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**Political Economy Analysis and Economic Evaluation
of Results-Based Financing in Afghanistan**

Ahmad Shah Salehi

Thesis submitted in accordance with the requirements for the
degree of

Doctor of Philosophy (Ph.D.)

of the

University of London

London School of Hygiene & Tropical Medicine

Faculty of Public Health and Policy

Department of Global Health and Development

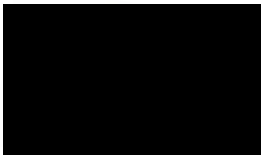
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Declaration

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Abstract

Results-based financing (RBF) has been receiving increasing attention in recent decades. RBF involves a transfer of funds based on the attainment and verification of predetermined outcomes. Afghanistan has implemented RBF in the form of performance-based contracting (PBC) since 2003 and performance-based financing (PBF) between 2010 and 2015. The PBC experience was successful in delivering maternal and child health services. However, the PBF programme had minimal effect on the delivery of maternal and child health services. Using a political economy lens, this thesis answers the question of what factors shaped and affected the PBC and PBF programmes and their outcomes in Afghanistan. It also examines the cost-effectiveness of the PBF programme relative to standard practice. This thesis provides support for the assertion that both political economy factors and value for money are critical in the design, adoption and implementation of RBF programmes. RBF enforces different arrangements for the distribution of resources and provides opportunities or threats for actors through changing their functions and modifying institutional processes. Subsequently, a new economic and political situation comes into existence. Economic evaluation compares the costs and consequences of alternative courses of action recommending which health care investments are most efficient, guiding resource allocation in health. Therefore, careful consideration and caution is required when adopting and implementing RBF programmes. Policymakers and researchers should increasingly focus on the political economy aspect of RBF programmes in conjunction with economic evaluations, particularly in the context of fragile and conflict-affected setting to ensure that the technical outcomes of economic evaluations are suitably received in the context of highly political situations. If RBF programmes are designed around a full understanding of political economy and value for money, RBF can potentially be a powerful tool to achieve better outcomes.

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“As you start to walk on the way, the way appears” (Rumi).

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Dedication

THIS THESIS IS DEDICATED TO THE MEMORY OF MY BELOVED FATHER, ABDUL MOTALEB SALEHI, AND My BELOVED GRANDFATHER, FEDA MOHAMMAD FEDA.

Acronyms

ANC	Antenatal Care
BHC	Basic Health Centre
BPHS	Basic Package of Health Services
BSC	Balanced Scorecard
CBHI	Community-Based Health Insurance
CCT	Conditional Cash Transfer
CHC	Comprehensive Health Centre
CHW	Community Health Worker
CI	Confidence Interval
CSO	Central Statistics Office
DALYs	Disability Adjusted Life Years
DFID	Department for International Development
DH	District Hospital
DoC	Drivers of Change
DPT	Diphtheria, Pertussis, Tetanus
DHMT	District Health Management Team
EC	European Committee
EPHS	Essential Package of Hospital Services
FCAS	Fragile and Conflict-affected State
GDP	Gross Domestic Product
GT	Grounded Theory
HIC	High-Income Country
HRITF	Health Results Innovative Trust Fund
HP	Health Post
HRH	Human Resources for Health
HSC	Health Sub-Centre
ICER	Incremental Cost-Effectiveness Ratio
IDA	International Development Association
LIC	Low-Income Country
LMIC	Low- Middle-Income Country
LoMIC	Lower Middle-Income Country
MCH	Mother and Child Health
MDGs	Millennium Development Goals
MHT	Mobile Health Team

MoF	Ministry of Finance
MoPH	Ministry of Public Health
NGO	Non-governmental organisation
NSP	Non-State Provider
P4P	Pay for Performance
PBC	Performance-Based Contracting
PBF	Performance-Based Financing
PEA	Political Economy Analysis
PEF	Policy Engagement Framework
PHO	Provincial Health Office
PNC	Postnatal Care
QALYs	Quality Adjusted Life Years
RBF	Results-Based Financing
RCT	Randomised Controlled Trial
SBA	Skilled Birth Attendance
SDGs	Sustainable Development Goals
SDT	Self-Determination Theory
TB	Tuberculosis
THE	Total Health Expenditure
UHC	Universal Health Coverage
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization
WTP	Willingness to Pay

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

One health programme that has been receiving increasing attention in recent decades is results-based financing (RBF) (Shroff, Bigdeli, and Meessen 2017). RBF involves a transfer of funds based on the attainment and verification of predetermined outcomes (Eldridge and Palmer 2009). RBF can be integrated within contracts for service delivery (performance-based contracting) or through the incentivisation of healthcare providers (performance-based financing).

RBF is given different names. The most common names used interchangeably are results-based financing, performance-based financing (Soeters, Havineza, and Peerenboom 2006; Eldridge and Palmer 2009; Rusa et al. 2009) and pay for performance (P4P) (Eichler and De 2008; Eichler, Levine, and Group 2009). In this thesis, we use the term of RBF for all types of supply-side financing, including performance-based contracting (PBC) and performance-based financing (PBF).

The introduction of RBF is supposed to generate a competitive environment which will motivate healthcare organisations to exhibit enhanced efficiency, high-quality services and improved results (Mills et al. 2002; Bustreo, Harding, and Axelsson 2003; Palmer et al. 2006; The Health Foundation 2011). RBF is expected to change governance arrangements, strengthening relationships between levels of the health system, and improving regulation of the health sector and health financing (Palmer 2000; Khalil 2013; Kadaï et al. 2006; Loevinsohn and Harding 2004, 2005). While in low-income settings, countries are struggling to maximize the impact of limited resources, RBF is considered to offer novel solutions to this problem (Loevinsohn and Harding 2005). By connecting financing to outcomes, RBF is seen as a mechanism for improving the effectiveness and efficiency of service delivery (Gertler, Giovagnoli, and Martinez 2014).

Meanwhile, political factors are influential in the selection and implementation of policies in the health sector (Hsiao 2007). Politics has consistently been a cohesive aspect of human discourse in all areas incorporating health throughout history (Oliver 2006). Politics is associated with the distribution of power and resources and how government and or community are managed to obtain a desirable outcome. It is about interactions between actors (individuals, groups, organisations) that allow particular actors to have influence and control over others (Fitzgerald 2013). In other words, politics is about “who gets what, when, how” (Lasswell 1936). Since Virchow’s theory that medicine is a critical aspect of political science (Benaroyo, Mtiller, and Frieriep 1998), there has been an increased focus on the political elements of health (Franco,

Álvarez-dardet, and Ruiz 2004). The World Health Report published in 2005 offers an important reference to the political economy of health. In the report, it is stipulated that health has a political nature because of the inequalities that exist in terms of the distribution of health within societies, the significance of health in the context of citizenship and human rights, and the link between the social determinants of health and political determination (Bambra, Fox, and Scott-Samuel 2005). The social determinants of health is defined as the interconnected social, political and economic forces that produce the setting in which people live and do activities (National Collaborating Centre for Determinants of Health 2014). In other words, living conditions and health are impacted by social, political and economic determinants (CSDH 2008). In addition, because health has economic and social consequences, it is fundamentally important for a country's political legitimacy (Kickbusch 2015). Given the relationship between politics and health, health programmes need to acknowledge that politics is a critical element that determines a programme's ability to bring about change (Moncrieffe and Luttrell 2005).

