Performance-based financing in the South-East Asia Region: A scoping review

World Health Organization
South-East Asia Region

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Foreword

Performance-based financing (PBF) is a pay-for-performance approach in health financing that links financial or material resources to achieving pre-agreed outputs or performance targets. Over the years, health system reform efforts in low- and middle-income countries have featured PBF initiatives accompanied by diverse objectives, scope and modalities.

Global evidence on its effectiveness and impact is mixed. While some initiatives have yielded positive results, others have encountered challenges. The mixed nature of the results and their modest scale highlight the fact that PBF needs to be conceptualized within a broader understanding of health system and community factors.

This report provides a comprehensive overview of PBF experiences in the WHO South-East Asia region, where the adoption and documentation of such experiences have been relatively scarce. The review offers insights into how this health financing approach interacts with the health system challenges and opportunities for countries in the region. From initiatives targeting maternal and child health in India, Nepal and Bangladesh, to emerging integration of PBF-similar approaches within Indonesia's national health insurance schemes, PBF experiences in the region are consistent with the findings in the broader PBF literature.

The review confirms that while PBF has mixed impacts on utilization and equity, it presents an opportunity to focus on quality and sustainability - especially when accompanied by thoughtful policy design and strong implementation frameworks and capacity. These lessons emphasize the significance of alignment with broader health system reforms, equity adjustments and leveraging PBF as a catalyst for strengthening governance, management and information systems.

Countries in the South-East Asia Region are encouraged to consider these lessons to enhance health system performance, reduce inequities and promote sustainable health financing reforms. Designing PBF as a mechanism to strengthen strategic purchasing helps scale up its role and support the larger health financing goals to accelerate progress towards Universal Health Coverage.

Saima Wazed
Regional Director
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Executive summary

Background

Performance-based financing (PBF) is a health financing approach whereby financial or material resources are made available on the condition that pre-agreed output or performance targets are met. It has been deployed with increasing frequency over the last decade in low- and middle-income countries (LMICs), with a wide variety of objectives, modalities and accompanying health system reforms.

A recent systematic review for the Cochrane Collaboration summarized the evidence of effects from LMICs, finding positive impact on quality (particularly relating to inputs to care) but mixed effects on utilization and equity, particularly when adjusted for additional resources. A realist review had also been recently published; it highlighted the multiple potential modifiers of performance and mechanisms of change. However, there has been no review to date of the deployment of PBF in the WHO South-East (SE) Asia Region specifically.

The study aims to comprehensively describe the state of PBF implementation across the WHO South-East Asia Region; the focus is on description of existing experiences in order to enable more analytic studies. This paper aims to support policy dialogue on PBF in the Region by examining the evidence on PBF programmes to date and the lessons that these may generate, particularly now that many countries are reviewing their purchasing and provider payment mechanisms, especially in the context of COVID-19 and future policy reforms.

Methods and limitations

This scoping review aims to identify the PBF schemes that had been or were due to be implemented in the South-East Asia Region. For all schemes identified, their objectives, design and planned mechanisms of change (where revealed) were identified and comparatively discussed; where evidence on implementation and impact of schemes was available, it was synthesized narratively and quality was appraised. Published and grey literature from the Region, focusing on supply-side programmes of different designs, were sought from databases and website searches, backed up by consultations with experts. Structured screening, quality assessment and extraction were used.

As the study is primarily descriptive and relies on evidence review, conclusions and findings drawn naturally relate to what is documented on the state of PBF in the South-East Asia

Region. This means that due to reporting challenges, it is not always possible to draw specific or definitive policy-relevant lessons.

Characteristics of included studies

In total, 13 000 documents were screened, with the selection process finally resulting in 24 studies included. The majority were academic publications and focused on India (14) and Bangladesh (5), with a smaller number on Nepal (2), Thailand (2) and Indonesia (1); no documents relevant to Myanmar, Bhutan, Sri Lanka, the Democratic People's Republic of Korea (DPR Korea), Maldives or Timor-Leste were identified. Most studies were quantitative, examining the impact over time, generally without any comparator.

Main findings

Characteristics of PBF design

The objectives of the programme are not always made explicit; however, in many cases, these have included a concern for particular health priorities (e.g. high national maternal mortality rates) as well as quality improvement goals, cost reductions, desire to improve equity and enabling of wider reforms (e.g. to shift the health system towards a more primary care-led model).

In terms of design, majority of the programmes used target payment or payments per output designs, most commonly within the public sector (at different levels, including health workers, and primary and secondary facilities), although in India public and private sectors were included [in the Janani Suraksha Yojana (JSY) programme] and some programmes targeted the private sector exclusively. Almost all offered rewards instead of sanctions (this was the case only in Thailand). The funders of schemes are predominantly national ministries of health or insurance agencies and in a minority of cases, international donors. Performance is assessed and paid for predominantly at facility and health worker levels. Purchasing arrangements are integrated (no third-party purchasing agency) in the vast majority of schemes. Information on magnitude of incentives (for both facilities and workers, absolute or relative) is often missing, as is information on how schemes were developed and targets set.

In many cases, the schemes implemented in the Region were complemented by concurrent demand-side interventions that aimed to enhance service utilization specifically. This was largely the case for Bangladesh, India and Nepal.

Barriers and enablers to PBF scheme implementation

A number of barriers are noted in relation to implementation, including incentives for facilities being too insignificant to incentivize substantive changes, schemes relying on the

local health management information system (HMIS) but not having the right indicators, quality or frequency to accommodate what is needed, schemes not being developed in a participatory manner with managers and health workers, limited appropriate communication with health providers on what was expected and delay in PBF payments. In cases where PBF schemes were not complemented by demand-side interventions, there was also, generally, a lack of resources allocated to enable demand generation or to sustain demand (e.g. via payments for transportation or for medication adherence). Enablers of PBF implementation, which were noted, included expanding incentives to cover the whole team, ensuring broad engagement in programme design as well as communication with service users, specifically where targets relating to utilization were set.

Scheme impact

In many cases, the PBF schemes had a positive impact, but this ranged from being minor to moderate in size; studies themselves noted risks of bias in teasing out PBF effects from concurrent demand-side interventions. It is important to note that limited equity effects were observed, but schemes that were implemented concurrently with demand-side interventions were more likely to achieve positive outcomes in this regard. In some cases, barriers to scheme implementation and success were noted to have influenced the offering of sufficient finances to sustain demand for services; it was observed that this affected out-of-pocket expenditures and equity specifically.

Conclusion

From this scoping review, it appears that relative to other regions, the WHO South-East Asia Region has been less active in developing PBF within its health systems, with the exception of a cluster of programmes targeting maternal and child health care in Bangladesh, India and Nepal, which combined supply and demand components. In some cases, PBF-like approaches may have been incorporated in the main health financing schemes – such as in Jaminan Kesehatan Nasional (JKN) (National Health Insurance Scheme) in Indonesia – but have not been well described and studied in the literature.

Across reviewed studies, impacts were largely positive. Barriers and enablers mentioned did not differ by PBF scheme design – however, PBF schemes that were more focused and had clear co-designed implementation guidance were most likely to note positive impacts.

The findings, which emerge from the limited published literature to date, are consistent with findings in the broader PBF literature to date. In terms of overall programme effects, their mixed nature and modest scale highlight the fact that PBF needs to be conceptualized within a broader understanding of health system and community factors.

Key messages and recommendations

Drawing from the regional and wider experience of PBF, the report highlights that:

(1) PBF is one of several tools that could address problems of resourcing and incentives to focus on priority services by health-care providers. It may be appropriate as part of a set of mixed provider payment methods in some settings.

(2) Key accompanying measures include increased supervision for health providers and increased autonomy to manage within given resources; these may be as important, if not more so than the conditional resources.

(3) In designing PBF programmes, the regional and wider international literature provides many lessons, as evidenced in recent systematic reviews. Specifically, policy-makers should pay attention to:

- collaboratively designing schemes with the stakeholders involved in the financing, implementation and verification of schemes, which are explicit about the bottlenecks to be addressed and how PBF is expected to achieve that;
- calibrating the level of incentives appropriately, so that local health-care workers find the efforts spent commensurate with potential rewards;
- where appropriate, rewarding the behaviour of teams of professionals instead of single cadres so as to incentivize care across entire patient pathways;
- reviewing indicators regularly to ensure that they target underperforming areas and inequities in coverage, and that they incentivize quality of care;
- considering the ancillary investments, which are required to ensure that PBF may be effective, including capacity-building for managers;
- establishing verification systems that are risk-based and build on routine information systems, where feasible; and
- actively monitoring negative, unintended consequences.

Given the interest in this area and the diversity of experiences in the SE Asia Region, it will be important for the WHO Regional Office for South-East Asia (WHO-SEARO) to continue supporting reflection and cross-sharing of lessons, both within the Region and in discussion with other regions.

Introduction

Performance-based financing approaches and components

Performance-based financing (PBF) – also known as paying for performance, performance-based funding, results-based funding or results- or output-based aid – is a health financing approach whereby financial or material resources are made available on the condition that pre-agreed output or performance targets are met (1, 2). It is important to conceptualize PBF as a complex health system intervention (1), which in practice can take on diverse designs (3,4) and vary significantly in relation to its implementation (5). For example, Musgrove (6) notes that scheme designs can vary based on the stakeholders who are targeted by interventions (e.g. health-care workers, health-care facilities in the public, private or not-for profit sector, at national or subnational levels) as well as the types of rewards put in place (e.g. non-monetary gifts vs monetary incentives).

The types of outputs and services that PBF targets also vary considerably (5), ranging from the rewarding of service utilization (e.g. rewards disbursed based on the number of women accessing antenatal care) to health outcomes (e.g. incentives disbursed based on patients achieving tuberculosis treatment success). Schemes may also employ punitive designs, whereby specific incentives are withheld or income of facilities is compromised based on undesirable behaviour displayed (e.g. overprescription of medications). In many cases, PBF interventions are not rolled out alone – they can be accompanied by training interventions, financing reforms, new monitoring, feedback and verification mechanisms as well as changes to governance systems; importantly, the effects of schemes are also highly context-dependent (7).

Box: Definition of PBF

For the purposes of this report, performance-based financing is defined as a health system financing intervention that takes one of the following three forms: conditional cash payment, conditional provision of material goods and target payments (payments for reaching a certain level of coverage, which can be defined in absolute terms or relative to a starting point). This definition is aligned with the most recent Cochrane review of PBF *(2)*. This means that financing modalities, such as capitation, are not covered by this report.

International evidence on PBF

Mechanisms of action

Evidence on the mechanisms of action of PBF as well as potential contextual and implementation-related moderators, as relevant to health-related programming and service delivery in low- and middle-income countries, is summarized in a recent realist review[1] (8). Some key influences relating to how pay-for-performance (P4P) may achieve higher utilization of health services concern the scheme's ability to influence health worker activity. For example, providers may focus more on demand generation (e.g. by carrying out outreach or home visits) or adhere more to clinical guidelines, thus increasing the quality of care as well as satisfaction with, and trust in, services. Health provider skills and competencies are noted as contextual moderators in this regard; in their absence, demand generation is not likely to result in desired outcomes, therefore, schemes may need to include training and supervision elements.

Trust in services is also noted as a key moderator for utilization, often also influenced by P4P's ability to increase available resources at a facility: this may either be via a direct transfer of material resources or by increasing the autonomy of the facility to spend PBF financial resources (e.g. on medications or equipment). P4P is sometimes accompanied by reforms that seek to lower user fees and informal payments made to health facilities/workers; by ensuring this, it is expected that utilization of services and satisfaction with the facility will increase.

The realist review also provides insights into how PBF brings about these desired changes in health worker behaviour and the wider health system context. Schemes are noted to increase the productivity and motivation of workers, partly via the direct effect of financial incentives (provided these are paid on time, and the lag between reporting and payments is small) and also by enabling a more supportive environment – e.g. one where supportive supervision, managerial support and autonomy are bolstered.

Accountability of workers to local communities – as incentivized by monitoring arrangements put in place by PBF schemes – is also a potential factor influencing motivation and productivity. Notably, however, PBF schemes can also give rise to negative spillover effects. For example, by focusing providers on the provision of specific services, other services may be neglected. Similarly, gaming and misreporting are frequently mentioned issues in the literature.

1 A realist review is a type of systematic literature review that focuses on explaining how an intervention works, whom it works for and in what circumstances it works (see an overview of this method of evidence review here).

Overall, the authors of the realist review conclude:

> "It is also clear that existing P4P studies, as a body of knowledge, remain insufficient for coming to a clear determination on a full set of pathways and mechanisms, and that variation in study design, programme design, implementation and contextual influences makes it challenging to make generalizations on P4P in LMICs."

Effectiveness of PBF

Complementary to the realist review, evidence on the effectiveness of PBF in achieving both targeted and untargeted outputs is summarized in a recent Cochrane review (2). Within this, 59 quantitative evaluations contribute to provide indications of PBF's effects against either a status quo control (i.e. no intervention, services and financing running as usual) or alternative interventions (most frequently enhanced financing to broadly match the resource inputs of PBF).

The Cochrane review identified a relatively weak evidence base, however, some trends emerged.

Compared with a status quo control (service as usual):

- PBF approaches may improve targeted service quality and they probably have a positive effect on the availability of health workers, medical supplies and equipment as well as infrastructure functionality.
- Effects on utilization of services are mixed. Concurring with the realist review findings, the Cochrane review finds that PBF positively impacts managerial autonomy; however, limited effects on provider absenteeism, motivation or satisfaction were observed.
- The evidence also points to mixed effects on the equitable utilization of health services.

Effects on health outcomes were seldom studied; however, available evidence suggests PBF may improve some health outcomes. The Cochrane review found that P4P may slightly reduce child mortality (0.2%–6.5% reduction) and the proportion of children with reported anaemia, and increase the likelihood of TB treatment success. Effects on neonatal mortality, however, were noted to be inconsistent *(2)*.

There is some evidence to suggest that P4P leads to increases in quality of care. However, mixed effects are now noted relating to the effects of PBF on increasing available facility resources. Effects on use of health services are also mixed.

Given the context-specific and mixed results for PBF effectiveness, it is important to consider it in the context of a wider menu of potential health system strengthening options, including direct facility financing (whereby funds are channelled directly to facilities without the same output-based conditionality) (Witter et al., 2021).

Rationale for study

While there is a growing body of international evidence on PBF and its implementation, little evidence has emerged in relation to schemes among countries in the South-East Asia Region. Some countries, such as India, have made efforts towards national-level implementation of PBF while ot hers (Timor-Leste) are contemplating experimenting with this policy tool to improve their health system performance.

In general, PBF has frequently been taken as a self-contained "health financing mechanism", often run as a "scheme" or a "project" for a particular programme and not adequately integrated into medium- to longer-term systems strengthening or overall health financing reforms. It is also sometimes understood as being able to improve provider performance on its own. If introduced this way, PBF may monopolize attention and focus policy dialogue on the short-term results of an individual programme while diverting attention and resources from broader processes of change in the overall health system, with too little care given to system-wide and long-term effects. There is a need to better understand what the experiences in the Region have been so far and the contextual elements that may facilitate or impede such a policy tool.

