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Results-based Financing (RBF) in Maternal, Newborn, and Child Health Programs in Low and Middle-income Countries (LMICs): A Systematic Literature Review

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บทคัดย่อ

การจัดสรรเงินอุดหนุนโครงการโดยเน้นผลสัมฤทธิ์ (Results-based Financing: RBF) เป็นกลไกที่องค์การระหว่างประเทศนิยมใช้ในการพิจารณาจัดสรรเงินสนับสนุนประเทศกำลังพัฒนา แม้ว่าประสิทธิภาพของ RBF จะยังไม่เด่นชัด แต่ก็ปรากฏเครื่องมือและวิธีการประเมินโครงการตามแนวทาง RBF มากมายที่หน่วยงานต่างๆ ใช้ในการประเมินโครงการ บทความนี้มีวัตถุประสงค์เพื่อศึกษาและทบทวนวรรณกรรมที่เกี่ยวข้องกับการจัดสรรเงินอุดหนุนรูปแบบ RBF อย่างเป็นระบบ โดยวรรณกรรมดังกล่าว ได้แก่ รายงานกรณีศึกษาจากแต่ละประเทศ บทความวิจัย และบทความวิชาการอื่นที่ประมวลผลข้อมูลการติดตามและประเมินโครงการสุขภาวะอนามัยมารดา เด็กแรกเกิด และเด็กในประเทศที่มีรายได้ปานกลางและประเทศที่มีรายได้ต่ำ

การศึกษานี้พบว่า วิธีการและเครื่องมือวัดประเมินผลโครงการโดยส่วนใหญ่เป็นวิธีการเชิงปริมาณ มีรายงานและบทความการประเมินผลโครงการส่วนน้อยที่ใช้วิธีการเชิงคุณภาพซึ่งสามารถอธิบายปฏิสัมพันธ์ระหว่างตัวแปรเชิงการเมือง ตัวแปรเชิงสถาบัน ตัวแปรเชิงเศรษฐศาสตร์ และตัวแปรทางด้านสังคม บทสรุปของการศึกษานี้ คือ ระบบการจัดสรรเงินอุดหนุนแบบ RBF จะต้องไม่เป็นเพียงกลไกการจัดสรรเงินอุดหนุนให้แก่โครงการพัฒนาคุณภาพชีวิต

แต่ควรได้รับการผนวกเข้ากับระบบหลักประกันสุขภาพของประเทศเพื่อก่อให้เกิดการพัฒนาสุขภาวะอนามัยของประชาชนอย่างยั่งยืน

คำสำคัญ

การจัดสรรเงินทุนที่เน้นผลสัมฤทธิ์ การบริหารผลงาน อนามัยแม่ เด็กแรกเกิดและเด็ก

Abstract

Globally, results-based financing (RBF) has gained recognition as an ideal health financing mechanism, particularly among international donor agencies. Evidence to support the efficacy of RBF is indicative, but not conclusive, with various methodologies and tools being applied by different agencies to measure an impact of population health programs. The purpose of this paper is to offer a critical review of literature using specific evaluation reports, published articles, and unpublished documents on RBF evaluations in low- and middle-income countries (LMICs). The focus is on the RBF schemes used to improve maternal, newborn, and child health (MNCH) outcomes. This study finds that current RBF evaluation methods are still predominantly quantitative. Few evaluation studies utilize qualitative evaluation tools that can explain the complex interactions between underlying political/institutional, economic, and social factors. This paper concludes that there is a need to

transform the RBF model from a project financing mechanism to an institutionalized national health financing system.

Keywords:

Results-based Financing, Performance Management, Maternal, Newborn, and Child Health

1. INTRODUCTION

In recent years, international donors, governments, and non-governmental organizations (NGOs) have taken steps to reform the funding mechanisms of healthcare services in low- and middle-income countries (LMICs). Results-based Financing (RBF) features as a prominent reform strategy that links funding to results. More specifically, RBF ties monetary or non-monetary rewards to pre-defined targets or measures, with such rewards made available upon verification that the agreed-upon targets or measures have been reached (Kane et al., 2019; Paul et al., 2020).