The available evidence suggests that political economy is relevant to the design and implementation of RBF programmes. While RBF can influence the behaviour of healthcare professionals, it can also affect the behaviour of other relevant actors and their relationships between each other (Jacobs et al. 2012). Due to its innovative nature, RBF enforces distinct arrangements for the sharing of resources; and represents a risk or opportunity to actors as a result of changes to their roles and responsibilities and the modification of organisational processes (Sparkes et al. 2019). Consequently, a new political and economic environment comes into existence. Nevertheless, minimal information is available regarding the political processes and interactions associated with RBF in addition to the factors that influence the choice and application of such policies. To date, only a limited number of political economy analyses (PEA) have been conducted on RBF programmes in low-income settings and fragile and conflict-affect states (FCASs) (Bertone et al. 2014; Bertone and Witter 2015; Chimhutu et al. 2015; Bertone, Falisse, et al. 2018; Bertone, Wurie, et al. 2018; Witter, Chirwa, et al. 2019). We will discuss these studies in the literature review part of this thesis. Political economy analysis locates a policy in terms of the understanding of interactions between economic and political actors; the manner in which power and resources are distributed between forces; as well as the processes that shape, maintain and alter such interactions over time (Mcloughlin 2014).

Furthermore, the available evidence suggests that economic evaluation is relevant to

RBF programmes. Economic evaluations play an important role in the appraisal of health care programmes (Cunningham 2000). Economic evaluation compares the costs and consequences of alternative courses of action recommending which health care investments are most efficient, guiding resource allocation in health (Griffiths, Legood, and Pitt 2016). A growing number of studies have examined the costs and outcomes of RBF programmes; however, most of these studies were carried out in high-income countries. Only two economic evaluations focused on low-income countries (LMICs) (Zeng et al. 2018; Borghi et al. 2015). No study focused on fragile and conflict-affected states (FCASs). Furthermore, available studies tend to have methodological limitations meaning that evidence is inconclusive as to whether or not the outcomes are worth the costs (Emmert et al. 2012; Meacock, Kristensen, and Sutton 2014; Turcotte-Tremblay et al. 2016). We will discuss these studies in the literature review part of this thesis.

Since 2003, the Basic Package of Health Services (BPHS) has been implemented in Afghanistan via a performance-based contracting (PBC) programme defined as “contract out”. This PBC has been considered an effective strategy for the rapid scale-up of maternal and child health (MCH) programmes across the country (Alfonso et al. 2015; Newbrander et al. 2014; Edward et al. 2011; Kim et al. 2016; Peters et al. 2007). The country additionally executed performance-based financing (PBF) programme associated with BPHS from 2010 to 2015 (Ministry of Public Health & KIT Royal Tropical Institute 2015).

Although various studies have been conducted on the PBC and PBF implemented in Afghanistan (Newbrander et al. 2014; Waldman and Newbrander 2014; Edward et al. 2011; Loevinsohn and Sayed 2008; Ameli and Newbrander 2008; Arur et al. 2010; Engineer et al. 2016; Tawfiq, Desai, and Hyslop 2018), the cost-effectiveness as well as the political economy factors that affected the performance of the programmes within Afghanistan, remain poorly understood. Understanding whether PBF represents value for money and the extent to which political economy factors affected the programme would be useful for the country and, in a more general sense, for comparative research of healthcare financing systems in FCASs.

The current thesis uses political economy analyses to identify factors affecting the performance of PBC and the design and implementation of the PBF programme in Afghanistan. It also examines the cost-effectiveness of PBF in relation to the BPHS in Afghanistan. Additionally, it serves as a potential example for developing political economy analysis in conjunction with cost-effectiveness analysis. It presents a

research model for a setting in which health is political, and the outcome of cost-effectiveness analysis in isolation is limited in its capacity to influence decision-making actors.

Chapters 1 and 2 define RBF and its implementation globally along with an overview of the literature incorporating a systematic review of RBF economic evaluations. Chapter 3 details the objectives of the study, along with the methodology adopted. Chapter 4 presents two case studies related to PBC and PBF in Afghanistan using political economy lens, and a cost-effectiveness analysis of performance-based financing programme in Afghanistan. Lastly, chapter 5 interprets the study findings in light of existing literature, expounds on the forms and relationships uncovered by each key outcome, delineates the importance of the thesis findings, highlights the thesis methodological contribution, recognizes the limitations of the thesis, and finally offers a conclusion along with policy recommendations.

1.2 Country Profile

1.2.1 Geography

The Islamic Republic of Afghanistan, commonly known as Afghanistan, with a size of 652,864 square Kilometre (National Statistics and Information Authority 2018) is a landlocked country in South-Central Asia. The country neighbours with Turkmenistan, Uzbekistan and Tajikistan in the north, Iran in the west, China in the northeast and Pakistan in the south and east (Figure 1) (Ministry of Foreign Affairs 2019).

A large proportion of the country is covered by mountains while the south-west consists of deserts. The highest point of the country is at 7,500 metres, and the lowest is at 360 metres above the sea level. The country has an average temperature of +35 Celsius degree in summers and -15 Celsius degree in winters (Ministry of Foreign Affairs 2019).

1.2.2 Demographics

Afghanistan has a total population of 31.5 million of which only 22 per cent is urban based (Central Statistics Organization 2019). The remaining 78 per cent of the population lives in scattered rural areas. Almost half of the population is under the age of fifteen and less than three per cent of the population is over the age of 65. The sex ratio is 105 males to 100 females (Central Statistics Organization 2018). The average household size is eight persons (Central Statistics Organization 2017), while

almost 50 per cent of the population lives in households with nine or more people and 44 per cent live in over-crowded housing with more than three persons per room. Almost 99 per cent of women and men are married before age 40. Child marriage is practiced in the country. Twenty-eight per cent and 4 per cent of women marry before age 18 and 15, respectively (National Statistics and Information Authority 2018).

1.2.3 Governance

The country is guided by the 2005 constitution in which the political structure of the country is formed as a democratic government consisting of executive, legislative, and judicial branches and elected president and parliament. (National Statistics and Information Authority 2018). Dari (Farsi) and Pashto are the country's national languages (Islamic Republic of Afghanistan 2005) while there are a number of smaller local languages such as Uzbeki, Turkamani, Balochi, Nooristani, Pashaaye, and Pamiri. Over 99 per cent of the country practices Islam (Ministry of Foreign Affairs 2019).