The objectives and approaches for PBF differ, both across counties and within a country; this calls for clarification of understanding and coherence of PBF efforts in their design and implementation to support specific elements around universal health coverage (UHC) in the Region. The recent COVID-19 response, mounted by governments for health emergency preparedness and response, including the significant policy prerogatives for performance-based policy responses, underscored the criticality of effective PBF to engage with the private sector (an element that has been limited in the literature to date, which has focused on the public and faith-based sectors). WHO provides support to countries to accelerate and tailor PBF reform implementation in the health sector, where applicable.

Methods

Objectives

This scoping review aims to identify the PBF schemes that have been or are due to be implemented in the South-East Asia Region. For all schemes identified, their objectives, design and planned mechanisms of change (where revealed) were identified and comparatively discussed; where evidence on implementation and impact of schemes was available, this was synthesized narratively and quality-appraised. The aim of the study is thus to comprehensively describe the state of PBF implementation across the South-East Asia Region; the focus is on description of existing experiences in order to further enable more analytic studies.

Eligibility criteria

To be eligible for inclusion, documents had to include information on a PBF scheme planned or implemented in the South-East Asia Region (see eligible countries in Appendix 1). Documents could be academic studies or grey literature, such as reports, infographics and presentations, among others, including policy documents describing PBF schemes. Documents were accepted in any language and no time restriction was applied; however, searches had all been conducted in English.

Since this is a scoping review, inclusion criteria have been deliberately broad. PBF schemes may refer to schemes implemented at national or regional levels (including results-based aid) as well as at district, facility and health worker levels, and schemes including a mixed supply- and demand-side incentive element (e.g. performance-based contracting introduced alongside cash transfers).

To be excluded, documents needed to meet one of the criteria below:

- The document does not relate to the South-East Asia Region.
- The document reports on a demand-side financing intervention only.
- Insufficient detail on a PBF scheme (must include design and planned mechanism at a minimum) is available for synthesis in the review.

Documents excluded because of insufficient detail (the third criteria mentioned above) are listed in an appendix to the final review to ensure a comprehensive account of the schemes that may have been implemented across the South-East Asia Region; however, they were excluded from synthesis.

Information sources

The review team searched bibliographic databases, grey literature and global PBF websites as well as websites of South-East Asia organizations and international agencies (see Appendix 2). The Ministry of Health websites for each of the countries in question were also searched and experts approached in the field – see Appendix 3 – to identify any additional documentation of relevance. Additionally, the reference lists of the recent Cochrane review (2) and realist review (8) on the topic were hand-searched.

Searches

Searches have been adapted from the most recent Cochrane review of PBF (2). Search strings included all relevant synonyms and terms related to PBF, including performance-related pay and results-based aid, among others. The country-specific list in Appendix 1 was used to calibrate country search terms to be used for searches of bibliographic databases only. Website searches were deliberately kept broad so that all potential studies could be captured.

Screening process

Search results were imported into Mendeley and de-duplicated. Following this, screening proceeded in two phases. First, one reviewer screened all title and abstract/document summaries, proceeding along a principle of overinclusion – i.e. all potentially relevant documents were retained for more thorough reviews. Second, the full texts of the retrieved documents were read and documents excluded, as per the criteria listed above.

Data extraction

The remaining documents were included in the review, and underwent data extraction and charting, as per the template in Appendix 4. Specifically, each document was assigned a unique identifier (including author organization) and information was extracted with regard to the country where the PBF scheme was implemented/due to be implemented, the context of implementation and the scheme's features (e.g. objective, mechanism of action, verification mechanisms, indicators incentivized, etc.) as well as implementation issues noted and assessed effects. Depending on the type of document, specific additional information was retrieved – e.g. for academic documents/studies, a summary of findings as well as descriptions of methods used was extracted. For policy documents and financing strategies, information on the context of the policy/financing strategy and how PBF was framed was extracted.

Critical appraisal

Policy documents and financing strategies did not undergo critical appraisal; information retrieved from these was charted and synthesized narratively (see below). For studies that were retrieved, as these were very heterogeneous, the Mixed Method Appraisal Tool (MMAT) for quality assessment (see Appendix 5) was used.

Charting and synthesis of results

A basic descriptive bibliometric analysis, providing an overview of the types of documents retrieved, their years of publication, funding sources and countries covered, was prepared for all documents.

For any documents that provided information on PBF schemes already implemented, overview graphics were prepared to summarize information on where schemes had been implemented and comparable characteristics (e.g. the size of incentive payments). Information on scheme mechanisms was obtained and a typology of scheme designs, similar to those existing in current literature, developed (2); summary tables and graphics provide summative details on how schemes operate as well as contexts of implementation, implementation issues and effects.

For documents focused on future PBF policies or financing strategies, a brief overview of how PBF approaches are described is narratively presented. The purpose for extracting information from these documents is to identify the main trends in relation to how PBF is framed by policy-makers.

For those documents that are studies and provide evidence or lessons on PBF scheme implementation or success in relation to targeted indicators, the typology of schemes noted above is used and a summary of the study findings by PBF type provided. A quality rating for each of the studies is also be available to assist with interpretation of findings. To provide an overview of PBF schemes and any lessons learnt specific to countries, data by country setting will be summarized as well.

Findings

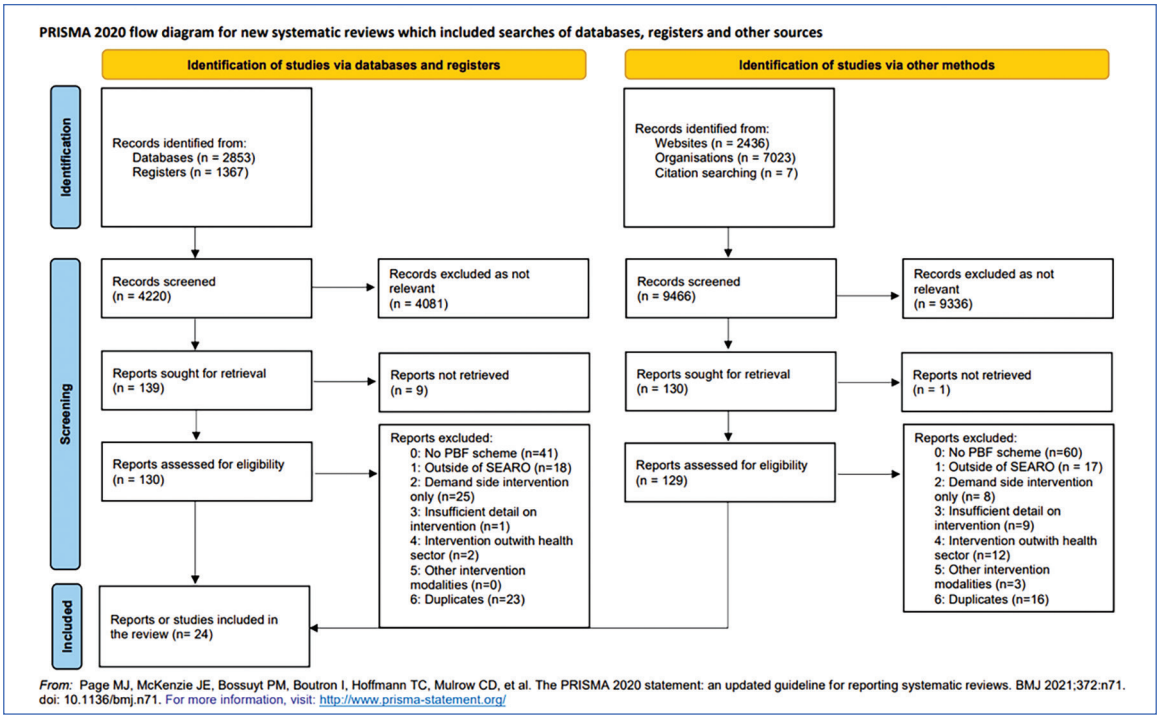
Literature search results

Searches identified over 13 000 documents, the majority of which were from grey literature sources.

The PRISMA diagram below (Fig. 1) details the selection process: following screening of titles and abstracts, 270 documents were retained for full-text screening, with 24 documents retained for inclusion. These documents also include a reference to one trial that has not registered results to date.[2] At times, documents cover information on multiple schemes, as such the team focused on extracting relevant information unique to each country and present this in the relevant sections, by scheme.

All tables referenced are included in Appendix 6.

Fig. 1. PRISMA diagram

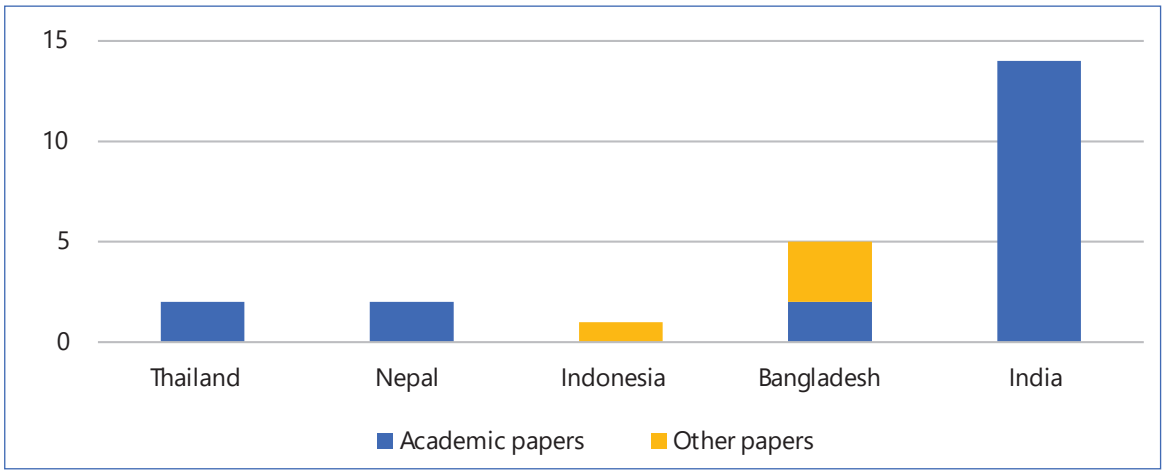


2 Integrating paediatric care delivery in rural health-care systems

Overview of the PBF literature applicable to the region

Of the 24 documents identified, the majority focused on India (14) and Bangladesh (5). No documents relevant to Bhutan, DPR Korea, Maldives, Myanmar, Sri Lanka or Timor-Leste were identified. The majority of the literature was academic – very few reports were identified (see Fig. 2).

Fig. 2. Mention of PBF schemes, by country

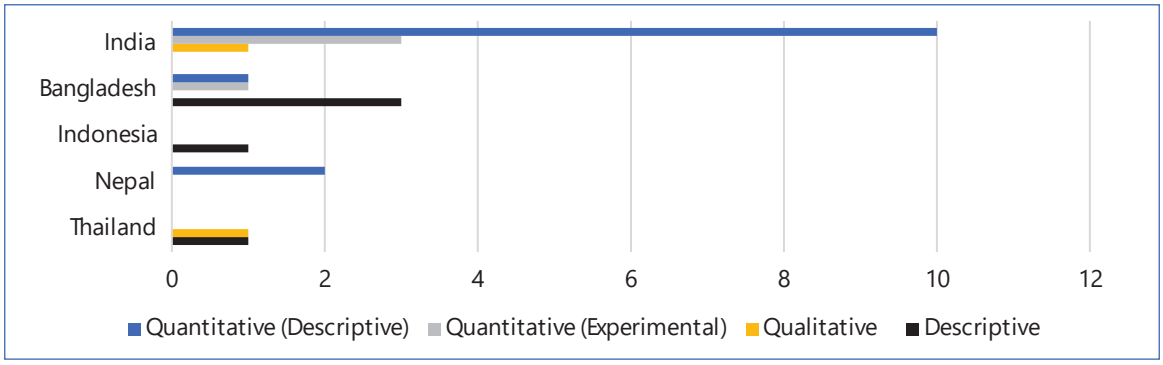


Characteristics of included studies

Table 1 offers an overview of all studies that were included, along with their characteristics. Despite not setting time-related inclusion criteria in searches, all studies referencing the topic of PBF, which were included, were published after 2001; the last study retrieved was published in 2019. Most of the work was published around 2014.

The majority of the studies are quantitative and focus on assessing the impact of PBF implementation. However, some qualitative studies were also identified (Fig. 3). The majority of the quantitative studies were descriptive ones, assessing effects via routine monitoring and evaluation. Quantitative experimental studies instead sought to put in place controls/comparators for use in formal impact evaluations.

Fig. 3. Mention, by country and type of study



As noted in Table 1, the majority of the studies were commissioned by external agencies instead of country agencies: for example, the World Bank and the Bill and Melinda Gates Foundation were among frequent funders. Most studies did not include a comparator intervention to PBF – this means that studies mostly focused on PBF schemes themselves as they were implemented, not discussing their effects against alternative financing strategies. Where control groups or other interventions were considered by studies, Table 1 notes this. For the majority of the studies with controls, the latter refer to traditional financing arrangements in the health system. Some studies in Bangladesh and India specifically also consider other interventions as comparators – for example, providing demand-side incentives to patients [e.g. Rahman (2011)].

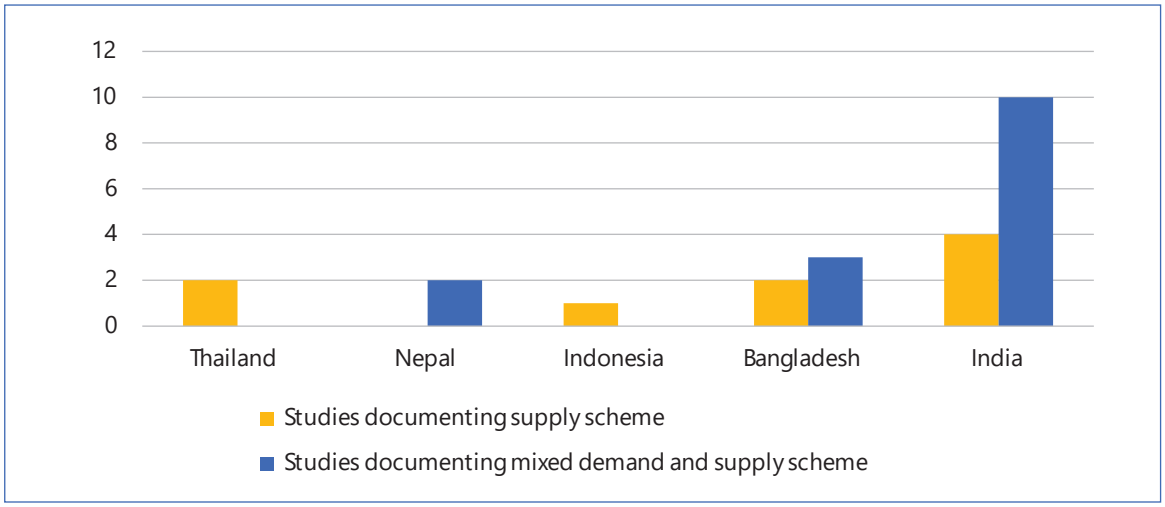
Table 2 further summarizes how the studies collected their data, from whom and what kind of outcomes were considered. The majority of the studies use surveys with P4P participants (health workers), beneficiaries of health services at facilities where P4P is implemented or routine health records and data. Outcomes that studies consider vary; however, the majority focus on utilization of health services.

Which schemes have been implemented?

Tables 3 and 4 and Fig. 4 offer an overview of the schemes that are discussed in the studies included. As the searches were focused on identifying PBF schemes that targeted the supply side of health care delivery, the majority of the schemes discussed fall within this category.

