as regular structured feedback and provider representation in decision-making, as well as piloting changes under 'real-life' conditions prior to broader implementation, could improve the program's effectiveness and acceptance among providers [34]. Similarly, this study revealed minimal emphasis on patient involvement in PBF design and evaluation, a gap that contrasts with global calls for more inclusive health system reforms [32, 35]. Engaging patients as active stakeholders could improve the program's responsiveness, aligning it more closely with community health needs [35, 36]. These aspects fall under a broader need for participatory consensus building in health policy design, implementation, and evaluation [37–39].

Study strengths and limitations

This study is the first in-depth qualitative analysis of healthcare providers' perspectives on PBF in Rwanda, offering valuable insights into the program's strengths and challenges. By focusing on providers—the key implementers—it highlights their experiences, operational realities, and recommendations. The use of in-depth interviews allowed us to capture nuanced views and experiences of PBF in daily practice. The respondent group included diverse types of healthcare providers,

enabling a comprehensive overview. The findings provide a solid foundation for policy improvements and cross-country learning in similar settings, particularly for countries developing or refining PBF frameworks.

However, the exclusion of other stakeholder groups represents a significant study limitation. Future research could incorporate perspectives from policymakers, CHWs, and patient representatives. For example, examining the informal health sector, where CHWs play a crucial role, could reveal opportunities and challenges for integrating PBF across all levels of care.

Conclusions

By linking financial incentives to performance metrics, PBF has motivated providers, enhanced accountability, and improved provider attraction and retention. Its successful implementation in Rwanda is largely attributed to strong political will, integration into national strategies, and decentralized management structures. However, addressing systemic barriers (e.g., payment delays) and contextual disparities among facilities and fostering greater stakeholder engagement are critical to maximizing the program's impact. These findings offer valuable lessons for policymakers in Rwanda and other contexts looking to implement or refine PBF systems, emphasizing the need to balance financial incentives with equity and inclusivity in healthcare reform.

Abbreviations

COGE	Comité de gestion
CHWs	Community health workers
DAF	Director of finance
EDPRS	Economic development and poverty reduction strategy
DG	Hospital general director
HR	Human resources
MDGs	Millennium development goals
MINECOFIN	Ministry of finance and economic planning
MOH	Ministry of health
NCST	National council for science and technology
NCNM	National council of nurses and midwives
PBF	Performance-based financing
RBC	Rwanda biomedical centre
RMDC	Rwanda medical and dental council
UHC	Universal health coverage

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

CN and KDJ conceived the study, developed the study protocol, and created the in-depth interview guide. CN conducted participant recruitment, interviews, transcript translation, and data analysis and wrote the original manuscript. KDJ, RN, and CS reviewed and edited the manuscript. RN assisted with oversight of the study locally in Rwanda, including administrative guidance and participant recruitment. KDJ and CS provided overall supervision and handled administrative matters. All the authors read and approved the final manuscript.

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Data availability

The datasets generated and/or analysed during the current study are not publicly available due to participants' privacy but are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

The study received ethical approval from the National Council for Science and Technology (NCST) of Rwanda under research permit No. NCST/482/0124/2024. Additional ethical clearance was granted by the Research Ethics Committee of Jagiellonian University Medical College (No. 118.0043.1.10.2024).
Study procedures and methods were conducted in accordance with the Declaration of Helsinki guidelines. Written and verbal informed consent was obtained from all study participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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