Figure 1. Afghanistan Map



Source: MaCruzin.com (MapCruzing.com 2008)

Afghanistan is administratively composed of 34 provinces. Each province is led by a governor appointed by the president. Kabul is the capital of Afghanistan, with the largest population in the country. It stands out as an essential centre for all types of

activities including social, economic and political gravitation. The second largest cities are Herat, Mazar, Ningarhar and Kandahar (National Statistics and Information Authority 2018).

1.2.4 Economy

Afghanistan remains one of the least developed countries in the world with a nominal gross domestic product (GDP) of 20,367 billion US dollars and GDP per capita of 565 US dollars in 2018. GDP growth has been 2.4 per cent in 2016, 2.7 per cent in 2017, and 2.4 per cent in 2018. Overall, economic growth has been hampered by insecurity, limited private sector in investment, and recent years' drought (The World Bank 2019).

1.2.5 Health Care System, Structure and Challenges

Afghanistan has experienced profound difficulties over the past decades, especially since the 1978 invasion by the former Soviet Union which led to political instability, pervasive conflict and, at times, outright war. In 1992, the Mujahedeen (groups of religiously driven warriors) took power, initiating a new period of civil war and inter-Mujahedeen conflicts. From 1996 until November 2001, the Taliban emerged as the ruling group in the country with limited resources to support health systems development (Sondorp 2004).

In December 2001, a new democratic government was established in Afghanistan. The new government inherited extreme disorder in the health sector. The capacity of both private and public sectors was relatively constrained, and the future prospects were uncertain. The proportion of primary health facilities to the population varied from around one per 40,000 in the eastern and central regions of the country to one per 200,000 in the southern part. This also focused attention on the significant lack of healthcare workers and the substandard infrastructure, which in some places was completely missing. Healthcare services were predominantly delivered by non-state providers (NSPs). Four primary obstacles limited the efforts to establish an effective and efficient national health framework: (i) insufficient managerial and service delivery capacity in the Ministry of Public Health (MoPH); (ii) absence of physical infrastructure and competent staff; (iii) substandard financial and human resources distribution; and (iv) lack of coordination and management of NSP activities (Waldman, Strong, and Wali 2006). The mortality rate of children under 5 years of age was approximated as 257 per 1,000 live births, while the maternal mortality ratio was estimated as 1,600 per 100,000 live births. In Badakhshan province located in the northeast of

Afghanistan, characterised by high mountains, the maternal mortality ratio was 6,607 per 100,000 live births (Loevinsohn and Sayed 2008; Bartlett et al. 2005). The majority of babies were delivered in the mother's home, with approximately 95 per cent of all deliveries occurring in this manner. The rate of skilled birth attendance (SBA) was 51 per cent in urban areas, 12 per cent in provincial towns and 7 per cent in rural areas. Approximately 80 per cent of females had no knowledge regarding how their pregnancy could be delayed. Less than 10 per cent of females under the age of 49 were utilising methods for postponing pregnancy. Additionally, 40 per cent of children were not vaccinated against tuberculosis (TB), 54 per cent were not vaccinated against diphtheria, pertussis and tetanus (DPT), while 24 per cent had not been given a measles vaccination (Central Statistics Organization and UNICEF 2003).

1.2.5.1 Primary Health Care: The Basic Package of Health Services for Afghanistan

The new government started bringing substantial reform to Afghanistan's health care system. Six months after the new government took power, in May 2002, MoPH established a Basic Package of Health Services (BPHS) with technical support from donors and international organisations. The BPHS was designed to ensure equitable access to a core set of health services in remote and underserved populations (Ministry of Public Health 2003).

The BPHS is provided through community health workers at health posts (HPs), and through the outpatient care medium at the health sub-centres (HSC), basic health centres (BHCs), mobile health teams (MHTs), and comprehensive health centres (CHCs), and through outpatient and inpatient care services at district hospitals (Ministry of Public Health 2010). Below is the summarisation of the services which are available at all facility types (Ministry of Public Health 2010):

Health Posts (HP): The community health workers (CHWs) provide basic health services at the community level by delivering services from their homes. One HP gets staffed by a team of one female CHW and one male CHW. HPs are bound to provide services to a catchment area of 1,000-1,500 population. By offering limited curative care services, CHWs focus on the identification of notable diseases and implementation of preventive and promotive measures.

Health Sub-Centres (HSC): HSCs aim at responding to the health care requirements of approximately 3,000-7,000 population range. HSCs offer health education, immunisation, antenatal care (ANC), family planning (FP), treatment and follow-up of

Tuberculosis (TB) cases, management of diarrhoea and pneumonia, etc. Also, HSCs support CHWs and health posts to accelerate health care services. HSCs are staffed by one male nurse and one community midwife besides a cleaner and a guard.

Basic Health Centre (BHC): A BHC covers a population of approximately 15,000-30,000. The key services provided by BHCs are ANC, delivery, postnatal care (PNC), FP, routine immunisation, and integrated childhood illness management, treatment of malaria and TB, and identification and referral of mental health patients. A BHC's minimum staffing requirement is a medical doctor or a nurse besides a community midwife and two vaccinators. It is also mandated that at least one female health care worker becomes part of the BHC staff.

Mobile Health Team (MHT): The focus of MHT is to facilitate services in remote villages and geographically challenging locations and to ensure the expansion of community-based health care services. The services offered by MHTs are usually those which BHCs offer. As far as MHT staff is concerned, it usually includes a male health provider (doctor or nurse), a female health provider (community midwife or nurse), a vaccinator and a driver.

Comprehensive Health Centre (CHC): By covering a catchment area of approximately 30,000 – 60,000 population, CHCs play key roles in providing maternal and child health services, treatment of communicable disease and managing mental health and disability cases. CHCs usually provide basic laboratory services. CHCs staff include male and female doctors, male and female nurses, midwives and at least one male or female psychosocial counsellor alongside laboratory and pharmacy technicians.