However, Bangladesh, India and Nepal implemented mixed supply- and demand-side schemes. The main scheme described in this category is the Janani Suraksha Yojana (JSY) implemented across India, for which evidence is available across various states where it has been implemented (see Fig. 4).

Fig. 4. Type of PBF scheme documented across studies, by country (the total refers to the number of studies)



When comparing the number of schemes implemented across the Region and per country with that executed in regions such as sub-Saharan Africa or individual countries therein, it is noted that relatively few PBF interventions appear to have been implemented in the SE Asia Region.

The Context in which PBF schemes were implemented (Table 3)

The earliest scheme discussed was implemented in Bangladesh in the 1980s [see Chowdhuri (2001)], however, the majority of the schemes described in the literature have been implemented from the 2000s onward.

Table 3 describes the circumstances in which PBF was introduced. Schemes were primarily introduced to advance progress in specific health priority areas and/or to address poor performance in service delivery.

As per Table 3 summarizing the context in which PBF was introduced, the implementation was primarily due to prioritizing specific health issues or attempting to address health services elements that were not performing as intended. With regard to the former, the most common issue related to maternal and child mortality, and regarding the latter, issues with the quality of care were flagged.

PBF Scheme design

Funders and purchasing arrangements

The majority of the schemes are funded by national governments and ministries of health or health insurance agencies. Purchasing arrangements appear to be predominantly integrated – this means that the payments made to health facilities and workers are channelled via the health-care system instead of third parties. Only one scheme used a third party to disburse payments [see Rahman (2011) in Bangladesh].

PBF approaches and their clinical and indicator focus

In line with the above-mentioned observations on the context in which PBF schemes were introduced, the primary clinical areas that the schemes were targeting related to maternal and child care. A few schemes additionally focused on noncommunicable diseases (NCDs) as well as on tuberculosis (TB).

The indicators incentivized by schemes vary. Most of the indicators that are described across the literature refer to utilization of services and quality of care indicators, such as control of prescriptions or antibiotic use and completion of treatment.

The main type of PBF approach used is payment per target. This means that health facilities and workers are paid if specific targets are reached; from Tables 3 and 4 and the descriptions below, it is seen that these largely refer to achieving specific quality of

care scores, managing to contain expenditure at health facilities or overprescriptions and managing to achieve specific health outcomes (e.g. TB treatment completion). The second most common PBF approach relates to payments per outputs (i.e. services delivered).

Target-setting and measurement of targets

Reviewed documents do not provide much information on how the specific service targets schemes focus on are set. In specific settings (e.g. Thailand), it was noted that mainly the Ministry of Health and the insurance agency concerned themselves with target-setting; however, in Bangladesh, the processes for target-setting appear more comprehensive and consultative, with additional stakeholder groups being consulted.

Similarly, limited information is available on how the different targets will be measured in practice during PBF implementation. Where information is available, this suggests that routine health records and information systems will be used by the PBF schemes to determine if/how targets have been achieved.

Sectors contracted and the level at which performance is assessed and paid for

The majority of the schemes contract a mix of private and public health providers. However, in some cases, the public sector clearly makes up the majority of providers (e.g. in Thailand).

Schemes vary in relation to the level at which performance is assessed and paid for. One group of schemes targets facilities (including hospitals) – this type of schemes was mainly used across Nepal and Thailand. Across these schemes, it is unclear from reviewed documents how and whether incentives are cascaded down to individual health workers. The second group of schemes directly rewards health workers (or health worker teams) and for these, payments predominantly reach the health workers directly. A few documents describe cases wherein facilities are paid first, with payments then being cascaded to health workers (this appears to be mainly the case in Bangladesh).

Size of incentives

Where magnitude is reported, the literature reveals a wide range of sizes of incentives being used. For example, for schemes that target health facilities, the relative magnitude of the incentives they receive ranges from 1% of the sums that facilities will usually be paid for care to 60% of the budgets that facilities will usually receive.

For incentives targeting health workers directly, the review team similarly identify varied sizes of incentives. Some are modest in nature: e.g. where non-cash incentives were used, their value amounted to approximately US$ 30 per quarter. Other incentives were much higher though, e.g. up to US$ 27 000 (equivalent to approximately 15% of a mid-level doctor's salary).

PBF implementation and overarching impact

Table 5 summarizes the key issues relating to the implementation of the above-discussed PBF schemes, by country. The table presents barriers or challenges encountered for each of the schemes, alongside the lessons learnt from the scheme implementation. Where findings relating to effectiveness or impacts of schemes are discussed in the literature, these are summarized briefly or direct quotes are presented from the reviewed documents.

Findings across literature

Authors across the literature retrieved note that the implemented PBF approaches have achieved modest improvements in relation to their intended clinical targets (see last column in Table 5). While effects are largely positive and no actual unintended effects are noted, they tend to be of relatively small magnitude or isolated in wealthier patient groups. Notably, in many of the documents reviewed, the positive effects cannot be directly attributed to the PBF scheme alone. However, the PBF schemes implemented appear to have strengthened the broader health system – including by strengthening teamwork and ensuring transparency in relation to quality of care, among others.

The risk of bias across reviewed studies varies, however, it is generally low, suggesting that the conclusions the studies reached are credible.

Barriers and challenges to PBF schemes achieving intended effects

Across reviewed documents, authors discuss the challenges to the PBF schemes achieving their intended effects. Some of these barriers are also mentioned in the wider PBF literature to date.

These include the conclusions that:

- incentives are too small to incentivize substantive changes (e.g. as in Indonesia);
- schemes rely on the local HMIS, but this does not have the capacity to accommodate what is needed in terms of monitoring of performance (Thailand);
- schemes have not been developed in a participatory manner (as noted in studies from Thailand);
- there has been limited appropriate communication with health providers on what was expected (Nepal, Thailand); and
- PBF payments are made late or are distributed in a manner inconsistent with the scheme's intent (Bangladesh and Nepal).

Lessons learnt across schemes implemented

Across the documents, some lessons regarding how best to implement schemes in future are noted. Some of these include ensuring that schemes are co-designed and co-developed with all relevant staff [for example, as described by Khampang (2017) in Thailand, Rahman (2017) in Bangladesh or Carmichael (2019) in India]. Other lessons concern the types of workers targeted by schemes – e.g. it may be appropriate to expand PBF designs to incentivize all those involved in a particular treatment [e.g. team incentives, as described by Rahman (2011) and Rob (2014) in Bangladesh]. Further, particularly with regard to schemes implemented in Bangladesh and India, the need to consider how to adapt schemes to ensure access to the poorest segments of society is also noted.

Limitations

As the study is primarily descriptive and relying on evidence review, conclusions and findings drawn naturally relate to what has been documented. In many cases, the documents reviewed here offered only limited information on scheme designs and particularly on effects of interventions. Additionally, a large proportion of the schemes described are using a mix of supply- and demand-side interventions concurrently – often with evolving characteristics over time as lessons are learnt from implementation. Therefore, please note that classification of schemes, and triangulation between scheme designs and impacts are difficult. This means that it is not always possible to draw specific or definitive policy-relevant lessons.

Country-specific experiences and opportunities

For all references to the studies below, please see the data extraction file.

1. Indonesia

Schemes implemented

Two supply-side-focused schemes, implemented in Indonesia, were identified: one in the late 1980s, developed and implemented by the Ministry of Health, and one approximately two decades later, supported via external partner funding (by CORDAID). The second (CORDAID) scheme appears to have been at the start of the implementation when the document identified was written. The scheme was implemented in two districts of Flores Island.

Main design features

Limited information on the design of the scheme was available. The report retrieved states that surveys were held with key stakeholders to identify the types of indicators that would

be incentivized by the scheme. Regarding purchasing, the document notes that funding was provided by CORDAID and channelled as per the following:

> "Initially, the intention was to channel funds through existing social insurance organizations, which would operate as the fund holder. Due to gaps in its organizational capacity, it was decided not to involve them in the programme. The fund holder function is now organized at the district level, as an independent unit directly funded by CORDAID and supported by expatriate technical assistance.
>
> "A steering committee, in which facilities, communities and other stakeholders are represented, will oversee the operations of the fund holder. Both public and private facilities will be contracted. The first contracts are expected to be signed by the end of 2009. Community groups will be contracted for verification and assessment of patient satisfaction."

Brinkerhoff (2013) offers more details on the CORDAID scheme, stating:

> "Starting in 2009, local health facilities and district hospitals earned financial rewards for increases in new consultations, referrals, complete immunizations, new and cured TB cases, safe deliveries, and treatment of low birth weights, among other quantity indicators. Quantity indicators were verified monthly, through spot-checking facility records and visiting patients to verify treatment. Quality was gauged quarterly, using a list of indicators of hygiene and sanitation, regular consultation, emergency service, delivery care, etc."

Evidence on scheme impact

There was no information on scheme impact in the report retrieved by CORDAID. However, Brinkerhoff (2013) reports: "Compared to a June 2009 baseline, quality indicators had increased by an average of 18%, compared to 1% in a neighbouring control district. However, inspections were carried out by teams trained and funded by CORDAID, thus raising concerns about sustaining incentives, given a prior lack of recordkeeping and supervision by district and provincial health authorities (Schoffelen et al., 2011)."

Other schemes and insights from broader literature

Although it is not PBF as commonly designed, the JKN insurance programme uses a payment system based on capitation augmented by a fee for service for some priority services. Reflections on this model are contained in a brief by Trisnantoro et al. from 2018 (9), which notes the importance of the wider human resourcing situation and of incentivizing teamwork, not just individual health workers, and also observes that the current system of cascading incentives to health workers is varied and does not link clearly to their performance. This conclusion is also reached by Eichler et al. (10), who highlighted

the fact that health workers viewed the incentives within the JKN scheme as unfair and linked to factors outside their control.

Two further demand-focused schemes (World Bank, 2013; Olken, 2014) were also identified: in these cases, specific block grants allocated to villages were made conditional on previous performance in relation to health-related indicators.

These are also described in Brinkerhoff (2013), highlighting some important broader lessons about the need to build capacity and address political economy factors for reforms targeting better performance in decentralized systems, such as Indonesia, to be effective.

Pertiwi and Fitrie (undated) generally reviewed the use of performance-based incentives in the civil service in Indonesia since 2014 and concluded that these were not well linked to performance, but were rather variable and appeared more linked to structural aspects such as role and responsibility. They also noted the need for a better underlying information system to track performance.

2. Sri Lanka

Searches identified no performance-based financing schemes associated with Sri Lanka. This is explained by the budget-based health financing approach currently adopted nationally.

3. Thailand

Schemes implemented

Two academic articles, both focusing on the same scheme, describe Thailand's experience with PBF. Introduced in 2010, then with an initial revision in 2013, the scheme was introduced in order to strengthen primary health care service delivery. One article is descriptive, the other a qualitative study that focused on identifying the challenges to scheme implementation.

The scheme was introduced in a context of higher emphasis on primary care and strengthening of universal health coverage (UHC). Thailand has a purchaser and provider split, whereby the National Health Security Office (NHSO) will purchase services either from the Ministry of Public Health (MoPH) or other suppliers. To increase the performance of health facilities, particularly in rural areas, where the majority of facilities are ministry-owned, the scheme sought to introduce on-top payments that accounted for performance.

Modelled after the UK Quality Outcomes Framework, in 2013, the scheme renamed itself to the Thai Quality & Outcomes Framework.

Main design features

The scheme described has an integrated purchasing mechanism, with funding provided by the Ministry of Public Health (MoPH). The scheme focuses predominantly on noncommunicable diseases and seeks to reward health facilities based on a set of 10 core indicators. As per Khampang (2017):

> "The core indicators comprise nine quality measures in five key primary care services, including maternal and child health, cervical cancer screening, management of asthma, diabetes and hypertension, and the structure of primary care organizational development, e.g. the percentage of people who have access to a physician. Some of these indicators, such as the percentage of pregnant women who received antenatal care before 12 weeks of gestation, are also adopted by the MoPH as a key performance indicator (KPI) for monitoring and evaluating the service delivery in its health facilities. However, some of the QOF indicators, such as the percentage of diabetes patients admitted to the hospital due to short-term complications from diabetes, are not included in the MOPH's KPI list."

Regional/local boards are allowed to add additional indicators, hence, the number of indicators varies. It is important to note that payments are not additional to routine finance allocated to facilities. Rather, facilities risk losing income that they previously had.

Khampang (2017) mentions that depending on the performance recorded across indicators, facilities can lose up to 60% of their previously directly allocated budgets.

The development of the scheme was not participatory (it included mainly the health insurance agency and did not have sufficient representation from the ministry); this was flagged as a key challenge by implementers. Other design features of the scheme – e.g. reliance on routine data systems – were also flagged as key challenges to the implementation as systems were not ready to support verification mechanisms for the PBF schemes.

Evidence on scheme impact

The scheme is under revision, given the current experience with it. Only six of the 13 regions actually implemented the scheme, hence, limited inferences can be made.

Other schemes

No other schemes for the country were identified.

Complementary materials and insights

There is limited discussion on opportunities for PBF (Asia-Pacific Policy Brief), however, it is clear that diverse purchasers exist, therefore, it is important to consider how the scheme is co-developed with all.

4. Timor-Leste

No information on performance-based financing schemes was identified for Timor-Leste.

5. Bangladesh

Schemes implemented

Two academic articles and three reports/briefs describe the experience of PBF introduction in Bangladesh. Overall, four schemes with diverse design features were introduced in the country. They were all targeted at priority health problems of the country, including maternal and child mortality, and tuberculosis. The schemes were implemented from 1980 onwards, with the majority taking place after the 2000s.

Main design features

Three of the schemes use a payment per output design, and one a mixed payment per output and per target design. The schemes are relatively focused in terms of the indicators they incentivize. This means that even when focusing on specific clinical areas, they incentivize a small set of indicators, e.g. TB treatment completion.

Two supply-side interventions were implemented by the Bangladesh Rural Advancement Committee (BRAC). One of the schemes is maternal health-focused, with the second focused on tuberculosis (see Tables 3–5). Both of these are funded in partnership with BRAC, via Oxfam and the Global Fund, both aimed at community health workers. In one case, incentives are released based on a grading of how well mothers can prepare oral rehydration solution; in the second case, incentives are released if tuberculosis patients who are supported by health workers complete treatment.

Rahman (2011) and Rob (2014) focus on the supply-side schemes introduced alongside the demand-side financing (DSF) scheme that Bangladesh rolled out in 2007. These two authors report evaluations, which compare a mixed PBF-DFS intervention with PBF only versus care as usual. The first paper reviews the impact at 12 months (period of implementation 2010–2011), with the other reporting on the effects of a further three months.

Rahman (2011) is vague about who provided funding for the scheme, but it is likely that UN partners supported the implementation.

Rahman (2011) summarizes implementation-related characteristics:

> "The key implementers of the provider incentive payment model include the DGHS as the regulator, the facility MNCH team as the providers, Population Council as the payment administrator, the QAG as the monitor to measure performance in terms of quality of care and an independent audit firm to validate service volume reported by the facilities. The DGHS issued guidelines, following which the intervention health facilities formed

> a P4P Committee, which, in turn, identified their MNCH team responsible to provide services and receive the incentive payments. Upon receiving an invitation from the P4P Committee, the QAG visited each facility to accredit the facility and set benchmark and performance targets in discussion with the P4P Committee and the MNCH teams. The facilities and the Council signed a contract allowing them to receive funds that could be paid as incentives to individual providers, if the facility achieved the targets. (…) Achieving only the quantitative target does not allow a facility to receive the incentive. For the first level of incentive, the facility must meet the first level of qualitative target coupled with at least the first level of quantitative target; and for the second level of incentive, facilities must meet the second level of qualitative target along with the second level of quantitative target."