In the health sector, RBF can be broadly classified into *supply-side* and *demand-side* mechanisms. When targeting the supply side, RBF—interchangeably referred to as "performance-based payment" or "pay for performance (P4P)"—offers incentives for healthcare providers to deliver pre-determined healthcare services (Oxman & Fretheim, 2009; Musgrove, 2011). On the demand side, a typical RBF mechanism is a conditional cash transfer (CCT) program, which channels funding to individual healthcare beneficiaries according to specific requirements, such as having children vaccinated and getting regular health screenings (Wilhelm et al., 2016; Brenner et al., 2018). In LMICs, a combination of these supply-side and demand-side RBF schemes has been used to administer health promotion and disease prevention programs, such as nutrition programs in Senegal and Madagascar (Loevinsohn

& Harding, 2005), HIV/AIDS treatment and care services in Sub-Saharan Africa and South Asia (Suthar et al., 2017), and maternal, newborn, and child health (MNCH) initiatives (Liu et al., 2008; Petrosyan et al., 2017; Wright & Eichler, 2018).

LMICs face not only population health problems, but also management challenges characterized by inadequate health workforce, unavailability of essential equipment and medicines, and inefficient allocation of financial resources (Zizien et al., 2019). RBF has been promoted as a strategy to improve health systems and population health in LMICs, particularly MNCH (Witter et al., 2013; Bertone & Witter, 2015; Tawfiq et al., 2019; 2020). However, there is scarce evidence for the RBF effects on MNCH outcomes (Gopalan et al., 2014; Das et al., 2016). The current RBF evaluation methods and tools lack robustness required to provide conclusive indication of the effectiveness, efficiency, equity, and sustainability (Grittner, 2013; Gorter & Meessen, 2013; Mills, 2014). The MNCH programs in LMICs have been evaluated by a variety of methods and tools depending on funding agencies and countries. In this present study, we conduct documentary research on evaluation reports and peer-reviewed articles to gain a better understanding of the methods and tools used to evaluate the RBF interventions and quality of the MNCH programs in LMICs. Emphasis is placed on the recurrent findings, conclusions, and policy recommendations from these documents. Only the RBF and MNCH programs implemented by the LMIC public sector agencies are under consideration.

The rest of this article proceeds as follows. First, a conceptual framework for the documentary research is introduced. Second, the article explains the research design and data collection procedures. Third, the findings are reported based on the methods and tools used to evaluate the MNCH programs in LMICs, as well as the recurrent findings, conclusions, and recommendations from the evaluation reports. Then, this article culminates in a discussion of implications for health systems development in LMICs.

2. METHOD

2.1 Protocols and Registration

We conducted a documentary review to identify and synthesize evaluation reports and research articles on the RBF interventions in MNCH in LMICs. Although the initial protocol was not registered, the review of literature in this study is consistent with the PRISMA statement.

2.2 Eligibility Criteria

Inclusion criteria. In this documentary research, we review evaluation studies on RBF used in the MNCH programs from January 2000 to September 2017. These evaluation studies were

classified into three (3) groups: 1) program evaluation reports from different countries at different levels of program completion, which can be retrieved from the World Bank databases (e.g., http://www.rbfhealth.org/impact) ; 2) peer-reviewed journal articles; and 3) unpublished program evaluation studies conducted by non-World Bank international agencies, country governments, and NGOs.

Exclusion criteria. In this study, we excluded: 1) evaluation studies on MNCH programs conducted in high-income countries (HICs); 2) publications that contain only executive summaries or abstracts; and 3) reports and articles that are not written in English.

2.3 Information Sources

Searching in previous systematic review. We started our documentary research by exploring the reference lists of two (2) recent systematic reviews to find RBF evaluation studies focusing on the MNCH programs in LMICs. A review by Patel (2018) analyzed evaluation studies on the P4P interventions between June 2014 and September 2017. However, the author only studied peer-reviewed articles and the supply-side RBF mechanism. The other review conducted by Turcotte-Tremblay and colleagues (2016) also focused on the evaluation of supply-side RBF programs from 2000-2012. During the search for relevant literature, we also screened the reference sections of additional systematic reviews (Emmert et al., 2012; Eijkenaar et al., 2013).

Search in databases. Electronic searches were conducted in the Web of Science, Library Genesis, and PubMed databases. As stated earlier, documents selected into this study had to be written in English and published between January 2000 and September 2017. We adopted a Boolean search strategy to identify documents with the following keywords: (RBF "OR" Incentive schemes) "AND" (Maternal and child health care "OR" Health care "OR" Health) "AND" (RBF "OR" Output based strategies) "AND" (Impact in MNCH "OR" "OR" Success "OR" Achievements "OR" Failures) "AND" (RBF programs "OR" RBF projects "OR" Incentive based mechanics "OR" Health financing "OR" PBF) "AND" (Low and middle income countries "OR" Developing countries "OR" Fragile countries). In addition to the three (3) databases listed above, other potentially relevant documents (e.g., unpublished reports, conference articles) were identified using Google and Google Scholar. We also consulted health systems specialists and health economists about any ongoing RBF interventions or RBF evaluation studies.