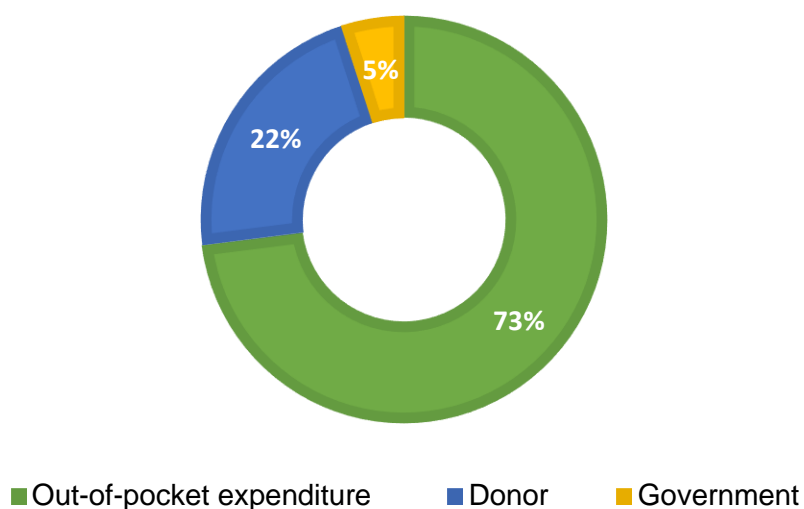
District Hospital (DH): The services offered by DHs are not only those services provided by CHCs but also performing emergency surgery cases under general anaesthesia, offering X-rays services and helping mental health and disability cases including physiotherapy. District hospitals are staffed with female obstetricians/gynaecologists, surgeons, anaesthetists, paediatricians, psychosocial counsellors, midwives, laboratory and X-ray technicians, pharmacists, a dentist, a dental technician, and physiotherapists (male and female). Usually, a single District Hospital covers an approximately 100,000 – 300,000 population. Annexes 1.1 - 1.4 show the services offered by BPHS and supported by the RBF programmes.

1.2.5.2 Health Financing in Afghanistan

Afghanistan aims to address key health priorities by better allocation of resources to healthcare services. Health financing in Afghanistan aims to focus on mobilising external and domestic financing for health; promoting aid effectiveness, efficiency and equity of public spending; reducing financial risks and barriers to health access for the poor; and improving purchasing mechanisms. Public health services are provided free of charge in Afghanistan (Ministry of Public Health 2019).

According to the National Health Accounts report in 2014, total health expenditure (THE) was estimated at 1,992,000,000 US\$. Given Afghanistan gross domestic product (GDP) was 21 billion US\$ in 2014, THE as a percentage of GDP was 9.5 per cent. Households expenditures account for 73 per cent of THE, while the government financed 5 per cent and development partners 22 per cent (Figure 2). Hospitals incur around 40 per cent of THE, followed by outpatient care (26 per cent), medical goods (25 per cent), and health administration (9 per cent). In general, per capita expenditure on health is around 71 US\$ annually (Ministry of Public Health 2017). Distressed financing rate (borrowing or selling assets to meet health expenditures) is estimated at 47 per cent, and a severely distressed financing rate (inability to meet health expenditures) is 9 per cent. Drugs and supplies are the most significant share of household expenditure for inpatient and outpatient care, followed by transportation cost (Ministry of Public Health and KIT Royal Tropical Institute 2018).

Figure 2. Annual total health expenditure in Afghanistan



Source: National Health Accounts Report 2014

1.2.5.3 Afghanistan's Results-Based Financing Programmes

In 2002, drawing on knowledge and experience from other countries that had suffered conflict, specifically Cambodia, the MoPH and its development partners made the decision that the delivery of health services should be managed and expanded by authorizing NSPs to implement the BPHS. Performance-based contracts (PBCs) were given to NSPs (More details in chapter 4). As a result, significant improvements have been made since that time. In 2018, SBA and ANC coverage rates were 58.8 per cent and 63.8 per cent, respectively. Similarly, children vaccination for TB and DPTS has increased by 30 percentage points. The mortality rates for infants and children under the age of 5 have decreased at 41 deaths per 1,000 live births and 50 deaths per 1,000 live births, respectively (Ministry of Public Health and KIT Royal Tropical Institute 2018). Therefore, this PBC has been considered an effective strategy for the rapid scale-up of maternal and child health (MCH) programmes across the country (Alfonso et al. 2015; Newbrander et al. 2014; Edward et al. 2011; Kim et al. 2016; Peters et al. 2007).

The country additionally executed a performance-based financing programme associated with BPHS from 2010 to 2015. The primary goal of the PBF programme was to facilitate the accomplishment of MDG 4 (reduction in child mortality) and MDG 5 (reduction in maternal mortality) via the implementation of interventions that offer performance incentives for healthcare workers with the aim of increasing critical maternal and child health outputs, enhancing healthcare service quality and ensuring that both patients and communities have increased involvement in and are content with the publicly-funded healthcare services they are provided. Healthcare workers were given performance-based incentives for delivering MCH services in greater quantities with enhanced quality compared to baseline objectives. Reporting of service quantities was performed via the health management and information system (HMIS), while measurement of service quality was conducted via field monitoring. The responsibility for HMIS data verification was delegated to a third party (Ministry of Public Health 2010).

Health facilities were randomly assigned to two groups of treatment and control (comparison). Matching of healthcare facilities was based on the type of facility and the number of outpatients. In total, 463 healthcare facilities from the 11 provinces participated in the PBF programme, where 245 were assigned to the treatment group, and the remaining 217 were allocated to the comparison group.

Following a randomised controlled design, the performance of PBF was assessed by

a baseline and an endline household surveys and facility assessments on the bases of the Balanced Scorecard (BSC) measurement. The objective of surveying the households was to gather data after the implementation of the programme as well as a comparison between baseline and endline data regarding health service coverage within the community. The sample used for both baseline and endline household surveys consisted of a multi-stage probability sample from the nine chosen provinces. Two of the provinces were not included in either the baseline or endline surveys as a result of insecurity. In the initial sampling stage, stratification of the healthcare facilities within the nine provinces was performed based on the type of facility, and the necessary amount of matched facilities was obtained by random selection. Matching of healthcare facilities was based on the type of facility and the number of outpatients that had visited in the past 12 months. In the next stage, the necessary amount of villages or clusters was randomly selected from all of the villages located within the catchment areas of the healthcare facilities that had been chosen. The third stage involved the selection of the necessary number of households within the chosen villages by applying a random sampling process (Johns Hopkins Bloomberg School of Public Health and Ministry of Public Health, Johns Hopkins University 2010; Ministry of Public Health & KIT Royal Tropical Institute 2015). The findings of impact evaluation indicated that all health indicators had improved compared to baseline in both the intervention and control groups. However, the differences were not considered to have statistical significance (Ministry of Public Health & KIT Royal Tropical Institute 2015).

The purpose of the health facility assessment was to evaluate the effects of the PBF programme on the performance of the healthcare facilities on the basis of the BSC measurement. The analysis incorporated nine provinces of matched-pair healthcare facilities randomly chosen during the PBF household survey. Although a statistically significant difference was observed in the health facility assessment, it was not particularly large and potentially not that meaningful in terms of comprehending the differences in performance between the two groups. When specifically analysing the healthcare facility performance measures, those facilities in which the intervention was implemented exhibited statistically significant increased performance with regard to seven of the indicators out of 19 (Ministry of Public Health & KIT Royal Tropical Institute 2015).

Using a political economy lens, this thesis will answer the question of what factors shaped and affected the PBC and PBF programmes and their outcomes. It will also examine the cost-effectiveness of the PBF programme in Afghanistan.