This scheme seeks both health facilities and health workers being rewarded, with incentives being cascaded to health workers from facility levels.

The last scheme identified across the literature is similar to the one described by Rahman and Rob, however more comprehensive and purposefully introduced in a highly rural area where health outcomes for maternal deaths were particularly poor. The Aama scheme consolidates the insights from the DFS and previous similar attempts, and additional to demand- and supply-side incentives, also offers investments in facility infrastructure and high levels of sensitization. The scheme was also revised subsequent to community feedback.

Rahman (2017) states that the Aama scheme was rolled out alongside many supporting components and supported via national funding. For example, delivery rooms were established and equipment set up, 24/7 service coverage was introduced, and health providers were trained in emergency obstetric care (EmOC)and safe deliveries. Similarly, to ensure that the intervention was accountable to communities, community advocacy meetings were held to both sensitize communities to the new model and receive feedback. Cash incentives to cover women's expenses to attend health-care facilities were also introduced or took the form of emergency transport and referral.

Evidence on scheme impact

For the two supply-side schemes [Chowdhuri (2001), Beith (2007)], both schemes yield substantive benefits (over 20% increase in targeted indicators); however, both schemes occurred concurrently with other changes and the evaluations do not account for this. Factors that facilitated effectiveness included that the intervention was inexpensive and culturally appropriate, and could be monitored administratively.

For the two evaluations of mixed demand- and supply-side schemes, Rahman (2011) and Rob (2014) identify substantive effects, mainly for the mixed PBF-DFS intervention. However, the risk of bias is moderate to high, and the evaluation designs do not appear to account for confounders or supplementary components, which included regular supervision,

mentoring and counselling, and on-the-job training, alongside a system of regular performance review to address internal quality gaps, supported several infrastructural improvements.

As regards the Aama scheme, no separate significant effects of the demand- and supply-side schemes were identified. The scheme has positive effects, but we cannot disentangle elements contributing to this.

Other schemes

No other schemes for Bangladesh were identified.

Complementary materials and insights

No further materials were provided.

6. Bhutan

No schemes were identified for Bhutan.

7. Democratic People's Republic of Korea (DPR Korea)

Reviewers have not been able to locate any documents focused on DPR Korea.

8. India

Schemes implemented

A total of 14 documents were identified: four were describing supply-side incentives and target payment approaches. The overarching risk of bias for these documents was low to moderate.

The remaining documents were describing the Janani Suraksha Yojana (JSY), a mixed demand-and-supply scheme implemented across India and evaluated across the country at different levels (state, district or city). The table below offers a summary of the scheme locations. Overarchingly, the risk of bias for these studies was also low, with the exception of Vikram (2013) and Ng (2014), judged to be moderate and low to moderate respectively.

Reference	Locations reported on
Vikram (2013)	Delhi (reported on in this paper)
Amudhan (2013)	Ballabargh town (here)
Dongre (2013)	8 low-performing states (here)
Randive (2013)	9 of the higher population states
Randive (2014)	9 of the higher population states

Reference	Locations reported on
Ng (2014)	Madhya Pradesh (here)
Chaturvedi (2014)	Madhya Pradesh (here)
Thongkong (2017)	Five districts in the states of Jharkhand and Odisha, two of the poorest states in India (Godda, Khunti and Ranchi districts in Jharkhand, and Mayurbhanj and Rayagada districts in Odisha)
Mukherjee (2018)	Uttar Pradesh, one district
Gupta (2018)	"Jharkhand, Madhya Pradesh and Uttar Pradesh. The EAG states are characterized by poor performance on socioeconomic and health-care indicators, and are targeted for additional interventions by several national social welfare policies. Among the 8 EAG states, Jharkhand has the lowest JSY uptake, Uttar Pradesh has a mid-range level of uptake and Madhya Pradesh has the highest uptake."

Main design features

Schemes described by Carmichael (2019), Raman (2013), Grant (2017) and Mohanan (2016 and 2017) all employ a target payment design.

Carmichael (2019) and Grant (2017) describe the same scheme, implemented between May 2012 and November 2014 across 18 subdistricts of Begusarai (purposively chosen for implementation, given the diverse range of population sizes and geographies). This scheme was supported by CARE India. Within this, scheme team-based goals are set by health workers, who affirm they will work together to achieve their goals.

The goals focused on increasing coverage and quality targets relating to reproductive, maternal, newborn and child health (RMNCH). The design of the scheme was inclusive and received input from both technical experts (e.g. CARE India, in partnership with the Georgia Institute of Technology) and ministry and health workers, who would be tasked with implementation.

Upon achieving goals, non-monetary incentives were provided to all members of the team (these include all health workers – FLWs involved in the care for maternal cases). Incentives consisted of "stoves, casserole dishes, storage containers or similar household items" (Carmichael, 2019). Pressure cookers were offered at the end of the first year to the health workers who met their respective targets across all quarters and the teams that met targets in all quarters also received certificates at an end-of-year function.

Carmichael (2019) notes:

> "The intervention was designed to leverage the power of incentives and lessons from motivational theory on teamwork and goal-setting to improve FLW performance and, in turn, health-promoting behaviours related to

> RMNCHN. 4–6 Unique features were that the intervention awarded non-monetary rather than monetary incentives based on team rather than individual performance, incentivized the achievement of a range of outcomes rather than a single outcome and integrated incentives with goal-setting and team-building to motivate FLWs to work as a team and to increase their interactions with beneficiaries. The intention was that the resulting improvements in teamwork and motivation would lead to improvements in outreach to the study population and more effective communication of health messages, which would in turn positively impact health behaviours and outcomes among the beneficiaries."

Mohanan (2016 and 2017) report an experimental study testing two types of design against a control (care as usual). In the first arm, health workers will be able to receive an incentive if they minimize the risk of adverse maternal and neonatal health outcomes. In the second, they will receive incentives conditional on the quality of care provided. Incentives were decided upon following surveys with service beneficiaries. If providers are found to game the system – i.e. decide not to see or receive patients or inappropriately refer them – contracts with the providers will immediately cease. The scheme was implemented across the state of Karnataka in a rural setting, starting in 2013, in the private sector; however, funding for the scheme is likely to have been provided by state budgets.

Across the two arms of the study, payments to health workers were broadly comparable. Depending on performance, providers will be able to earn up to Rs 150 000 (US$ 2700) per year based on performance – this is roughly equivalent to 15% of a mid-level doctor's salary, more than half of the state's basic per capita income.

Raman (2013) describes a scheme implemented between 2007 and 2013: "Chiranjeevi Yojana (CY) is a performance-based financing (PBF) programme in the Indian state of Gujarat that aims to increase access to free delivery care for poor women. The state makes a fixed payment to accredited private hospitals per 100 deliveries performed, regardless of vaginal and caesarean section delivery proportions." Incentives are delivered to the facility, but it is unclear if they are cascaded to the health workers.

All of the remaining studies retrieved focused on the Janani Suraksha Yojana (JSY) mixed demand-and-supply scheme. The scheme is financed by the Central government and rewards women below the poverty line for having institutional deliveries and accredited social health activists (ASHAs) for encouraging women to access this service. The latter should receive Rs 600 (approximately US$ 7) for a delivery facilitated at a public health facility.

Evidence on scheme impact

On the scheme described by Carmichael (2019) and Grant (2017):

> The first evaluation conducted by Grant (2017) noted strengthening of the health system overall: "Results show statistically significant differences

> across several measures between intervention and control frontline health workers, including improved teamwork (mean = 8.8 vs 7.3), empowerment (8.5 vs 7.4), job satisfaction (7.1 vs 5.99) and equitable service delivery (6.7 vs 4.99). While fewer significant differences were found for supervisors, they reported improved teamwork (8.4 vs 5.3) and frontline health workers reported improved fulfilment of supervisory duties by their supervisors (8.9 vs. 7.6). Both frontline health workers and supervisors found public recognition and enhanced teamwork more motivating than the non-financial incentives."

This is similarly described in Carmichael (2019); however, the latter also notes that health workers perceived the targets to be unrealistic and as such no major effects on service delivery were observed:

> "Of note, complementary feeding visits were almost non-existent before the intervention and were significantly higher in intervention than control areas after implementation, but the DID was not significant. Visits related to family planning remained low, likely reflecting the particular difficulties regarding this topic. In fact, 81% of AWWs and 76% of ASHAs reported that this was the hardest goal to achieve (data not shown). The intervention had the most consistent effect in increasing provision of health-related advice by ASHAs and AWWs to mothers. After accounting for baseline differences between women from the intervention and control villages, analyses indicated that the intervention resulted in significantly better performance on one RMNCHN goal – receipt of IFA tablets – but did not result in significantly better performance on other health behaviours related to the goals of the trial; it is also noteworthy that IFA receipt declined overall, which was likely a supply issue. We did observe improvements in several behaviours that were related to Ananya but not directly part of the TBGI goals, suggesting that the intervention had benefits beyond just the specific TBGI goals, and may have augmented the successes of the Ananya programme."

On the scheme described by Mohanan (2016 and 2017), authors note that the way the scheme calculated incentive amounts meant that it was incredibly time-consuming to implement. Both of the PBF arms showed improvements relating to quality of care outcomes. However, relating to health outcomes associated with deliveries, providers rewarded for quality of care showed better results.

The authors also estimate a cost-effectiveness analysis (CEA) model, with costing from HS perspective. Arm 1 costs approximately US$ 300 per provider and Arm 2 US$ 900. Providers noted that it was the supervision and encouragement received rather than the monetary reward that was motivating. Across both groups, high performers were distinct from low performers: high performers were likelier to view the monetary incentives as motivating, and targets as good and easy to achieve. The differences between high and low performers was starkest in the output group.

On the scheme described by Raman (2013): "224 mothers from 23 CY-accredited facilities and 372 from 43 non-CY facilities were interviewed. Caesarean section rates among CY beneficiaries were 6% (six of 97), compared with 18% (14 of 79) among non-beneficiaries in CY facilities. Non-CY programme mothers were three times more likely to have a caesarean section than were CY mothers, even after controlling for maternal age, and antenatal and intranatal complications (odds ratio 3·02, 95% CI 1·06–8·57) in a logistic regression model."

Regarding the JSY scheme, authors of retrieved documents noted several barriers to implementation (discussed below) but generally positive impacts on service delivery. Across states, the JSY appears to result in increases in institutional deliveries, however, the impact of this appears restricted to women who are better educated or of higher socioeconomic status.

Barriers to scheme impacts are largely focused around the three delays (Gupta, 2018). "The major themes that emerged from our analysis were consonant with the analytical frame of the '3 delay model' proposed by Thaddeus and Maine [32, 33]. The delay model identifies three domains of delays that could affect health care access: (i) the decision to seek appropriate medical help, (ii) reaching an appropriate health facility and iii) receiving adequate quality of care at the facility. We found that implementation barriers under the JSY fell into these domains, where sociocultural barriers at the community/household level led to delay in the decision to seek appropriate care; infrastructural barriers in linkages between home and the facility led to delays in reaching health-care facilities; and health system barriers often compromised the provision of quality care at the facilities."

Vikram (2013), for example, notes issues with verifying which mothers are eligible: "Also, the criteria for distributing cash incentive for the JSY was not strictly followed in all hospitals in the two districts as five women from North East and six from East district had received cash incentives despite having two or more children. Probable reason would have been misinforming the parity status as this cannot be verified by health workers except ASHA."

Similarly, there were challenges regarding the payments to be made to ASHAs. Dongre (2013) notes: "When it comes to the timing of receiving incentives post delivery overall, only 58% of the surveyed ASHAs received their incentives within or up to seven days, while 65% received it within or up to 15 days.33 Clearly, timing of receiving their payment seems to be an issue."

Ng (2014) notes that while the scheme is well intentioned, its design does not take into account the fact that expectant mothers may be encouraged to use health facilities with low-quality care. Gupta (2018) echoes these concerns: "We also found that gaps in institutional measures to ensure proper understanding and implementation of the JSY have led to a widespread interpretation of the JSY as a simple cash transfer scheme; yet, the institutions that ensure improved quality and outcomes of maternal health services are crucial for making Janani Suraksha (meaning maternal safety in Hindi) a reality. The programme, through a supply-side lens, seems to remain primarily a promotional scheme to shift the place of childbirth to health-care facilities rather than an organic programme

to improve the quality and security of childbirth processes. Policy attention needs to be directed to attending these hard realities."

Other schemes

No other supply-side schemes were identified.

Complementary materials and insights

No other materials were provided.

9. Maldives

No performance-based financing schemes related to Maldives were identified. A World Bank brief from 2011 (11) notes that Maldives is focused on expanding universal health coverage (UHC). Provider payment systems are using a fee for service model that may introduce artificial demand; as such, the authors recommend that the country make a move towards the introduction of diagnosis-related groups (DRGs), a global capitated budget or capitation with PBF. A report on the National Health Accounts (2019) in Maldives, over the period of 2015–2017, reveals that the country has been successful in its expansion on UHC, funding it via general taxation, with health expenditure accounting for 9%–10% of GDP. Funding primarily goes towards primary care; however, authors note that disease prevention at the primary level should be enhanced to address the rising burden of noncommunicable diseases. Encouraging this, according to the report, may be possible via introduction of PBF, and incentivizing resolution of cases and delivery of appropriate disease prevention at the primary care level.

10. Myanmar

No performance-based financing schemes related to Myanmar were identified; however, the potential for introducing PBF programmes, as part of a more coherent suite of financing and risk protection reforms and approaches, is well recognized for the country. An expert contact notes that Myanmar is currently implementing strategic purchasing, focused on both maternal and child care as well as COVID-19, hence, this may prove to be a basis for future PBF schemes. Demand-side voucher schemes were also being piloted prior to the military coup (12) .

11. Nepal

Schemes implemented

The Safe Delivery Incentive Programme (SDIP) had been introduced since 2005 as a mixed supply-and-demand-side programme – it was mainly intended to get more women to utilize maternal services, specifically deliveries.

Powell-Jackson (2012) notes: "The development of the SDIP and its rapid adoption was heavily influenced by a convergence of political interests and effective dissemination of research findings supporting the notion of financial incentives (Ensor et al., 2009). At the time, the coalition government was headed by the United Marxist Leninist party who, in their manifesto, had pledged support to advancing the status of women."

But to ensure that there would be capacity in the health system, a provider incentive element was added, with providers receiving a bonus for deliveries attended and facilities being reimbursed for the deliveries. This scheme was also included by Eichler (2013). In 2009, this merged into the national Aama programme.

Main design features

The scheme adopts a payment per output design, whereby mothers and health providers are paid respectively for attended deliveries. Specifically, mothers should receive "300 NRS (US$ 4.7) for each delivery attended, 1000 NRS (US$ 15.6) reimbursed to health facility". The scheme is financed by the government; it was initially including the public sector but was then expanded to private-sector providers, and accredited teaching hospitals and NGO facilities.