Study selection. The selection began with two investigators gathering all potentially relevant documents and screening them according to the inclusion and exclusion criteria (Table 1). Documents containing only abstracts or executive summaries were excluded. If the investigator could not decide based on the abstract or executive summary, he proceeded to consider the full text. When a decision was still unreachable, the other investigator read the document and made a consensual decision.

Table 1. Inclusion and Exclusion Criteria

Category	Inclusion Criteria	Exclusion Criteria
1. Country evaluation reports	1) Published reports from the World Bank databases 2) Conducted between 2000 and 2017	1) Focus on HICs 2) Evaluation summaries only 3) Non-English language
2. Peer-reviewed articles	1) Journal articles on evaluation of the RBF interventions in MNCH 2) Published between 2000 and 2017	1) Focus on HICs 2) Abstracts only 3) Non-English language
3. Published and unpublished papers/ reports by country governments, donor agencies, and NGOs	1) Documents with keywords relevant to RBF and MNCH 2) Written between 2000- 2017	1) Focus on HICs 2) Evaluation summaries or abstracts only 3) Non-English language

Data item and extraction. The two investigators conducted data extraction. The extracted information consisted of author (s), publication year, country when RBF and study were executed, evaluation method (s) used, findings, conclusions, and recommendations.

Summary measures and data synthesis. A variety of summary measures and results were present in the selected studies, such as differences in service costs, out-of-pocket payments (OPPs), disability-adjusted life years (DALYs), quality-adjusted life years (QALYs). Thus, we could not conduct a meta-analysis for this present study.

2.4 Appraising Methodological and Reporting Quality of Included Studies

Two investigators read and appraised the selected studies by examining both the chosen and foregone interventions, the consequences, the study conclusions, and policy implications. We developed a list of questions to guide our synthesis of the recurrent findings, conclusions, and recommendations in the selected studies.

How were the RBF models of health financing structured within the MNCH programs in LMICs, in terms of scope, incentive types, and program targets?

What methodologies and tools were used in evaluating RBF interventions in MNCH in LMICs?

What are the recurrent findings that came out of RBF evaluations in MNCH, as applied in LMICs?

To what an extent is equity and sustainability addressed in RBF evaluations?

3. FINDINGS

Initially, we retrieved 165 articles after our electronic searches. Based on the inclusion and exclusion criteria, we eliminated 14 country reports, 64 peer-reviewed articles, and 26 unpublished studies due to an absence of the full reports and irrelevance to the research questions. Ultimately, the study selection process ended with 61 studies for our analysis.

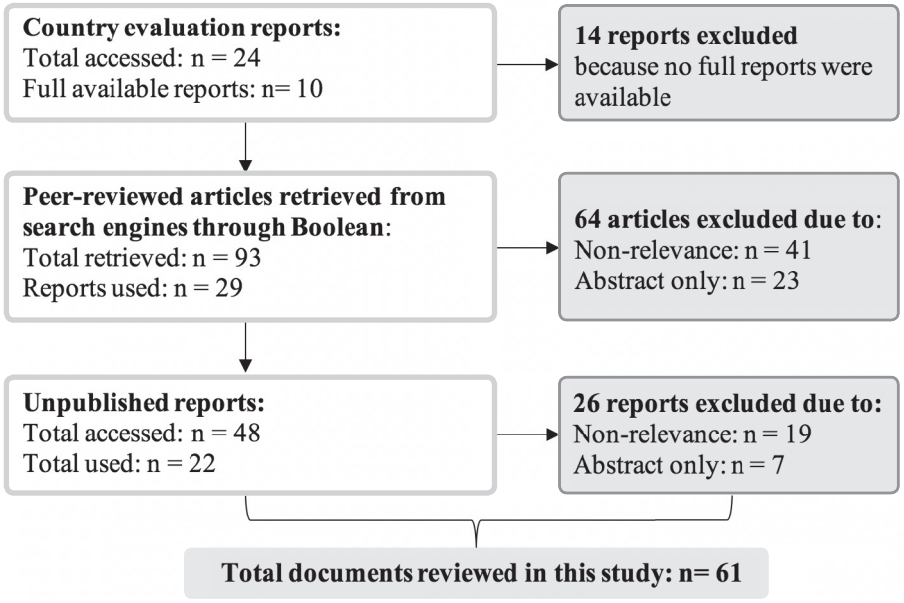

Figure 1. Summary of Retrieved Studies

3.1 How were the RBF models of health financing structured within the MNCH programs in LMICs, in terms of scope, incentive types, and program targets?