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CHAPTER TWO: LITERATURE REVIEW

2 Literature Review

This chapter begins by defining what is meant by results-based financing (RBF), and its theoretical underpinnings. Then, it goes on to a systematic review of RBF economic evaluations, followed by the review of literature on the political economy of health financing, especially results-based financing programmes.

2.1 Results-Based Financing

2.1.1 Definition

Health financing focuses on three functions: revenue generation, pooling, and purchasing (Gottret and Schieber 2006). The World Health Report 2010 emphasises the importance not just of generating revenue for health but also on utilising resources efficiently (World Health Organization 2010b). The latter has a direct relationship with the purchasing function of health financing. Purchasing refers to a set of activities that identify the services to purchase, select providers, and choose efficient and effective mechanisms to purchase services (Figueras et al. 2005). RBF for health is a form of purchasing (Witter et al. 2013).

RBF is an umbrella term comprising a range of incentive models on both the demand and supply sides. RBF links payments or materials to results in order to expand outcome of health care services, improve population health, and bring about changes in health-related behaviours (Perrot et al. 2010; World Health Organization 2010a; Eichler 2006; Oxman et al. 2008; Eichler, Levine, and Group 2009; Eldridge and Palmer 2009; Dieleman, Gerretsen, and van der Wilt 2009). RBF is “a cash payment or non-monetary transfer made to a national or sub-national government, manager, provider, payer or consumer of health services after predefined results have been attained and verified. Payment is conditional on measurable actions being undertaken.” (Musgrove 2011). RBF was initially promoted as an open approach adapted to specific country needs and as a paradigm shift away from traditional input-based financing methods (Ireland, Paul, and Dujardin 2011). It is now widely acknowledged that RBF is much broader and encompasses a series of reforms that can have system-wide effects (Fritsche et al. 2011). The first objective of RBF is to raise the motivation of health workers through incentives and consequently improve health systems performance (Shroff, Bigdeli, and Meessen 2017). Secondly, it can be used as a strategic purchasing reform (49,50) which offers an answer to the ‘how’ of achieving Universal Health Coverage (UHC) and the Sustainable Development Goals

(SDGs) (Meessen et al. 2017). Some of the reforms that accompany RBF include financial decentralisation and increased autonomy for health facilities to use RBF funds (Craig 2017). Other examples are the introduction of specific business and quality improvement plans and increased monitoring and verification of the remunerated indicators (Pearson, Johnson, and Ellison 2010), training of health care workers, involvement of community (Kane et al. 2019), and implementation of patient satisfaction surveys (Alonge et al. 2015).

RBF can involve direct payments to health professionals such as doctors, nurses, and community health workers (Ashir, Doctor, and Afenyadu 2013; Gavagan et al. 2010) to organisations such as health facilities or medical groups (Lindenauer et al. 2007; Curtin et al. 2006) or to government or non-government entities (Basinga et al. 2010). Additionally, payers can be government, donors, or insurance programmes (Lindenauer et al. 2007; Curtin et al. 2006).

2.1.2 Theoretical Underpinnings

2.1.2.1 *Principle-Agent Theory*

The concept of RBF is grounded in principal-agent theory for which economists describe an agency relationship where the principal or incentive provider engages the agent or health care provider to perform on its behalf or to be motivated to act in the principal's interest. The predefined scope of the work and incentive allow both the actors to benefit from the relationship and therefore achieve mutual objectives (Rees 1985). It is argued that in usual contracts, the principal pays agents for a standard set of inputs such as salaries, drugs, building, and administration amongst others. The agents hardly bear any risk in such arrangements and are paid irrespective of whatever result is achieved. Consequently, agents take limited responsibility or no responsibility at all in the case of facing failures (Gneezy, Meier, and Rey-Biel 2011). Therefore, it is important to link financial incentives to performance. The basic law of behaviour perceives that higher incentives lead to a maximum effort; consequently, it can assure better performance levels (Gneezy, Meier, and Rey-Biel 2011).

2.1.2.2 *Self-Determination Theory (SDT)*

While principal-agent theory emphasises on external motivation as a prerequisite to achieve organisational goals, self-determination theory goes further to uncover rest forms of motivation. Intrinsic motivation is defined as doing something which remains inherently interesting or enjoyable to perform, whereas extrinsic motivation is

described as doing something because it leads to certain additional outcomes (Ryan and Deci 2000). Self-determination theory argues that when people are intrinsically motivated, the outcome is more positive on their behaviour and their health (Ryan and Deci 2000). However, extrinsic motivation can have a negative relationship with intrinsic motivation. Based on the self-determination theory, an incentive that positively affects extrinsic motivation can weaken intrinsic motivation (Kuvaas et al. 2017).

Self-determination theory is considered to have importance in the discussion regarding whether RBF programmes should be adopted within the field of health, in which healthcare workers are motivated by the need to provide services to the public, which might override economic concerns.

2.1.2.3 Referent Cognitions Theory

The subject of fairness in work environments is a matter of social justice, and numerous researchers in the field of social psychology have investigated these issues (Van Den Bos and Van Prooijen 2001). Such theories generally concentrate on matters of distributive justice; in other words, they emphasise that outcomes are critical in the process of judging fairness, as well as procedural justice that relates to the perception of fairness within the decision-making process (Folger 1987). According to Referent Cognitions Theory, the manner in which individuals react to distributive and procedural justice is predominantly dependent on their counterfactual thoughts. This theory hypothesises that in situations where procedural or distributive rules are violated, the individual adopts a fundamentally referential thinking approach: individuals utilise a frame of reference to assess what occurred, whereby they mentally compare the event with an alternative outcome (Van Den Bos and Van Prooijen 2001). As suggested by the theory, in the event that an outcome is perceived to be unjust or discriminatory in the workplace, this can lead to righteous indignation and dissatisfaction (Cropanzano and Folger 1989). Referent Cognitions Theory has significant implications for RBF programmes. For instance, if such a programme only provides incentives to a specific category of health professionals, the unequal distribution of these incentives can impact the health professionals' view of fairness and justness.

2.1.3 RBF Global Experience

Low-income countries started introducing RBF fairly recently, and the start was closely associated with the Millennium Development Goals (MDGs) to improve maternal and child health (Oxman and Fretheim 2009). Now, RBF is linked with Universal Health Coverage (UHC) by the Health Results Innovative Trust Fund (HRITF) and International Development Association (IDA) (RBFHealth 2017) in the World Bank (RBFHealth 2019). In the past decade, the total budget invested in RBF projects in low-income countries is estimated at 1.5 billion US dollars (RBFHealth 2018). We extracted the list of RBF intervention sites financed by the HRITF and IDA and the specifications of the projects in Table 1 from RBFHealth (2018).