Evidence on scheme impact

Implementation issues that were noted include delays in implementation and in release of payments, and difficulties in communication with communities. Small increases in utilization were observed, with the impact mainly concentrated in hill and tarai (lowland) areas for demand-side incentives, but mountain areas benefitted from the supply-side incentives specifically. In order to be more pro-poor, a more (geographically) targeted approach may be needed. Overall, evaluations are appropriate and of high quality, with the first one relying on survey evidence and the second one on national data.

Other schemes

No other schemes have been identified.

Complementary materials and insights

No information on future schemes for Nepal has been identified.

Discussions and conclusion

From this scoping review, it appears that relative to other regions (e.g. sub-Saharan Africa), the South-East Asia Region has been less active in developing and implementing PBF within its health systems. The exception is a cluster of programmes targeting maternal and child health care in Bangladesh, India and Nepal. In some cases, PBF-like approaches may have been incorporated in public schemes, such as in the JKN in Indonesia, but have not been well studied in the literature.

The findings that emerge from the limited published literature to date are consistent with those in the broader PBF literature to date. In terms of overall programme effects, this review identified mixed effects (i.e. both positives and negatives), with most effects being modest in their scale. This highlights the fact that PBF needs to be conceptualized within a broader understanding of health system and community factors (for example, addressing cultural and physical barriers from the community side, and factors such as health worker distribution and capacity from the supply side).

Where there is a variation in facility endowments (such as infrastructure, equipment and catchment population) and starting capacity, for example, PBF can exacerbate these differences, especially when payments are per output (facilities with higher utilization and higher population density are likely to "perform" better) (9). The Cochrane review also showed that quality-adjusted and equity-adjusted payments (e.g. weighted for poorer areas or more remote areas) performed better than simpler designs. Wider strategies to address structural factors on the supply side are required – for example, ensuring efficient drug supplies – in addition to ensuring that community barriers are identified and tackled.

Equally, the starting remuneration of staff is important to gauge how far PBF is likely to motivate them, as highlighted in the Indonesian context. Again, the wider literature supports this – there is evidence that PBF can be seen as valuable by staff as it comes as a "bonus" (not expected) (10). But, at the same time, the complex remuneration of staff in many LMICs may make other levers (other sources of revenue, including informal payments in some settings) for behaviour more powerful (depending on the starting levels of salaries and the extent to which staff rely on other sources of remuneration) (11).

Examples from Indonesia and elsewhere highlight the importance of the distribution of incentives to individual staff members being perceived as fair and related to factors that they can control, otherwise the risk of demotivation is high. Care needs to be taken to ensure that PBF reinforces incentives for health workers to be retained in areas of highest need (e.g. not reinforcing urban drift, if there is staff maldistribution). The wider literature also points to the fact that non-financial incentives are as much important as financial ones for retention and motivation of staff.

It is interesting that most programmes adopt a reward design, instead of using sanctions that potentially may benefit from loss aversion. This tallies with a recent systematic review of performance-based incentives for health staff and teams in the Organization for Co-operation and Development (OECD) countries, which found that reward designs were more common and that positive reinforcement methods were more effective at improving health-care worker performance in general than sanctions (12).

In a decentralized context, such as Indonesia, policy-makers may be interested to learn from the experience of providing performance-related grants from the centre to regions in countries such as Argentina (in the Salud Mesoamerica Initiative).[3] This took a broader approach to reducing health inequalities for children and mothers, which fits more closely into result-based management approaches.

Many of the studies highlight the need to focus on quality, and this has also been a growing theme for PBF programmes that initially emphasized utilization and quantity indicators. Promoting greater utilization in the absence of basic staff competences, for example, will be irresponsible and potentially iatrogenic. It is important that a scheme design is adapted to the context and to the challenges that each system faces (and that this is clearly articulated).

Equity is also a key domain of interest and in South-East Asia, as in other regions, the results for PBF have been mixed. In particular, programmes have not had a significant impact on reducing out-of-pocket payments in general, despite this often being a key objective. Some countries may wish to use geographical targeting wherein poverty distribution is clustered. In particular, areas with low populations, hard-to-reach populations or poor health infrastructure may be disadvantaged by PBF that largely rewards service outputs, therefore, care needs to be taken with design to mitigate these potential inequitable effects [e.g. in Zimbabwe (13)].

There is also a growing literature on the setting of targets, highlighting the importance of consultation with managers and providers to ensure that targets are reachable, appropriate and understood. It is also important that they do not reward behaviours that are already demonstrated, as that will be wasteful – paying for ANC when coverage is already high, for example. In practice, this implies both periodic iteration on indicators and potential localization to fit into local priorities (especially in highly diverse and decentralized settings, such as India and Indonesia).

Implementation of policy is, of course, paramount to effectiveness and where delays in funding are noted, as is the case for some programmes, these will naturally reduce any practical or motivational benefits from PBF.

Another theme with broader resonance is the balance of the need for monitoring and verification against the complexity and costs of this component, which has led to the

3 https://www.healthdata.org/salud-mesoam%C3%A9rica-initiative

adoption of more targeted and risk-based approaches to PBF in settings where misreporting has been found to be low (13). Expensive verification has been one of the main critiques of PBF more globally (14).

Not many of the studies appeared to explicitly examine whether PBF had positive or negative unintended effects, but the recent realist review suggested that gaming could be reduced by including a wider range of indicators to lower the risk of focusing on a small subset at the cost of others (8).

It is likely that the act of focusing on performance, of providing feedback on priority areas, of jointly analysing where blockages are occurring, and of paying attention to data and trends can be in itself a mechanism of change as powerful, if not more, as the finances provided in these programmes. Reinforcing management and planning capacities and information systems is, therefore, an important precondition for PBF success (and independently valuable) (15).

Work on mechanisms of change has been promoted in the wider literature. The studies from South-East Asia have some findings of relevance here, highlighting the importance of supervision and encouragement as much as financial incentives. Designs of studies in future can be structured to dig more deeply into these mechanisms. Other areas that warrant more attention include cost–effectiveness of PBF, which remains understudied, and more focus on understanding the heterogeneity of effects (on different population groups, service users, by area of residence, sector and facility type, just to cite some of the main examples).

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World Bank Document

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Appendices

Appendix 1: Country list

Reference: https://www.who.int/southeastasia/about/contact

Country list:

- Indonesia
- Sri Lanka
- Thailand
- Timor-Leste
- Bangladesh
- Bhutan
- Democratic People's Republic of Korea
- India
- Maldives
- Myanmar
- Nepal

Appendix 2: Searches

Strategies A – Bibliographic databases

CENTRAL, Cochrane Library

ID	Search
#1	MeSH descriptor: [Reimbursement, Incentive] this term only
#2	MeSH descriptor: [Physician Incentive Plans] this term only
#3	MeSH descriptor: [Employee Incentive Plans] this term only
#4	"p4p":ti,ab,kw
#5	((performance or result or results) near/3 (pay* or paid or money or monetary or cash or financ* or fund* or econom* or disbursement* or remunerat* or reimburs* or compensat*)):ti,ab,kw
#6	((performance or result or results) near/3 (nonmonetary or voucher* or token or tokens or goods)):ti,ab,kw
#7	((performance or result or results) near/3 (reward* or bonus* or initiative* or incentive* or contract or contracts)):ti,ab,kw
#8	(indicator* near/3 (pay* or disbursement* or remunerat* or reimburs*)):ti,ab,kw
#9	((performance or merit) next based):ti,ab,kw
#10	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement or reward* or bonus) next incentive*):ti,ab,kw
#11	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement) next (reward* or bonus*)):ti,ab,kw
#12	(pay* near/3 quality):ti,ab,kw
#13	(bonus next payment*):ti,ab,kw
#14	((incentive* or compensatory or reimbursement) next (plan or plans)):ti,ab,kw
#15	((incentiv* or motivat* or positive* next reinforc*) near/3 (quality or output* or outcome* or delivery or utilisation or utilization)):ti,ab,kw
#16	((incentiv* or motivat* or positive* next reinforc*) near/3 (target or targets or "health goal" or "health goals" or measurable next action* or behaviour* or behavior* or "best practice" or practice next pattern* or standard or standards or recommendation* or guideline*)):ti,ab,kw
#17	(conditional near/3 (pay* or money or monetary or cash or financ* or fund* or econom* or disbursement* or remunerat* or reimburs* or nonmonetary or voucher* or token or tokens or goods or reward* or bonus* or incentive* or motivat*)):ti,ab,kw
#18	(incentive next payment*):ti,ab,kw
#19	((target or targets or targeted) near/3 (pay* or reward*)):ti,ab,kw
#20	((chang* or enhanc* or improve*) near/6 (provider* or practitioner* or "health personnel" or "health care personnel" or "healthcare personnel" or health next worker* or "health care" next worker* or healthcare next worker* or physician* or doctor or doctors or nurse or nurses or health next facilit* or "health care" next facilit* or healthcare next facilit* or hospital or hospitals or health next service* or "health care" next service* or healthcare next service* or health next sector* or "health care" next sector* or healthcare next sector* or "health administrations" or government* or nongovernment*) near/6 performance):ti,ab,kw
#21	("provider recognition" next program*):ti,ab,kw
#22	"cash on delivery":ti,ab,kw
#23	("output based aid" or "result based aid" or "results based aid"):ti,ab,kw
#24	("program for result" or "program for results" or "programs for result" or "programs for results" or "programme for result" or "programme for results" or "programmes for result" or "programmes for results"):ti,ab,kw
#25	#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 or #20 or #21 or #22 or #23 or #24

ID	Search
#26	(Bangladesh or Bhutan or "East Timor" or "East Timur" or "Timor Leste" or Korea or Myanmar or Myanma or Burma or India or Indonesia or Maldives or Nepal or or "Sri Lanka" or Ceylon or Thailand):ti,ab,kw
#27	#25 and #26

MEDLINE and Epub Ahead of Print, In-Process & Other Non-Indexed Citations

#	Searches
1	Reimbursement, Incentive/
2	Physician Incentive Plans/
3	Employee Incentive Plans/
4	or/1-3
5	"p4p".ti,ab,kw.
6	((performance or result? based) adj3 (pay* or paid or money or monetary or cash or financ* or fund* or econom* or disbursement? or remunerat* or reimburs* or compensat*)).ti,ab,kf.
7	((performance or result? based) adj3 (nonmonetary or voucher? or token? or goods)).ti,ab,kf.
8	((performance or result? based) adj3 (reward* or bonus? or initiative? or incentive? or contract?)).ti,ab,kf.
9	(indicator? adj3 (pay* or disbursement? or remunerat* or reimburs*)).ti,ab,kf.
10	((performance or merit) adj based).ti,ab,kf.
11	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement or reward* or bonus) adj incentive?).ti,ab,kf.
12	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement) adj (reward* or bonus?)).ti,ab,kf.
13	(pay* adj3 quality).ti,ab,kf.
14	bonus payment?.ti,ab,kw.
15	((incentive or compensatory or reimbursement) adj plan?).ti,ab,kf.
16	((incentiv* or motivat* or positive* reinforc*) adj3 (quality or output? or outcome? or delivery or utilisation or utilization)).ti,ab,kf.
17	((incentiv* or motivat* or positive* reinforc*) adj3 (target or targets or health goal? or measurable action? or behaviour? or behavior? or best practice or practice pattern? or standard? or recommendation? or guideline?)).ti,ab,kf.
18	(conditional adj3 (pay* or money or monetary or cash or financ* or fund* or econom* or disbursement? or remunerat* or reimburs* or nonmonetary or voucher? or token? or goods or reward? or bonus? or incentive? or motivat*)).ti,ab,kf.
19	incentive payment?.ti,ab,kw.
20	((target or targets or targeted) adj3 (pay* or reward*)).ti,ab,kw.
21	((chang* or enhanc* or improve*) adj6 (provider? or practitioner? or health personnel or health care personnel or healthcare personnel or health worker? or health care worker? or healthcare worker? or physician* or doctor? or nurse? or health facilit* or health care facilit* or healthcare facilit* or hospital? or health service? or health care service? or healthcare service? or health sector? or health care sector? or healthcare sector? or health administrations or government* or nongovernment*) adj6 performance).ti,ab,kf.
22	provider recognition program*.ti,ab,kw.
23	cash on delivery.ti,ab,kw.
24	(output based aid or result? based aid).ti,ab,kw.
25	program* for result?.ti,ab,kw.
26	or/5-25
27	4 or 26
28	(Bangladesh or Bhutan or "East Timor" or "East Timur" or "Timor Leste" or Korea or Myanmar or Myanma or Burma or India or Indonesia or Maldives or Nepal or or "Sri Lanka" or Ceylon or Thailand):ti,ab,kw

#	Searches
29	27 and 28

Embase1974

#	Searches
1	"p4p".ti,ab,kw.
2	((performance or result? based) adj3 (pay* or paid or money or monetary or cash or financ* or fund* or econom* or disbursement? or remunerat* or reimburs* or compensat*)).ti,ab,kw.
3	((performance or result? based) adj3 (nonmonetary or voucher? or token? or goods)).ti,ab,kw.
4	((performance or result? based) adj3 (reward* or bonus? or initiative? or incentive? or contract?)).ti,ab,kw.
5	(indicator? adj3 (pay* or disbursement? or remunerat* or reimburs*)).ti,ab,kw.
6	((performance or merit) adj based).ti,ab,kw.
7	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement or reward* or bonus) adj incentive?).ti,ab,kw.
8	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement) adj (reward* or bonus?)).ti,ab,kw.
9	(pay* adj3 quality).ti,ab,kw.
10	bonus payment?.ti,ab,kw.
11	((incentive or compensatory or reimbursement) adj plan?).ti,ab,kw.
12	((incentiv* or motivat* or positive* reinforc*) adj3 (quality or output? or outcome? or delivery or utilisation or utilization)).ti,ab,kw.
13	((incentiv* or motivat* or positive* reinforc*) adj3 (target or targets or health goal? or measurable action? or behaviour? or behavior? or best practice or practice pattern? or standard? or recommendation? or guideline?)).ti,ab,kw.
14	(conditional adj3 (pay* or money or monetary or cash or financ* or fund* or econom* or disbursement? or remunerat* or reimburs* or nonmonetary or voucher? or token? or goods or reward? or bonus? or incentive? or motivat*)).ti,ab,kw.
15	incentive payment?.ti,ab,kw.
16	((target or targets or targeted) adj3 (pay* or reward*)).ti,ab,kw.
17	((chang* or enhanc* or improve*) adj6 (provider? or practitioner? or health personnel or health care personnel or healthcare personnel or health worker? or health care worker? or healthcare worker? or physician* or doctor? or nurse? or health facilit* or health care facilit* or healthcare facilit* or hospital? or health service? or health care service? or healthcare service? or health sector? or health care sector? or healthcare sector? or health administrations or government* or nongovernment*) adj6 performance).ti,ab,kw.
18	provider recognition program*.ti,ab,kw.
19	cash on delivery.ti,ab,kw.
20	(output based aid or result? based aid).ti,ab,kw.
21	or/1-20
22	(Bangladesh or Bhutan or "East Timor" or "East Timur" or "Timor Leste" or Korea or Myanmar or Myanma or Burma or India or Indonesia or Maldives or Nepal or or "Sri Lanka" or Ceylon or Thailand):ti,ab,kw
23	21 and 22