The evaluation reports in this review came from eight (8) countries: Afghanistan (Engineer et al., 2016), Argentina (Gertler et al., 2014), Benin (Lagarde et al., 2016), Cameroon (De Walque et al., 2017), Democratic Republic of Congo (Brendenkamp et al., 2011; Fox et al., 2014), Rwanda (Basinga et al., 2011; Shapira et al., 2017), Zambia (Friedman et al., 2016), and Zimbabwe (World Bank, 2016). Supply-side RBF schemes, including performance-based contracting (PBC) and P4P, were used in Afghanistan, Zambia, and Zimbabwe as incentives to deliver specified MNCH services. Bonus payments were paid to health facilities in these countries for meeting pre-determined service requirements. Argentina, Benin, and Cameroon followed a similar supply-side model that offered incentives to healthcare facilities to assist low-income households with the MNCH services consistent with pre-defined quality criteria. On the contrary, the P4P scheme in the Democratic Republic of Congo linked payments to the volume, rather than quality, of services provided. The MNCH program in Rwanda employed both supply-side and demand-side RBF schemes, including in-kind incentives for female service recipients and performance-based incentives for community health workers.

Central to the implementation of RBF programs, performance indicators or targets serve as an objective basis for rewards and help align the public health goals with those of the service providers. In the MNCH programs, common pre-defined indicators were antenatal care (ANC), skilled birth attendance, referral of complicated deliveries, child immunization, and family planning (Gorter & Meessen, 2013). In most cases, RBF in LMICs was funded by donor agencies who normally specified the scope of incentives and quality measures for their grant programs. Few RBF schemes were based on local and national government resources. Thus, recipient countries and local healthcare providers had limited roles in incentive setting and indictor selection (Ye et al., 2016). As such, few countries were able to integrate RBF into the national health funding systems (Gorter & Meessen, 2013).

In all eight (8) countries in this study, RBF implementation arrangements follow similar financial arrangements. Funding agencies or the consortia of funders do not channel funds directly to the national governments, but to the international NGOs to administer the MNCH programs on their behalf. These international NGOs—collectively know as the National Purchasing Agencies (NPA)—are responsible for contracting out the MNCH services, verifying results, and reimbursing payments. Each country's national steering committee, which consists of the NPA, funding agencies' representatives, and the public health ministry, sets out the national implementation framework and appoints external evaluators to validate performance data before incentive reimbursement (Van de Looij et al., 2015). At the community level, multi-stakeholder committees oversee day-to-day operations and report to the external evaluators. The Zimbabwean case offers a concrete example of this implementation framework (World Bank, 2016). In Zimbabwe, a consortium of funders—the World Bank, UNICEF, and the Health Results Innovation Trust Fund (HRITF)—worked with two NPAs, including the Crown Agents and the Catholic Organization for Relief and Development Aid (CORDAID). These NPAs contracted out the MNCH programs to community-based organizations and designated the University of Zimbabwe to perform external evaluation of local facilities' healthcare services.

3.2 What methodologies and tools were used in evaluating RBF interventions in MNCH in LMICs?

RBF evaluation methods and tools vary from country to country depending on the funding agencies, evaluators' interests, implementing partners, hosting governments, and the nature of MNCH intervention programs. The evaluation methods and tools range from a simple before-and-after comparison between intervention and control groups to a highly technical econometric model that attempts to control for extraneous variables (Morgan et al., 2013). The majority of demand-side RBF schemes, such as

voucher and conditional cash transfer (CCT) programs, have been assessed using descriptive cross-sectional surveys and experimental and quasi-experimental methods (Chansa et al., 2015). On the other hand, a variety of controlled experiments are more popular assessment tools for the supply-side RBF schemes, such as P4P.

In 22 peer-reviewed articles (76 percent of all peer-reviewed articles) and 18 unpublished reports (82 percent of unpublished reports), the evaluation methods and tools focus on service quantity and coverage. Consistent with Grittner (2013), the majority of the research under consideration utilize output assessment rather than outcome assessment. Program outcome measures, such as service quality, client satisfaction, and equity, are largely absent from the monitoring and evaluation of RBF programs for MNCH (Gorter & Meessen, 2013; Morgan et al., 2013). Also, most research covered in this study relies on quantitative approaches to assess the effectiveness of RBF interventions at the expense of qualitative analyses, which are essential to explain the underlying behavioral, political, and logistical factors influencing health outcomes (World Bank, 2016).