2.1.3.1 Performance-Based Contracting (PBC)

One of the types of RBF, namely PBC, connects outcomes with performance incentives. In this kind of framework, contracts are agreed with organisations based on their level of performance. The contracting organisations are expected to achieve a certain level of performance on the basis of a pre-determined group of services, defined goals and indicators (Loevinsohn 2008).

In the last two decades, PBC has gained popularity as it is seen as a promising option to target vital health care services, link the resources to results, improve efficiency and effectiveness, empower communities, and allow the government to practice a stewardship role by developing policies and standards, regulating the health sector, and improving health financing (Khalil 2013; Kadaï et al. 2006; Loevinsohn and Harding 2004; Palmer 2000).

PBC has enough potential presumably to establish a well-defined collaborative partnership between state and non-state providers based on vibrant objectives and clear expected outcomes. The element of competition and performance incentives encourages non-state providers (NSPs) to demonstrate improved efficiency, quality services, and better outcomes (Mills et al. 2002; Bustreo, Harding, and Axelsson 2003; Loevinsohn and Harding 2005; Palmer et al. 2006; The Health Foundation 2011).

A review from PBC approaches in LMICs confirmed the positive effect of the approach on improving access to health care services (Liu, Hotchkiss, and Bose 2008). However, a meta-analysis of PBC studies from Cambodia and Guatemala contexts reported that the approach did not have impact on MCH services and child mortality; however, it reduced out-of-pocket expenditure on curative services (Odendaal et al.

2018).

Nonetheless, implementation challenges of PBC in LMICs, where systems are weak, and state capacity in contract and financial management is limited, has remained a matter of concern for policymakers (Lagarde, Haines, and Palmer 2009; Palmer et al. 2006). Some studies reported limited capacity in health systems management, shortage of health care workers, inadequate drugs and equipment, and poor infrastructure have negatively affected PBC implementations in low-income countries (Ssengooba, McPake, and Palmer 2012; Matsuoka et al. 2014; Mashasi et al. 2014; Fox et al. 2013). Likewise, in some studies, operational challenges of PBC such as delays in payments to providers and low capacity of local authorities to manage the contracts were reported (Maluka 2018; Maluka et al. 2018). PBC can be affected by contextual factors such as national policies, the political environment, donors competing priorities, interference of local authorities, and government bureaucratic processes (Islam et al. 2018).

2.1.3.2 Performance-Based Financing (PBF)

In spite of the rapid expansion of PBF in LMICs, there are mixed results on the effects on healthcare services. Some studies found PBF schemes to be effective in improving results against set targets (Soeters, Havineza, and Peerenboom 2006; Kane et al. 2019; Celhay et al. 2015; Janssen et al. 2015; Soeters et al. 2011; PowerII-Jackson, Yip, and Han 2015) while there is a number of studies reporting limited effects of PBF in achieving the outcomes (Van Herck, De Smedt, Annemans, Remmen, Rosenthal, and Sermeus 2010; Witter et al. 2012; Engineer et al. 2016; Ngo, Sherry, and Bauhoff 2017).

Cameroon embarked on the implementation of a pilot project in 2012 to improve quality of care and coverage of maternal and child services. The evaluation results found that PBF led to a significant increase in the utilisation of maternal and child services, including immunisation and HIV testing. The programme also improved quality of care and decreased out-of-pocket expenditure. The government of Cameroon intends to scale up the PBF at the national level by 2021 (Walque et al. 2017). In Benin, to motivate healthcare workers and to improve the quantity and quality of MCH services, a PBF programme was piloted between 2012 and 2017. The midline survey report shows that PBF had a positive effect on the performance of healthcare workers. In addition, the quality of care improved, and a greater level of patient satisfaction was achieved (The World Bank Group 2019). Suthar et al. (Suthar

et al. 2017) reviewed the impact of PBF on HIV/AIDS services in four studies from Sub-Saharan Africa setting. They found that PBF improved pregnant women testing coverage. Lannes and colleagues (Lannes et al. 2016) reported that in Rwanda PBF programme affected efficiency positively for most incentivised maternal and child health services.

However, in other settings the effects of PBF programmes were limited. For example, reviewing the effects of PBF in health care services in Malawi, Gama et al. (2014) reached the conclusion that PBF did not improve quality of care or efficiency of services. In the above-mentioned study from Cameroon, no effects were reported on antenatal care visits and institutional delivery (Walque et al. 2017). A meta-analysis of five PBF studies related to maternal and child health services reported that the evidence was too limited to thoroughly examine the assumption of PBF impact on the reduction of maternal and child morbidities (Haas, Till, and Everetts 2012). The findings were in line with another report that there was limited evidence on the effectiveness of PBF programmes on health systems performance and sustainable changes in health service delivery in general terms (Oxman et al. 2008). Herck et al. (Van Herck, De Smedt, Annemans, Remmen, Rosenthal, Sermeus, et al. 2010) conducted a systematic review of 128 PBF studies carried out between 1990 and 2009. The review reported mixed results on the effects of PBF on clinical effectiveness and equity of care (Van Herck, De Smedt, Annemans, Remmen, Rosenthal, Sermeus, et al. 2010). Similarly, a review of the effect of PBF on the utilisation of services was inconclusive (Flodgren et al. 2011).

Some studies reported donors' extensive influence in priority setting and PBF implementation designs that could put the programme at risk by undermining the notion of local ownership and the future sustainability of the programmes (Walker et al. 2010). Paul et al. criticized the overall PBF approach. They call it a donor fad, given the unavailability of empirical evidence on the effectiveness and efficiency of the programme and the poor local ownership granted to low and middle-income countries in the course of design and implementation of PBF programmes (Paul et al. 2018).

Another study points to the substantial variation in PBF programme design (including factors such as the selection of incentive recipients, the cost of such incentives, the particular indicators that are targeted, the process of evaluating the indicators), and the design is key in determining programme effectiveness (Witter et al. 2012).

Evidence also identified factors supporting the scale-up of PBF in some settings (Shroff, Bigdeli, and Meessen 2017), finding that tackling motivation and weak health

indicators were key, together with knowledge transfer from Rwanda. It is also important to understand the policy context for the purpose of adapting the content of policies; policy content should be optimised to strike a balance between financial sustainability and political feasibility, and donors should support government policies rather than parallel projects.

Similarly, Witter et al. (2019) investigated the impacts of various PBF programmes on healthcare purchasing functions within Uganda, Zimbabwe and the Democratic Republic of Congo. By utilising accessible secondary evidence and feedback from key informants with close connections to the evolution of PBF programmes, they evaluated evidence to determine the manner in which PBF programmes impacted strategic healthcare purchasing in those settings. They concluded that the programmes implemented did not appear to have made changes to facilitate more strategic purchasing. The current evidence implies that PBF programmes are still often implemented as a complementary element of payment frameworks, but should rather move towards institutionalisation and integration within national financing arrangements (Witter, Bertone, et al. 2019).