PsycINFO 1806

#	Searches
1	Monetary Incentives/
2	Monetary Rewards/

#	Searches
3	"p4p".ti,ab.
4	((performance or result? based) adj3 (pay* or paid or money or monetary or cash or financ* or fund* or econom* or disbursement? or remunerat* or reimburs* or compensat*)).ti,ab.
5	((performance or result? based) adj3 (nonmonetary or voucher? or token? or goods)).ti,ab.
6	((performance or result? based) adj3 (reward* or bonus? or initiative? or incentive? or contract?)).ti,ab.
7	(indicator? adj3 (pay* or disbursement? or remunerat* or reimburs*)).ti,ab.
8	((performance or merit) adj based).ti,ab.
9	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement or reward* or bonus) adj incentive?).ti,ab.
10	((payment or financial or monetary or nonmonetary or economic or disbursement or remuneration or reimbursement) adj (reward* or bonus?)).ti,ab.
11	(pay* adj3 quality).ti,ab.
12	bonus payment?.ti,ab.
13	((incentive or compensatory or reimbursement) adj plan?).ti,ab.
14	((incentiv* or motivat* or positive* reinforc*) adj3 (quality or output? or outcome? or delivery or utilisation or utilization)).ti,ab.
15	((incentiv* or motivat* or positive* reinforc*) adj3 (target or targets or health goal? or measurable action? or behaviour? or behavior? or best practice or practice pattern? or standard? or recommendation? or guideline?)).ti,ab.
16	(conditional adj3 (pay* or money or monetary or cash or financ* or fund* or econom* or disbursement? or remunerat* or reimburs* or nonmonetary or voucher? or token? or goods or reward? or bonus? or incentive? or motivat*)).ti,ab.
17	incentive payment?.ti,ab.
18	((target or targets or targeted) adj3 (pay* or reward*)).ti,ab.
19	((chang* or enhanc* or improve*) adj6 (provider? or practitioner? or health personnel or health care personnel or healthcare personnel or health worker? or health care worker? or healthcare worker? or physician* or doctor? or nurse? or health facilit* or health care facilit* or healthcare facilit* or hospital? or health service? or health care service? or healthcare service? or health sector? or health care sector? or healthcare sector? or health administrations or government* or nongovernment*) adj6 performance).ti,ab.
20	provider recognition program*.ti,ab.
21	cash on delivery.ti,ab.
22	(output based aid or result? based aid).ti,ab.
23	or/1-22
24	(Bangladesh or Bhutan or "East Timor" or "East Timur" or "Timor Leste" or Korea or Myanmar or Myanma or Burma or India or Indonesia or Maldives or Nepal or or "Sri Lanka" or Ceylon or Thailand):ti,ab
25	23 and 24

Strategy B

Free word search, each line run separately

ID	Search
1	pay for performance
2	paying for performance
3	p4p
4	reimbursement incentive
5	reimbursement incentives
6	payment incentive
7	payment incentives
8	payment reward
9	payment rewards
10	performance incentive
11	performance incentives
12	performance reward
13	performance rewards
14	performance payment
15	performance payments
16	performance based financing
17	result based payment
18	results based payment
19	result based payments
20	results based payments
21	result based funding
22	results based funding
23	result based financing
24	results based financing

Strategy C

Exact word search, each line run separately

ID	Search
1	"pay for performance"
2	"paying for performance"
3	"p4p"
4	"reimbursement incentive"
5	"reimbursement incentives"
6	"payment incentive"
7	"payment incentives"
8	"payment reward"
9	"payment rewards"
10	"performance incentive"
11	"performance incentives"
12	"performance reward"
13	"performance rewards"
14	"performance payment"
15	"performance payments"
16	"performance based financing"
17	"result based payment"
18	"results based payment"
19	"result based payments"
20	"results based payments"
21	"result based funding"
22	"results based funding"
23	"result based financing"
24	"results based financing"

Strategy D

ID	Search
1	performance based OR reward based OR result based OR results based OR performance incentive OR performance incentives OR reimbursement incentive OR reimbursement incentives OR p4p
2	pay for performance OR paying for performance OR payment for performance OR payments for performance OR pay by performance OR paying by performance OR payment by performance OR payments by performance
3	performance related payment OR performance related payments OR incentive payment OR incentive payments OR payment incentive OR payment incentives
4	financial incentive OR financial incentives OR economic incentive OR economic incentives OR monetary incentive OR monetary incentives
5	financial reward OR financial rewards OR economic reward OR economic rewards OR monetary reward OR monetary rewards
6	rewarding performance OR performance reward OR performance rewards OR bonus payment OR bonus payments OR conditional cash

Strategy E

ID	Search
1	"pay for performance"
2	"p4p"
3	"reimbursement incentive"
4	"payment incentive"
5	"payment reward"
6	"performance incentive"
7	"performance reward"
8	"performance payment"
9	"performance based financing"
10	"result based payment"
11	"result based funding"
12	"result based financing"

Appendix 3: Expert Contact

Experts contacted

To identify relevant materials, WHO-SEARO and consultants contacted the stakeholders below:

- PBF Community of Practice
- Regional health financing experts.

Expert email

Dear colleagues,

In collaboration with the World Health Organization South-East Asia Regional Office, we are conducting a review of performance-based financing in the South-East Asia Region.

As an expert in the field, we would value your insights regarding relevant examples of performance-based financing (PBF) schemes implemented and evaluated in the Region.

We define PBF as any of the approaches mentioned below:

- results-based aid: where financial or in-kind aid are disbursed based upon pre-agreed outcomes or targets to be achieved by recipient organizations (private, public, not-for-profit operating at local, national or regional scale);
- performance-based financing schemes (supply-side intervention only): where financial or in-kind resources are disbursed to those supplying health services (private, public and not-for-profit organizations or health workers – including community health workers) based on pre-agreed service or health targets or outcomes;
- performance-based financing schemes (supply-and-demand-side mixed interventions): similar to b above, but where schemes also include demand-side disbursement of financial or in-kind resources to persons accessing health services or receiving health care.

We are interested in PBF experiences in any of the countries below:

- Indonesia
- Sri Lanka
- Thailand
- Timor-Leste
- Bangladesh
- Bhutan
- Democratic People's Republic of Korea
- India
- Maldives
- Myanmar
- Nepal

Action and timeline: Please share any documentation that describes PBF schemes (their design, implementation and effects, as available) implemented in health care in the above-mentioned countries with kdiaconu@qmu.ac.uk by 2 September.

We are aware we may not have reached all relevant persons in the field, so please forward this email to colleagues as you feel appropriate.

Thank you.

Sophie Witter and Karin Diaconu

Appendix 4: Data extraction

Domain	Item	Definition	Levels, if coded
Document identifiers	**Document ID**	Main author or organization, year	
	Country	Country of origin	1. Indonesia 2. Sri Lanka 3. Thailand 4. Timor-Leste 5. Bangladesh 6. Bhutan 7. Democratic People's Republic of Korea 8. India 9. Maldives 10. Myanmar 11. Nepal
	Document type	What type of document this is	Policy, academic (manuscripts, studies), other (e.g. reports, impact evaluations etc.)
	Document type exact	What the document is called by the authors, e.g. report, impact evaluation, etc.	
Study descriptors (if applicable)	**Methods**	One of the main categories	Empirical – quant; empirical – qual; empirical – mixed; review; analytic
	Funders	Who funded the study	
	Study population	What the population involved was	
	Sample details	Any details on the sample	
	Comparator interventions	Was PBF compared with any alternative intervention, if so, what?	
	Data collection methods	How were data collected?	
	Analysis methods	How were data analysed?	
	Outcomes reported on	What were the main outcomes reported on?	
Description of PBF scheme	**Context of PBF introduction and objectives**	Brief description of why PBF is being considered – what is the problem statement that it is meant to address?; how does it link to other policies?; does it have clear objectives and what are they?	

Domain	Item	Definition	Levels, if coded
Description of PBF scheme	**Stakeholders involved in scheme design**	List who was involved in the scheme design and roles	
	Stakeholders involved in scheme rollout	List who was involved in the rollout and implementation of scheme, roles	
	PBF design	Brief description of the PBF mechanism	
	Scale	At what scale was the scheme implemented?	National, subnational/district, one site only
	Time period implemented	When was the scheme implemented?	
	Source of funding for PBF scheme	Who was funding the PBF scheme?	National only; mixed – national and international; other
Description of PBF scheme	**Purchasing arrangement**	Is purchasing integrated within the national MoH system?	Integrated; not-integrated; unclear
	Sectors contracted	Which sectors does the PBF scheme involve?	Mixed; private; public; not-for-profit; unclear
	Location of care	Where is the care incentivized by the scheme being delivered?	Primary care; Secondary care; Tertiary care; Mixed; Unclear
	Urban or rural areas	Which areas is the scheme implemented in?	Mixed; urban; rural; unclear
	Primary clinical or population group targeted	Who are the patient groups targeted by the scheme?	
	Level at which PBF performance is assessed and paid for	Describe how performance is assessed and who receives incentives.	
	Indicators incentivized	List indicators incentivized	
	How are the PBF incentives used and cascaded?	What can be done with the incentives?	
	Who set the target and how were the targets set?	Describe rationale behind target choice.	
	Measurement of targets: how and where from	How are the targets measured?	
	Verification procedures	Which verification procedures are in place?	
	Magnitude of incentives	What is the size of the incentives; list	
	Relative size of incentive	What is the relative magnitude of incentives?	
	Are bonuses additional to normal wages or funding?	Are the bonus payments additional to wages?	

Domain	Item	Definition	Levels, if coded
(If study) Summary of findings	Main findings on scheme regarding services incentivized: utilization; health outcomes; quality of care; financial protection; equity; health system effects (services delivered, resources, information systems, HRH, governance, supplies)		
	Barriers (implementation, success)		
	Enablers (implementation, success)		
	Notable findings		
(If policy)	Target of policy		
	When is it due to be implemented?		
	How is PBF described?		
	Why use PBF?		

Appendix 5: Quality appraisal

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Cannot tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow addressing the research questions?				
	Further appraisal may not be feasible or appropriate when the answer is "No" or "Cannot tell" to one or both screening questions.				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	1.2. Are the qualitative data collection methods adequate to address the research question?				
	1.3. Are the findings adequately derived from the data?				
	1.4. Is the interpretation of results sufficiently substantiated by data?				
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?				
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				
	2.2. Are the groups comparable at baseline?				
	2.3. Are there complete outcome data?				
	2.4. Are outcome assessors blinded to the intervention provided?				
	2.5 Did the participants adhere to the assigned intervention?				
3. Quantitative non-randomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Cannot tell	Comments
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of non-response bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed-methods design to address the research question?				
	5.2. Are the different components of the study effectively integrated to answer the research question?				
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?				
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?				
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				

As per: Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon M-P, Griffiths F, Nicolau B, O'Cathain A, Rousseau M-C, Vedel I. Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada.

Appendix 6: Tables

Table 1: Characteristics of included studies: funders, methods and comparator interventions

Country	Reference	Funders (of study/report)	Detail on methods	Comparator interventions
Thailand	Gill (2016)	None declared	Descriptive (account of scheme)	No comparator
	Khampang (2017)	National Health Security Office, Thailand (Grant Number 59A00218)	Key informant interviews and document review	No comparator
Nepal	Powell-Jackson (2012)	DfID UK – Safe Motherhoods Programme	Quantitative methods – surveys with women across the intervention regions and comparators identified via propensity score matching	No comparator, but variation in the rollout of the scheme across regions was considered and comparators also sampled from similar regions.
	Ensor (2017)	Not identified	Quantitative methods – analysis of routine data	No comparator, study assesses impacts over time.
Indonesia	Cordaid (2009)	CORDAID	Descriptive (account of scheme)	No comparator
Bangladesh	Chowdhuri (2001)	World Bank	Descriptive (account of scheme)	No comparator
	Beith (2007)	CGD	Descriptive (account of scheme)	No comparator
	Rahman (2011)	Population Council and UNICEF	Mixed methods – quasi-experimental design involving both quantitative and qualitative data collection, pre-post test design with over 400 participants	One pure control, one mixed demand + supply side design (patients are receiving vouchers for their expenses + performance of teams judged) + supply side only design
	Rob (2014)	Unclear	Same as Rahman (2011)	One pure control, one mixed demand + supply side design (patients are receiving vouchers for their expenses + performance of teams judged) + supply side only design
	Rahman (2017)	Bill and Melinda Gates	Quantitative methods – analysis of routine data	No comparator, study assesses impacts over time.
India	Carmichael (2019)	Bill and Melinda Gates	Quantitative and experimental – randomized control trial	One control of Ananya scheme only
	Raman (2013)	Unclear	Quantitative methods – survey analysis	One control of care as usual
	Grant (2017)	Bill and Melinda Gates	Quantitative and experimental – randomized control trial	One control of Ananya scheme only

Country	Reference	Funders (of study/report)	Detail on methods	Comparator interventions
India	Mohanan (2016 and 2017)	Bill and Melinda Gates	Quantitative and experimental – randomized control trial	Control arm where "care as usual" takes place, however, unclear if this control already has demand-side incentives.
	Vikram (2013)	Indian Council of Medical Research	Quantitative methods – survey analysis	None – cross-section, so parts of population may not have heard of ASHA.
	Amudhan (2013)	Not disclosed	Quantitative and semi-experimental	"The study design was before and after comparison with multiple control groups using a quasi-experimental design. The groups were formed on the basis of time (of intervention) and space (access to health facility giving intrapartum care) dimensions."
	Dongre (2013)	Unclear – Accountability Institute of India	Quantitative methods – analysis of routine data	No comparator
	Randive (2013)	Funding came from EU FP 7 grant to project MATIND.	Quantitative methods – survey analysis (Sample Registration Survey and Annual Health Survey conducted by the Government of India, also Census)	No comparator
	Randive (2014)	Not disclosed	Quantitative methods – survey analysis (Sample Registration Survey and Annual Health Survey conducted by the Government of India, also Census)	No comparator
	Ng (2014)	Not disclosed	Quantitative methods – secondary data	No comparator
	Chaturvedi (2014)	Not disclosed	Vignette-based surveys administered to health-care staff	No comparator
	Thongkong (2017)	ESRC and DfID	Prospectively collected data across specific states on births	Control: The control area consisted of 25 clusters in five districts, with a total population of around 35 000 (around 7000 per district).
	Mukherjee (2018)	University Grants Commission	Survey data collection on costs of accessing care	Control: women not accessing the JSY
	Gupta (2018)	Wellcome Trust Capacity Strengthening Strategic Award to the Public Health Foundation of India and a consortium of UK universities (Grant Number WT084754)	Qualitative interviews and method	No comparator

Table 2: Characteristics of studies: populations, data collection, analysis and outcomes

Country	Reference	Study population and sample details	Data collection methods	Analysis methods	(if quant) Outcomes reported on
Thailand	Gill (2016)	NA	NA	NA	NA
	Khampang (2017)	Staff from the national health insurance agency and implementers of the scheme, though with limited engagement from MoPH; 11 key informants and 24 participants across the focus groups, validation meetings with 20–30 staff	Interviews and focus group discussions, facilitated by research team; followed by quality assurance meetings	Qualitative content analysis	NA
Nepal	Powell-Jackson (2012)	Deliveries of women who had given birth the previous three years in the regions where implementation took place; 180 sampling units (villages) with 30 women in each village chosen randomly.	Surveys with women across the intervention regions and comparators identified via propensity score matching	Regression models to identify impacts of scheme – however, this is a mixed scheme and cannot distinguish effects of the PBF element.	Impact on utilization of services – numbers of persons that have accessed if they knew/did not know of the scheme.
	Ensor (2017)	Diverse segments of mothers included in the national dataset across 1999–2011	National routine data	Interrupted time series. "Multivariate analyses methods, over time adjustment: The multivariate analysis was undertaken on NDHS data for the period 1999–2011, providing an analysis six years prior to the first policy (MIS) and six years afterwards. The model allows for two separate effects of each policy."	Impact on utilization
Indonesia	Cordaid (2009)	NA	NA	NA	NA
Bangladesh	Chowdhuri (2001)	NA	NA	NA	NA
	Beith (2007)	Tuberculosis patients	NA	NA	Cure rates