Further, only two (2) out of ten (10) country reports (Zambia and Argentina) incorporate cost effectiveness analysis into their evaluation studies. This corresponds to Mills (2014), who observes that current RBF evaluation tools lack sufficient financial analytic power to generate viable policy recommendations. Another pitfall is the lack of randomization, which does not allow the RBF evaluation tools to show whether the claimed improvements are directly attributable to performance incentives or other contextual factors (Grittner, 2013). Based on these gaps, this documentary research supports past arguments by Gorter and Meessen (2013) and Morgan and colleagues (2013) that call for more robust evidence in support of RBF.

3.3 What are the recurrent findings, conclusions, and recommendations that came out of RBF evaluations in MNCH, as applied in LMICs?

This documentary research has found consistent evidence about the effectiveness of RBF interventions in improving coverage and utilization of MNCH services. In the countries under review, MNCH service utilization and coverage reportedly increased. For instance, early antenatal care (ANC) bookings in Argentina went up by 34 percent after implementing RBF interventions (Gertler, 2014). In Rwanda, institutional deliveries increased by 23 percent and preventive care visits for the 0-23 month (s) old children by 56 percent (Basinga et al., 2011; Shapira et al., 2017). Cameroon observed a similar trend in preventive care utilization (De Walque et al., 2017).

However, the effects of RBF incentives on healthcare workers are not yet conclusive. Studies from the Democratic Republic of

Congo, Benin, and Zimbabwe indicated that the supply-side RBF schemes motivated healthcare workers to perform optimally (Brendenkamp et al., 2011; Fox et al., 2014; Van de Looij et al., 2015; Lagarde et al., 2016). On the contrary, the assessment report from Zambia did not find any correlation between health worker motivation and incentives (Friedman et al., 2016). Moreover, this research found that all of studies under review only use quantitative methods to assess the effects of RBF interventions on health workers' satisfaction and motivation.

The impact of RBF interventions on healthcare quality and health outcomes remain unclear. Normally, RBF interventions channel resources directly to the point of use. This practice is expected to empower frontline healthcare workers to make decisions on how to use the resources to improve healthcare services. The supply-side RBF interventions have proven to increase structural quality indicators—such as biomedical waste disposal, medical equipment availability, and facility conditions— in Cameroon, Zambia, and Zimbabwe. Yet, few studies focus on the effects of RBF on healthcare quality. Quality indicators were incorporated into the assessment studies only from Rwanda (Basinga et al. 2011; Shapira et al., 2017), Zambia (Friedman et al., 2016), and Zimbabwe (World Bank, 2016). For example, authors of the Rwanda country report evaluated P4P against the quality of MNCH services and reported increased prenatal care quality. Thus, the lack of attention to service quality and health outcomes reveals an evaluation gap in the majority of research works under review. Due to this gap, it is difficult to link the RBF incentives to health outcomes (Morgan et al., 2013).

Based on the previous section, cost effectiveness analysis was rarely covered in most evaluation studies. Three (3) country reports (Argentina, Zambia, Zimbabwe), five (5) peer-reviewed articles (17 percent of peer-reviewed articles), and five (5) unpublished reports (23 percent of unpublished reports) touch on cost effectiveness. Our analysis of these cost-effectiveness studies found that the RBF interventions were highly effective in terms of averted DALYs (Disability-adjusted life years) and gained QALYs (Quality-adjusted life years). For instance, in Zambia, RBF was found to be cost effective in terms of DALYs and QALYs, when compared to the country's GDP per capita in 2013. However, Zambia's health outcome came at a higher unit cost than an input-based financing scheme.

4. To what an extent is equity and sustainability addressed in RBF evaluations?

Equity is not comprehensively covered in the current RBF evaluation methodology (Morgan et al., 2013). RBF proponents argue that RBF enhances access to healthcare for the underprivileged

population by removing financial barriers. In this documentary research, we have identified a small number of evaluation studies that address the equitable outcomes of RBF interventions. The studies from Afghanistan, Democratic Republic of Congo, and Rwanda in particular did not find the equity-enhancing impact of RBF. The Afghanistan report features an analysis of a wealth index in the manner proposed by Filmer and Pritchett (1999). However, the analysis reveals that the supply-side RBF scheme used in Afghanistan did not lead to equitable MNCH services (Engineer et al., 2016).