2.1.3.3 Unintended Consequence of RBF programmes

Some studies focused on the unintended consequences of PBF programmes. Nonetheless, unintended consequences were often not directly measured by programmes, and are presented as part of reviews and quantitative assessments (Ridde et al. 2018; Kuvaas et al. 2017; Paul et al. 2018; Salehi, Kim, and Hansen 2017; Paul et al. 2017; Weyer, Bobiak, and Stange 2008; Lee et al. 2010; Karve et al. 2008; Millett et al. 2007, 2008, 2009; Shen 2003; Tangri et al. 2011; Ireland, Paul, and Dujardin 2011; Pearson, Johnson, and Ellison 2010) and qualitative studies (Victor, Ida, and Siri 2014; Mcdonald and Roland 2009; Casalino et al. 2007; Kalk, Paul, and Grabosch 2010). The major unintended consequences reported are listed as follows:

“Gaming” the System: The introduction of incentives may change providers’ behaviours to maximize their ability to gain greater rewards. This may involve falsifying reporting documentation, an oversupply of measured services, and neglect of non-measured services (Kalk, Paul, and Grabosch 2010).

Wrong Targets: One of the major challenges in designing PBF programmes is identifying the appropriate performance targets to measure for payments. Actors need to decide whether targets should be process indicators, intermediate outcomes, or

health impact indicators. Then agreement on how high targets should be set and ascertaining what is feasible and an appropriate incentive to change provider behaviour (Casalino, Alexander, et al. 2007; Karve et al. 2008; Weyer, Bobiak, and Stange 2008).

Playing to the Test – Distractions: Providers motivated to reach just performance targets may be distracted from providing quality care for non-measured clinical services, as well as waste the resources to reach target goals for their economic benefit. It is argued that PBF might divert resources from the reform agenda; consequently, it is more harmful to healthcare services and the systems rather than improving health system performance (Casalino, Alexander, et al. 2007; Chen et al. 2010).

Cherry-Picking and increased disparities in quality and access to care: Cherry-picking involves the selection of patients based on meeting performance targets to increase economic benefits. This often leads to the inclusion of healthier patients and exclusion of more severely ill patients (Casalino, Alexander, et al. 2007; Chen et al. 2010; Tangri et al. 2011).

In the next subsection, we will review literature related to the political economy of health financing, especially RBF and political economy theoretical underpinning, followed by a systematic review of RBF economic evaluations.

Table 1. List of RBF projects supported by Health Results Innovative Trust Fund (HRITF) and International Development Association (IDA)

	Location	Focus	Date effective	Financing	Other sources	Evaluation design	Findings
1	Afghanistan	Reproductive, maternal and child health services	2010 to 2015	HRITF \$12 million	N/A	Cluster Randomized controlled trial	No substantial differences in any of the MCH coverage indicators between intervention and control arms of RCT
2	Armenia	To improve MCH services at primary and secondary levels, and prevent, screen and manage NCDs	09/27/2013 to 12/15/2019	HRITF \$1.8 million and IDA \$35 million	N/A	Rigorously test a mechanism that allows patient feedback using a computer-assisted phone interview	The conclusion was that the response rate was much higher using a CAPI survey. Thus, this method will be used for the scale-up of the pilot programme
3	Benin	Reproductive, maternal and child health services	09/30/2011 to 06/30/2017	HRITF \$11 million and IDA \$32.8 M	N/A	Cluster RCT	Midline survey reports positive effects of the RBF bonus treatment on the quality of care provided by health workers.
4	Burkina Faso	improve the utilization and the quality of reproductive health services in five regions	10/22/2012 to 12/31/2018	HRITF \$12.7 million and IDA \$29 M	US\$21 million for PBF	A block-by-region cluster randomised trial with a pre-post comparison group.	Forthcoming
5	Burundi	Reproductive, maternal and child health services	04/08/2013 to 06/30/2017	HRITF \$20 million and IDA \$25 million	Government, GAVI, EU, Belgium	Cluster RCT	Forthcoming
6	Cameroon	To increase service utilization and improve the quality with a particular focus on MCH and communicable diseases.	2012 to 12/12/2017	HRITF \$20 million and IDA \$45 million	N/A	A prospective randomised impact evaluation	Significant increases in coverage (child and maternal immunization, family planning, HIV testing) and improvements in structural quality of care. Decrease in out-of-pocket payments.
7	Central African Republic	Reproductive, maternal and child health services	10/28/2012 to 03/31/2018	HRITF \$11.2 million and IDA \$17 million	\$12 million	Blocked-by-region RCT	Forthcoming
8	Chad	To increase service utilization and improve the quality of MCH services in	09/18/2014 to 09/30/2018	HRITF \$5 million and IDA \$15.79 million	N/A	Project Surveys	The implementation of the Project is impeded by the prevailing security situation.

		twelve districts in five regions					
9	DRC	MCH	05/31/2016 to 12/31/2019	HRITF \$6.5 M and IDA \$220	N/A	RCT	No significant changes in the coverage or quality of services.
10	Djibouti	To improve the utilization and quality of MCH services and communicable disease control programs (i.e., HIV/AIDS TB)	07/27/2015 to 12/31/2018	HRITF \$7 million and IDA \$7 million	N/A	A randomised evaluation design	Forthcoming
11	Ethiopia	Maternal and child health services	06/17/2013 to 06/30/2018	HRITF \$20 million and IDA \$100M	Multi-donor financing	Demographic Health Survey	Not available
12	Gambia, The	To increase the utilization of community nutrition and primary maternal and child health services	05/20/2014 to 07/31/2019	HRITF \$5 million and IDA \$8.68 million	N/A	The overall approach for the evaluation is a randomised phased in 2 x 2 design	Forthcoming
13	Ghana	Maternal and child health services and Nutrition improvement	02/12/2015 to 06/30/2020	HRITF \$5 million and IDA \$68 M	N/A	Multi-site cluster randomized control trial	Forthcoming
14	Haiti	To increase access and utilisation of maternal and child health, nutrition and other social services – specifically targeting pregnant women, children under five and vulnerable families.	09/12/2013 to 12/31/2018	HRITF \$20 million and IDA \$70 million	N/A	The impact evaluation compares performance measured in terms of health outcome and output variables	RBF increased key services over 3-year period by 39%. For children under 1 year and pregnant women, the increases in services were statistically significant and large (1.7 to 2.2 times the baseline rates). Incentives proved more effective and substantially less expensive than training and technical assistance alone.
15	India	Increase utilization of essential health services	10/14/2011 to 08/31/2014	HRITF \$0.7 million and IDA \$142	Duke University: US\$0.22 M	Geographic regression discontinuity study	The impact evaluation showed a significant effect on mortality and on reducing financial risk.
16	Kenya	To enhance the delivery of essential health services especially the poor.	03/24/2014 to 06/30/2018	HRITF \$20 million and IDA \$41 million	N/A	Info not available	Forthcoming