Country	Reference	Study population and sample details	Data collection methods	Analysis methods	(if quant) Outcomes reported on
Bangladesh	Rahman (2011)	Baseline survey data from 273 providers, endline from 201 across 15 facilities; client exit interviews with 2124 clients at the facilities and interviews with 270 clients	Surveys with health providers, routine data and interviews	Unclear	Change in service volume, quality of care, patient satisfaction, provider satisfaction and also cost of care
	Rob (2014)	See Rahman (2011).	See Rahman (2011).	Unclear	Change in service volume, quality of care, patient satisfaction, provider satisfaction and also cost of care
	Rahman (2017)	Pregnant mothers in the areas studied	Routine system	Regression analysis	Proportion of women utilizing services ad outcomes
India	Carmichael (2019)	Both health workers interviewed as well as random sample of women in the specific areas	Surveys with the health workers and women in the areas	Difference in difference	Care utilization
	Raman (2013)	Mothers delivering at specific facilities	Cross-sectional survey	Unclear	Caesarean section rates
	Grant (2017)	Health workers involved in the RCT as per Carmichael (2019)	Survey		
	Mohanan (2016 and 2017)	Health workers in implementation areas and women having accessed maternal care and deliveries in area	Survey	Difference in difference models accounting for provider and also patient characteristics	Incidence of adverse maternal and neonatal events, quality of care
	Vikram (2013)	Mothers in the implementation area	Survey	Regression analysis	Utilization of JSY

Country	Reference	Study population and sample details	Data collection methods	Analysis methods	(if quant) Outcomes reported on
India	Amudhan (2013)	Women in the surveillance site; not sampled but all included	Demographic Surveillance Site surveys	Regression models working from the staggered and geographical design	Utilization of JSY and awareness of scheme
	Dongre (2013)	Women in the household survey (1200 households per district, total of 9405 households in 471 villages)	Survey data collection	Regression models	Utilization of JSY
	Randive (2013)	Samples of two routine data surveys used to generate nationally representative datasets	Sample Registration Survey and Annual Health Survey conducted by the Government of India, also Census	Regression models, adjustments made for cofounders	Utilization of JSY and also maternal mortality rate
	Randive (2014)	Samples of two routine data surveys used to generate nationally representative datasets	Sample Registration Survey and Annual Health Survey conducted by the Government of India, also Census	Regression models, adjustments made for cofounders	Utilization of JSY and also maternal mortality rate
	Ng (2014)	Routine data on expectant mothers from diverse sources	Data from Annual Health Survey, national vital statistics, research studies and UNICEF reports	Bayesian spatiotemporal regression model	Utilization of JSY and also maternal mortality rate
	Chaturvedi (2014)	Delivery nurses	Surveys and case vignettes	Comparison of scores	Nurse competence on assessing obstetric complications, diagnosis of complications, making decisions on first-line care
	Thongkong (2017)	Women sampled across the control and intervention areas	Surveys	Linear regression and probability models	Utilization of JSY and equitable breakdown
	Mukherjee (2018)	Women with deliveries in 10 months prior, total of 396 women, of whom 233 had received JSY benefits	Surveys in one district	Calculation of cost data	Out-of-pocket health expenditure for mothers
	Gupta (2018)	Perspectives of community health workers, facility staff and higher district-level staff	Qualitative interviews and method	Thematic analysis	

Table 3: Intervention characteristics

Country	Reference	Context of PBF introduction	Time period	Source of funding for PBF scheme	Purchasing arrangement	Design of PBF scheme	Primary clinical or population group targeted	Indicators incentivized
Thailand	Gill (2016)	Shifting national and global health landscape towards primary health care	2013 onwards	Ministry of Public Health	Unclear: integrated	Unclear: payment per target.	Noncommunicable diseases, maternal and child health, and infectious diseases	Unclear – 10 indicators noted to be developed
	Khampang (2017)	UHC introduced in 2002, with purchaser (National Health Security Office) provider (MoPH) split subsequently; the NHSO has limited contracting choices, especially in rural areas where MoPH facilities are predominant. PBF scheme developed to incentivize delivery of selected types of facilities towards NHSO-prioritized services	2013 onwards	Ministry of Public Health	Integrated – purchaser provider split; based on indicator achieved, point score calculated and funds delivered to facility	Unclear: payment per target	Noncommunicable diseases, maternal and child health	Nine quality of care indicators, largely NCD-related

Country	Reference	Context of PBF introduction	Time period	Source of funding for PBF scheme	Purchasing arrangement	Design of PBF scheme	Primary clinical or population group targeted	Indicators incentivized
Nepal	Powell-Jackson (2012)	Introduced in 2005, the Safe Delivery Incentive Programme intended to strengthen maternal health in the country	July 2005 onwards	Ministry of Health and Population	Unclear: integrated	Payment per output complemented by mix supply scheme	Maternal care	Attended deliveries
	Ensor (2017)	See Powell-Jackson (2012). Additionally note that the Aama scheme is the one that then merges the schemes.	2006 onward and Aama then integrated schemes in 2009	Ministry of Health and Population	Unclear: integrated	Payment per output complemented by mix supply scheme	Maternal care	Attended deliveries
Indonesia	Cordaid (2009)	Unclear	2009 onwards	CORDAID	Unclear	Unclear	Unclear	Surveys held to determine which indicators to choose
Bangladesh	Chowdhuri (2001)	Diarrhoea presents a main health problem to address and teaching mothers how to best make ORS at home viewed as most sustainable to address the problem.	1980 onwards	Oxfam and Bangladesh Rural Advancement Committee (BRAC)	Integrated	Payment per target	Children suffering from diarrhoea	Knowledge of how to prepare ORS solution

Country	Reference	Context of PBF introduction	Time period	Source of funding for PBF scheme	Purchasing arrangement	Design of PBF scheme	Primary clinical or population group targeted	Indicators incentivized
Bangladesh	Beith (2007)	Increased role of BRAC in TB management	1984 until 2003	BRAC funding initially, but further supported by the FIDELIS project and the Global Fund	Unclear: integrated	Payment per target	Tuberculosis patients	Tuberculosis treatment completion
	Rahman (2011)	The demand-side financing scheme introduced did not address quality of care concerns and as such, P4P was introduced alongside to improve maternal health care.	October 2010–November 2011	UN partners (but largely unclear)	Third party: "Fifthly, P4P scheme employed a third party (nongovernmental institution) to manage the incentive disbursement to the facilities while the payer and the payees are the government under the DSF scheme."	Payment per output and per target	Expectant mothers and mothers	Incentivized: two levels of target increases for numbers of deliveries and ANC established: 20% above baseline and 40% above baseline. Also, quality of care has been incentivized.
	Rob (2014)	High level of maternal mortality, particularly in the rural areas of the country	Follow-up study for three months	Unclear here, but see Rahman (2011).	Unclear here, but see Rahman (2011)	Payment per output and per target	Expectant mothers and mothers	Same as Rahman (2011)
	Rahman (2017)	High level of maternal mortality, unequally distributed, with this province particularly hit	24-month period post 2014	Unclear – appears to be national	Unclear – appears to be integrated but could be carried out via the NGOs	Payment per output	Expectant mothers and mothers	For CHW: bringing mother to facility; for HW: attending a delivery

Country	Reference	Context of PBF introduction	Time period	Source of funding for PBF scheme	Purchasing arrangement	Design of PBF scheme	Primary clinical or population group targeted	Indicators incentivized
India	Carmichael (2019)	Team Based Goals and Incentives scheme introduced alongside Ananya, a unique team-based design where health workers affirm vowing together and also working together to achieve goals	May 2012–November 2014	Unclear – funded by CARE India	Integrated	Payment per target (non-monetary rewards)	Maternal care	Coverage targets spelt out in paper, e.g. pregnant women whose transport arranged, women receiving iron and folic acid, breastfed children, deliveries with umbilical cord care, etc.
	Raman (2013)	Problems with too many C-sections being conducted, wishes to curb this.	2007–2013	Unclear	Unclear – integrated	Payment per output	Women giving birth at specific facilities	Caesarean sections and deliveries
	Grant (2017)	See Carmichael (2019).	See Carmichael (2019).	See Carmichael (2019).	See Carmichael (2019).	Payment per target (non-monetary rewards)	See Carmichael (2019).	See Carmichael (2019).
	Mohanan (2016 and 2017)	High levels of maternal mortality, move to introduce demand-side incentives	2013–2014	Unclear – assume it to be the state-level MoH	Unclear – integrated	Payment per target	Maternal and postnatal care	Arm 1 – incidence of adverse RMNCH events; Arm 2 – quality of RMNCH delivery as per WHO guidelines

Country	Reference	Context of PBF introduction	Time period	Source of funding for PBF scheme	Purchasing arrangement	Design of PBF scheme	Primary clinical or population group targeted	Indicators incentivized
India	Vikram (2013)	High levels of maternal mortality	2007 onwards	Government	Integrated for JSY; unclear for other (MAMTA)	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries
	Amudhan (2013)	High levels of maternal mortality	2008 onwards for implementation of JSY, 2005 onwards for the implementation of the PHC scheme (strengthening delivery huts)	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries
	Dongre (2013)	High levels of maternal mortality	2005 onwards	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries
	Randive (2013)	High levels of maternal mortality	2005 onwards	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries

Country	Reference	Context of PBF introduction	Time period	Source of funding for PBF scheme	Purchasing arrangement	Design of PBF scheme	Primary clinical or population group targeted	Indicators incentivized
India	Randive (2014)	High levels of maternal mortality	2005 onwards	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries
	Ng (2014)	High levels of maternal mortality	2005 onwards	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries
	Chaturvedi (2014)	High levels of maternal mortality	2005 onwards	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries
	Thongkong (2017)	High levels of maternal mortality	2005 onwards, but period is beyond 2009	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries

Country	Reference	Context of PBF introduction	Time period	Source of funding for PBF scheme	Purchasing arrangement	Design of PBF scheme	Primary clinical or population group targeted	Indicators incentivized
India	Mukherjee (2018)	High levels of maternal mortality	2005 onwards (but this sample 2013–2014)	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries
	Gupta (2018)	High levels of maternal mortality	2005 onwards (but this sample 2013)	Government	Integrated	Payment per output	Expectant mothers	Institutional deliveries and ASHAs conducting sensitization towards women utilizing more deliveries

Table 4: Intervention characteristics (continued)

Country	Reference	Who set the target and how were the targets set?	Measurement of targets: how and where from? Verification procedures	Sectors contracted	Level at which PBF performance is assessed and paid	How are the PBF incentives used and cascaded?	Magnitude of incentives	Relative size of incentive
Thailand	Gill (2016)	Unclear: assume national HTA agency	Unclear	Unclear: public	Unclear	Unclear	Unclear	Unclear
	Khampang (2017)	National health insurance agency set targets based on perceptions of priority areas;	Routine data systems	Public and private, de facto public, given MoPH owns 80% of facilities	Facility level	Unclear: the contracting units receive the incentives, but some facilities had more negotiation power than others.	Unclear	Mentioned in text that the scheme would account for 60% of budgets that facilities previously received.
Nepal	Powell-Jackson (2012)	Unclear: Ministry of health	Unclear	Public and nongovernmental	Mixed scheme – mothers are paid and providers/ facilities as well.	Unclear	300 NRS (US$ 4.7) for each delivery attended, 1000 NRS (US$ 15.6) reimbursed to health facility	Unclear
	Ensor (2017)	Unclear: Ministry of health	Unclear	"The scheme was broadened beyond the public sector to include community and teaching hospitals (2006), accredited NGO facilities and some for-profit private facilities (2009)."	Mixed scheme – mothers are paid and providers/ facilities as well.	Unclear	Unclear – probably similar to Powell-Jackson	Unclear

Country	Reference	Who set the target and how were the targets set?	Measurement of targets: how and where from? Verification procedures	Sectors contracted	Level at which PBF performance is assessed and paid	How are the PBF incentives used and cascaded?	Magnitude of incentives	Relative size of incentive
Indonesia	Cordaid (2009)	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear
Bangladesh	Chowdhuri (2001)	Unclear: assume BRAC.	Monitoring conducted as part of the evaluation, but both external and internal evaluation took place. Verification accounted for about 4% of the programme cost.	Public	Health worker	The monitor directly appraises the households and the incentive payment for each worker is therefore calculated.	"Health workers received Tk 600 a month on average (US$ 40 at the 1980 exchange rate, a good income in rural areas). The range was Tk 400–700. With the minimum salary set at Tk 250, much of the pay was based on performance".	Almost three times the salary
	Beith (2007)	Unclear: assume BRAC.	TB register	Unclear: Public	Health worker	Incentive directly to community health workers	Unclear	Unclear
	Rahman (2011)	Consultative process facilitated by BRAC and also the study teams	Audited by third-party company, but using routine data	Public	Facility and care teams, then individual persons	Facility to health worker	Unclear	Unclear

Country	Reference	Who set the target and how were the targets set?	Measurement of targets: how and where from? Verification procedures	Sectors contracted	Level at which PBF performance is assessed and paid	How are the PBF incentives used and cascaded?	Magnitude of incentives	Relative size of incentive
Bangladesh	Rob (2014)	Consultative process facilitated by BRAC and also the study teams	Quality Assurance Group reviews and verifies the accuracy of the data submitted, and then suggests release of funds.	Unclear here, but see Rahman (2011).	Facility and care teams, then individual persons	Facility to health worker	Unclear	"The amount of incentive for a facility varies according to its level of performance improvement. The first level of incentive amount for a quarter is equivalent to a person's one-month basic salary. The second level of incentive equals 1½-month's basic salary of the respective providers."