Also, since the MNCH services can cause due financial stress on the poor population, RBF interventions—particularly the demand-side schemes—can help ease financial stress by reducing or scraping user fees, thereby giving vulnerable populations more access to the MNCH services (Witter et al., 2009; Pearson et al., 2010). The evaluation studies from Afghanistan, Democratic Republic of Congo, and Rwanda found no differences in the household out-of-pocket health expenditures between the pre-intervention and post-intervention groups.

The sustainability dimension of RBF remains as blurry as the equity dimension. In this review, only four (4) country evaluation reports (Argentina, Zambia, Zimbabwe, Rwanda) placed emphasis on financial sustainability as inferred from cost effectiveness analysis (Morgan et al., 2013; Gertler, 2014). However, a singular emphasis on financial sustainability distracts attention from other important issues, especially environmental, political/institutional, social, and technological sustainability. As Grittner (2013) observes, RBF relies heavily on performance measurement and financial incentives, which may compromise the sustainability goals. Nonetheless, the Rwanda case provides some evidence for institutional sustainability of RBF, as the country has incorporated the RBF approach into the national health insurance system. Efforts to institutionalize RBF in other countries under review remain unclear. As described in the previous section, the RBF implementation arrangements require high administrative costs. Given the limited technical capacity and financial constraint in most LMICs, scaling up the RBF pilot programs becomes difficult if not impossible (Morgan et al., 2013).

Although experts seem to suggest that RBF is a sustainable way of financing healthcare services, it is important that countries receiving foreign assistance adopt reform measures to transform their national health systems. Based on this documentary research, the evidence remains inconclusive whether such reforms have actually taken place in the countries under review.

Discussion

The RBF model of healthcare financing aims at realigning incentives with the public health goals (Gorter & Meessen, 2013). A large number of RBF intervention programs have been funded by international donor agencies (Ye et al; 2016). The intervention programs in the countries under review have been implemented as vertical programs separate from the national health budget (Antony et al., 2017). This so-called verticalization practice poses a major challenge in the LMIC context where the public health needs are broad and vary geographically. Although aid recipient countries have been able to meet the national health priorities and donor agencies' specific requirements, this documentary review has shown that the RBF intervention programs still need to be assessed in terms of service quality, equity, and sustainability.

Further, this article has also demonstrated that there has been very little investigation on the systemwide effects of RBF on a country's health system (Witter et al., 2013). Similar to other health financing schemes, RBF has an effect of reducing healthcare cost at the point of consumption. This can give rise to supplier-induced demand (SID) in which the patients' demand for healthcare services exceeds the pareto-efficient level. Existing studies in this documentary review do not address potential perverse incentive effects caused by the RBF interventions.

As the world gears up for the ambitious Sustainable Development Goals (SDGs), program evaluation methods and tools still need further improvements to measure the effectiveness of RBF interventions. Equally important is the quality and reliability of data (Mills, 2014). Specifically, the lack of financial data in LMICs precludes attempts to perform meaningful cost effectiveness analysis of MNCH programs (Chansa et al., 2015). Poor data quality can negatively affect target setting, program monitoring, and verification of incentive/ subsidy claims—all of which jeopardize the merit of RBF.

Conclusion

RBF shows great potential to improve MNCH services in LMICs. In the resource-constrained countries, RBF is assumed to generate social and economic values for every dollar of public investment. RBF evaluation methods range from a simple before-and-after comparison to a more rigorous experimental design. Yet, qualitative assessment tools remain underutilized, despite their potential contribution to a more complete understanding of the political, social, and economic factors that affect RBF and health outcomes. Also, this documentary review has revealed that RBF evaluation studies do not adequately addressed the sustainability and equity issues. Rather, these studies emphasize the output-level indicators,

particularly coverage and utilization. Also, cost effectiveness analysis is largely absent from the RBF evaluation studies possibly due to poor data quality.

RFB is likely to yield more positive results with strong leadership and political commitment (Pearson et al., 2010). However, it should not be viewed as a magic bullet to address all the maternal and child health financing challenges in LMICs (Witter et al., 2009).

RBF as a health financing mechanism needs to be understood from a global health governance perspective. This includes an understanding of the global forces that shape, dominate, and drive the "payment for results" agenda. By focusing on the results, international donor agencies expect managerial accountability and financial risk management capacity to take root in aid r ecipient countries. Thus, health system reform and human capital development must be adopted in parallel with the RBF interventions.

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