Country	Reference	Who set the target and how were the targets set?	Measurement of targets: how and where from? Verification procedures	Sectors contracted	Level at which PBF performance is assessed and paid	How are the PBF incentives used and cascaded?	Magnitude of incentives	Relative size of incentive
Bangladesh	Rahman (2017)	Partnership that set up the study	Set up like cohort study with verification of issues	Unclear – public and not-for-profit	Community health worker and facility-level worker	Directly to health workers	"A VHW received Taka 200 (US$ 2.6) and a TBA received Taka 500 (US$ 6.4) as incentive if she brings the mother to the health facility." Further provider incentive [attended delivery, Taka 500 (US$ 6.4)], financial support for referral to hospital also included [ceiling Taka 1000 (US$ 12.8)]	Unclear

Country	Reference	Who set the target and how were the targets set?	Measurement of targets: how and where from? Verification procedures	Sectors contracted	Level at which PBF performance is assessed and paid	How are the PBF incentives used and cascaded?	Magnitude of incentives	Relative size of incentive
India	Carmichael (2019)	In partnership between health workers and researchers as well as implementers	Unclear – as part of study, would be the assessment	Public	Health workers	Directly to health workers	Incentives consist of stoves, casserole dishes, storage containers, pressure cookers, recognition certificates.	The total cost per FLW for non-cash incentives, if she met all quarterly targets and the annual target, was between US$ 20 and US$ 30.
	Raman (2013)	Unclear	Unclear	Private sector	Facility	Facility to health worker, though the latter is unclear.	Unclear	Unclear
	Grant (2017)	See Carmichael (2019).	See Carmichael (2019).	See Carmichael (2019).	See Carmichael (2019).	See Carmichael (2019).	See Carmichael (2019).	See Carmichael (2019).
	Mohanan (2016 and 2017)	The Karnataka state MoH and study investigators calibrated the targets to be achievable for the state, given average levels of performance in relation to health outcomes and quality of care.	The targets are measured via household surveys in each implementation year among the eligible women taking part.	Private sector	Health worker	Directly to health workers	Depending on performance, providers can earn Rs 150 000 (US$ 2700). All payments are disbursed yearly based on performance as assessed in surveys with the beneficiaries.	Equivalent to about 15% of a mid-level doctor's salary, more than half the state's basic per capita income

Country	Reference	Who set the target and how were the targets set?	Measurement of targets: how and where from? Verification procedures	Sectors contracted	Level at which PBF performance is assessed and paid	How are the PBF incentives used and cascaded?	Magnitude of incentives	Relative size of incentive
India	Vikram (2013)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Amudhan (2013)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Dongre (2013)	Unclear	Unclear	Public and private	Unclear	Unclear	"As per the guidelines, she is to be paid Rs 600 per delivery only if she facilitates delivery at government facilities.6 "	Unclear
	Randive (2013)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Randive (2014)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Ng (2014)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Chaturvedi (2014)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Thongkong (2017)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Mukherjee (2018)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear
	Gupta (2018)	Unclear	Unclear	Public and private	Unclear	Unclear	Rs 600 per delivery	Unclear

Table 5: Overview of key findings of studies included

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
Thailand	Gill (2016)	High	Critiques by stakeholders in the country on scheme design: there is lack of clarity on how and why indicators were chosen, and this resulted in variability in uptake of the scheme.	To address national critiques, the local Health Intervention and Technology Assessment Programme was invited to develop and pilot new quality indicators; these are expected to be evidence-based and identified via a transparent process.	None offered
	Khampang (2017)	Low	Same issues as noted above. Additionally noted that the implementation was slow at the beginning, so performance was actually judged on 8–9 months only, but without all implementers knowing they were in the scheme. Payment mechanisms were unclear and some facilities were still negotiating with purchaser, so were left out. The scheme was developed based on a UK model with a more robust data system monitoring outcomes. Given a different system and also inaccuracies here, only six out of 13 regions saw their payments allocated according to the PBF scheme.	Important to establish a participatory manner of designing the intervention; appropriate communication and also lead-in period for the scheme	Only six of 13 regions saw payments allocated according to scheme, limited inferences can be made.

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
Nepal	Powell-Jackson (2012)	Low to moderate	Only two thirds of women knew about the scheme and only 25.6% of women were provided with a financial incentive. The main issue was that districts were receiving funds with a considerable delay, thus they were not communicating the scheme to beneficiaries.	Not discussed	Slight improvements in deliveries with a skilled birth attendant and deliveries with any professional health worker: "statistically significant 4.2 percentage points (relative change 17%; CI: 4%, 29%) and 5.2 percentage points (relative change 17%; CI: 6%, 28%) respectively".
	Ensor (2017)	Low to moderate	Challenges the routine of programmes: gradual implementation, limited communication with beneficiaries, and multiple schemes rolled out and then consolidated.	Not discussed	Programme led to slight improvements in service delivery in hill and *tarai* areas (equity-related effect).
Indonesia	Cordaid (2009)	Not applicable – reports/ reviews	Limited capacity in the social insurance	Not discussed	Not discussed

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
Bangladesh	Chowdhuri (2001)	Not applicable – reports/ reviews	Only female workers were eligible to participate in the programme, so issues surrounding this were raised.	"Analysis showed that the programme had characteristics that allow scaling-up: it dealt with a problem common to all of Bangladesh. The intervention was relatively simple. It was also inexpensive, requiring households to purchase only salt and *gur*. The training and messages were built on existing skills and knowledge, such as cooking and child care, and were culturally acceptable. The health workers' performance could be measured through the knowledge acquired by mothers. Though the programme was large, it was possible to put in place an administrative structure of checks and balances, and rigorous supervision. Finally, the programme had a clear goal and specific outcome indicator."	"Monitoring showed that 90% of mothers scored in the A and B categories. Two years later, only 65% of these mothers scored A or B. To increase retention, follow-up education was introduced on local radio and television, and in schools. Mortality rates fell after the programme was implemented, but it is hard to isolate the effects of the oral therapy from other factors."
	Beith (2007)	Not applicable – reports/ reviews	Not discussed	Not discussed	"Study of the BRAC scheme in Bangladesh showed that TB case management using community health workers (of which the patient deposit–provider incentive payment was one part) increased case detection (90% vs national average of 82%) and cure rates (from 33% to 60%), but this study did not tease out the impact of the incentive; highlighting instead that the entire community-based approach to DOTS was more effective than government facility-based DOTS."

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
Bangladesh	Rahman (2011)	Moderate to high	Took time to establish a team approach and identify all the different members to receive incentives; the management information system was not suited to needs, but this was not realized until later on. As such, independent tools were needed and had to be developed.	Amendment of the P4P incentive structure to target further professionals also involved in care showed flexibility. Further: "Establishing the financial mechanism to track each payment involved multiple providers and clients and keeping vouchers for each transaction remained challenging. The competency of the financial operations team was enhanced through an interactive workshop, supportive follow-up and on-the-job training."	The mixed scheme increased antenatal care (ANC) utilization by 114%, supply-side incentive by 32%. Increases in quality of care scores mirrored this: 50% increase in points in mixed group vs 28 in supply. Client satisfaction also works like that. In relation to provider satisfaction, it is noted that the supply-side intervention providers are having higher scores than the others. However, other changes occurred as well, so unclear how much is attributable to the interventions.
	Rob (2014)	Moderate to high	Not discussed	"Improvement in the quality of services can be attributed to two interventions: external QAG and internal QAT. Regular supervision, mentoring and counselling on-the-job training offered by the QAG members from higher-level facility increased providers' skills in offering better services while QATs implemented a system of regular performance review to address internal quality gaps. This managerial improvement was supported by several infrastructural improvements."	"At the inception of the follow-up study, the intervention facilities initially had higher QOC score caused by the P4P interventions, compared with the control facilities (77% vs 60%). At the end of the follow-up period, average QOC score of the intervention facilities rose to 90, which is significantly higher relative to the control facilities that achieved average score of 64 [10]."
	Rahman (2017)	Low	Not discussed	Co-design between all partners and also sensitization with communities	"The Aama programme is a consolidation of the previous supply- and demand-side interventions and so it is perhaps not surprising that no separate, significant effect of the programme could be isolated."

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
India	Carmichael (2019)	Low	Targets noted to be unrealistic and context-related issues were also highlighted by the authors (e.g. social norms surrounding family planning, poor supply chains to supply contraceptives, structural challenges such as incentivized works falling under different government ministries). Authors note: "Insufficient focus on and accountability for behaviour change at the household level within the government's primary health care system may have also been an overarching limitation to impact of the study."	Co-design of the scheme and also calibration of incentives to what was locally appreciated	Once baseline differences are accounted for, significantly better performance on receiving iron and folic acid tablets, but not other outcomes; broader benefits in terms of strengthening system, e.g. increasing teamwork, meeting attendance and home visits in general, noted.
	Raman (2013)	Moderate to high	Unclear	Unclear	"Non-CY programme mothers were three times more likely to have a caesarean section than CY mothers, even after controlling for maternal age, and antenatal and intranatal complications (odds ratio 3·02, 95% CI 1·06–8·57) in a logistic regression model."

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
India	Grant (2017)	Low	Not discussed	Not discussed	"Results show statistically significant differences across several measures between intervention and control frontline health workers, including improved teamwork (mean = 8.8 vs 7.3), empowerment (8.5 vs 7.4), job satisfaction (7.1 vs 5.99) and equitable service delivery (6.7 vs 4.99). While fewer significant differences were found for supervisors, they reported improved teamwork (8.4 vs 5.3) and frontline health workers reported improved fulfilment of supervisory duties by their supervisors (8.9 vs 7.6). Both frontline health workers and supervisors found public recognition and enhanced teamwork more motivating than the non-financial incentives."
India	Mohanan (2016 and 2017)	Low	The way the scheme operationalized the use of surveys in order to calculate and release incentives was incredibly time- and resource-consuming. Further, grant funding itself was used to offer additional supervision of the intervention, which in practice may not have occurred.	Supervision support	Both the input- and output-based arms showed improvements in quality of care (specifically relating to items such as counselling, which were not dependent on other resource availability). In terms of adverse delivery events, input-based providers performed better on average than controls; output-based providers performed worse, specifically relating to sepsis. The authors also estimate a CEA model, with costing from HS perspective. Input-based incentives cost under US$ 300 per provider, with output-based ones costing approximately US$ 900. Providers noted that it was the supervision and encouragement received rather than the monetary reward that was motivating. Across both groups, high performers were distinct from low performers: high performers were likelier to view the monetary incentives as motivating, targets as good and easy to achieve. The differences between high and low performers was starkest in the output group.

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
India	Vikram (2013)	Moderate	Payment disbursement towards distributing incentives was not always followed, more women received the incentive than should have. Authors note that wealthier women were likelier to avail of the services incentivized by the scheme.	Not discussed	There were positive effects on the utilization of three or more visits, but largely concentrated in the women who are more educated and better off financially. "The awareness regarding JSY scheme was 62.3% (292), of whom 72% (211) were not aware if they were eligible for monetary benefits under the scheme. Only 7.5% of the women residing in these slums and resettlement colonies had proof that they belonged to SC, ST or BPL category. Majority of women (68%) came to know about JSY during the antenatal period, and place of ANC (51.7%) and place of delivery (40.1%) acted as the major sources of information about JSY, with ASHA acting as the third major source (25.7%). Other sources were neighbours (20.5%), relatives/ family members (6.5%), media (3.1%) and others (2.7%)."
	Amudhan (2013)	Low	Not discussed	Not discussed	It was noted that both JSY and PHC 24/7 had significant effects on improving the rate of institutional deliveries, with PHC 24/7 having immediate effect and across socioeconomic groups. It was also seen that JSY was more effective in the poorer sections of the community, who are its intended beneficiaries. When PHC 24/7 was strengthened by JSY, it did not have any additional effect among the disadvantaged. A significant increase across all sections was, however, noted when JSY was strengthened by improved access to PHC.

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
India	Dongre (2013)	Low	"When it comes to the timing of receiving incentives post delivery, overall, only 58% of the surveyed ASHAs received their incentives within or up to seven days while 65% received it within or up to 15 days.33 Clearly, the timing of receiving their payment seems to be an issue."	Not discussed	"To summarize, JSY is functioning well when it comes to payment of incentives – most of the women delivering in government facilities receive payment at the institution itself, mostly through cheque, and amount received is more or less as per the norm. But there are delays in receiving these payments and women report facing problems in the process. When it comes to the ASHAs, our findings suggest that very few households rely on the ASHAs for making transport arrangements. Further, not many women report that the ASHAs stayed with them during delivery or paid a visit within a week post delivery."
	Randive (2013)	Low	Despite higher institutional birth proportions, maternal mortality rates, going forward, did not change significantly.		"Change in the proportion of institutional births in the nine states since the inception of the JSY programme: the proportion of institutional births increased in the nine states from a pre-programme average of 20% to 49% in the five years (p, 0.05). While institutional birth proportions increased across all nine states, the magnitude of the increases varied across states."
	Randive (2014)	Low	Not discussed	See findings	"The effect of the outpatient prescription incentive programme was significant only for non-drug expenditure. The monthly non-drug expenditure was lower by 240 won on average after the incentive programme for the target claims."

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
India	Ng (2014)	Low to moderate	Poor quality of care noted across the health facilities	Not discussed	"Our analysis was unable to conclusively detect a significant impact of JSY-supported institutional deliveries on a reduction in maternal mortality in the districts of MP. We then conducted a second analysis examining for an association between MMR and JSY annual expenditure, as JSY also provides other support besides the cash transfer, which as discussed earlier could have a potential impact on MMR. As with our findings based on JSY-supported deliveries, the results showed that MMR was not significantly associated with JSY annual expenditure. This again indicates that the impact of JSY on MMR may be limited. Nevertheless, given the various analytical constraints, the lack of significant findings could be a result of a statistical power issue."
	Chaturvedi (2014)	Low	Not discussed	Not discussed	"To the best of our knowledge, this is the first study to assess competence in management of complications under the JSY. The poor levels of competence that this study has found could in part explain the slowness of decline in maternal mortality despite a successful institutional-birth promotion under the JSY programme in India."

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
India	Thongkong (2017)	Low	Not discussed	Not discussed	"Our analysis shows that inequalities in JSY receipt are substantial in Jharkhand and Odisha, both between wealth groups and between districts within states. In Jharkhand, these inequalities to some ex- tent reflected differences in awareness of the scheme. Nevertheless, the discrepancy between awareness and receipt of benefits was very large in both states, especially in Jharkhand. Poor–rich inequalities in JSY receipt reflected substantial pro-rich inequalities in the institutional delivery rate."
	Mukherjee (2018)	Low	Low availability of medicines at health facilities and culture of bribery for services	Not discussed	"The present study estimates all direct (formal and informal medical expenditure) and indirect expenditure incurred by households due to maternity, and examines the extent to which the JSY incentives reduced the burden of cost incurred. The findings of the study suggest that the JSY beneficiaries incur a substantial amount of direct out-of-pocket expenditure on maternity care even though the publicly funded health system is supposed to provide its services free of cost. It turns out that close to one fourth of the total out-of-pocket expenditure on maternity care by the JSY beneficiaries comes from direct expenditure which ideally should not incur."

Country	Reference	Risk of bias	Barriers and challenges	Lessons learnt, as discussed in document	Notable findings
India	Gupta (2018)	Low	Main barriers relate to availability of appropriate resources (human and technical) within the health system. Authors note that the JSY is largely viewed purely as a CCT, which acts as a demand shifting programme, hence other aspects are not appropriately considered, despite their importance – i.e., the facilities and attendants require investment to ensure quality of care.	Not discussed	"The major themes that emerged from our analysis were consonant with the analytical frame of the '3 delay model' proposed by Thaddeus and Maine [32, 33]. The delay model identifies three domains of delays that could affect health care access: (i) the decision to seek appropriate medical help, (ii) reaching an appropriate health facility and (iii) receiving adequate quality of care at the facility. We found that implementation barriers under the JSY fell into these domains, where sociocultural barriers at the community/household level led to delay in the decision to seek appropriate care; infrastructural barriers in linkages between home and the facility led to delays in reaching health-care facilities; and health system barriers often compromised the provision of quality care at the facilities."

This report reviews performance-based financing reforms and experiences in the WHO South-East Asia Region. The review highlights how this health financing approach interacts with broader health system challenges, emphasizing the need to integrate such approaches into the overarching health financing framework. Policymakers, partners and experts in the WHO South-East Asia Region are encouraged to consider these lessons to enhance health system performance, address inequities and promote sustainable health financing reforms.

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