17	Kyrgyz Republic	Improve the quality of maternal, neonatal and paediatric care at rayon hospital level	07/29/2014 to 06/30/2017	HRITF \$11 million and IDA \$0 million	N/A	Three-arm factorial design with 65 secondary (rayon) hospitals	Forthcoming
18	Lao PDR	To expand the coverage and improvement of the quality of MCH focusing on poor in rural districts	10/11/2011 to 12/31/2015	HRITF \$2.4 million and IDA \$15 million	N/A	Given the small scale of the project, an impact evaluation was not considered	N/A
19	Lesotho	Increase utilisation and improve the quality of primary healthcare services in six districts in Lesotho, with a particular focus on maternal and child health, TB and HIV	02/14/2014 to 07/30/2019	HRITF \$4 million and IDA \$12 million	\$ 4 million (Government)	Household surveys (Baseline and endline)	Forthcoming
20	Liberia	To improve the quality of MCH infectious disease services in selected secondary-level health facilities; and to support the emergency response needed to contain and control the Ebola outbreak.	03/07/2013 to 05/30/2018	HRITF \$5 million and IDA \$10 million	N/A	A simple before and after comparison of outcomes and a series of small augmented interventions at each hospital with randomised treatment groups and timing.	Forthcoming
21	Nigeria	Increase the delivery and use of high impact MCH and improve quality of care at selected health facilities.	11/15/2012 to 06/30/2018	HRITF \$20 million and IDA \$150 M	US\$ 1.7 million	pre-post experimental design	Forthcoming
22	Republic of Congo	To increase both the utilisation and the quality of MCH in targeted areas.	01/01/2015 to 06/27/2019	HRITF \$10 million and IDA \$10 million	\$100 million (Government)	Combination of PBF, community-based targeting and subsidisation of health services provided to the poor and household visits	Forthcoming

23	Rwanda	reduce extreme poverty at community level by supporting social protection and health policy reforms	04/27/2009 to 06/30/2012	HRITF \$12 million and IDA \$18 million	N/A	Prospective randomised design	Conditional in-kind incentives had a positive impact on timely ANC and PNC services. No significant effect on SBA. No multiplicative effect on outcomes when demand and supply-side interventions were combined.
24	Senegal	To improve health and nutrition outcomes for women and children in poor regions of Senegal	11/15/2012 to 06/30/2018	HRITF \$20 million and IDA \$20 million	US\$ 2.3 million (USAID)	Prospective and randomised at district level for PBF and at facility level for demand-side intervention	Forthcoming
25	Sierra Leone	To increase utilisation of MCH services and support the emergency response needed to contain and control the Ebola crisis	10/11/2013 to 10/10/2016	HRITF \$5 million and IDA \$13 million	US\$ 25.7 million	Not considered	According to the WB report, given the scale of the PBF scheme, an impact evaluation was not possible since there were no control facilities to test the counterfactual.
26	Tajikistan	To contribute to improving the coverage and quality of basic primary health care services in selected districts	12/11/2013 to 12/31/3019	HRITF \$4.8 million and IDA \$15 million	N/A	Difference-in-difference and experimental approaches	Forthcoming
27	Zambia	improve the delivery and utilisation of MNCH and nutrition services in five provinces	03/31/2015 to 06/30/2019	HRITF \$15 million and IDA \$52 million	N/A	Experimental study design	The study demonstrates that an RBF programme can be successfully implemented to increase delivery of key health indicators through “contracting-in” a capacity-constrained public health system.
28	Zimbabwe	To increase coverage of key MCH in targeted rural and urban districts	09/25/2013 to 02/28/2017	HRITF \$20 million and IDA \$0 million	N/A	A quasi-experimental evaluation	Key indicators like delivery by a skilled provider, in-facility delivery, and Caesarean Section deliveries improved faster in RBF districts than in control districts, although there was a general increase of these indicators across Zimbabwe. In addition, there was a mixed but positive message on the quality of care under the RBF programme.

Extracted from RBFHEALTH (2018)

2.2 Political Economy Analysis

Health becomes political in circumstances where a certain category of individuals benefit more in comparison to others, where the social determinants of health are based on political actions, and where health is a fundamental component of citizenships and human rights (Bambra, Fox, and Scott-Samuel 2005). Improvements to health require a thorough comprehension of the manner in which politics impact policies and decision-making processes (Gilson, Orgill, and Shroff 2018). Towards the end of the 20th century, Reich observed that policy reforms inherently have political dimensions as they are targeted at changing who receives valued goods within society, while Walt contended that health policy is focused on who is being influenced by whom in forming policy, as well as the manner in which this occurs. Both reached the conclusion that neither technical aspects, including economic analysis, nor a well-planned policy are sufficient on their own to instigate policy reforms. Instead, calculated and targeted analysis of the broader political factors, the actors, processes, and resources that influence such reforms is required to assess whether it is feasible in the political sense as well as to examine how the change process can be supported (Gilson 2019).

Health financing policies are fundamentally political on the basis that there are competing interests, significant gains and losses can be made, and challenges will inevitably be made to the existing situation (Gilson 2019). It frequently necessitates complex relationship between various actors with different status, power, and influence both within and outside the health sector. In numerous situations, reforms can lead to a contentious political environment as they are targeted at changing sensitive distributions, in addition to the rights of health service users, or the compensation and working situation of healthcare workers (World Health Organization 2018).

Recently, many LMIC governments are attempting to implement health financing policies to make progress towards UHC (Sparkes et al. 2019). UHC implies that “all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the users to financial hardship” (World Health Organization 2019).

Thus, it is important to introduce political economy thinking to the analysis of health financing policies in LMICs (Gilson 2019). Political economy analysis (PEA) is a group of methodologies that are utilised in analysing political behaviours and institutions (Wittman and Weingast 2008). PEA has a specific focus on the context and policy processes on one side, and the interactions between actors, with their interests, motivations and contestation on the other side. A significant assumption that underpins PEA is that institutions, behavioural trends and agents that are influential in the process of deciding, designing and implementing policies shape the setting in which reforms occur. In other terms, PEA focuses on the interplay between economic and political processes, how resources are distributed among groups and individuals, as well the processes that form, maintain and change these relations over time (DFID 2009).

In recent years, PEA has been integrated into the programmes of various international organisations, including the Swedish International Development Cooperation Agency (SIDA) (Pettit 2013), the United Kingdom Department for International Development (DFID) (DFID 2009), the USAID (Menocal et al. 2018), the United Nations Development Programme (UNDP) (UNDP 2012), the World Bank (Fritz, Kaiser, and Levy 2009), and the World Health Organisation (WHO) (Reich 2019). Additionally, PEA software named PolicyMaker is accessible on the Internet that assists researchers with conducting stakeholder analysis for the development of political strategy (Reich 2010).

2.2.1 Theoretical Underpinning of Political Economy Analysis

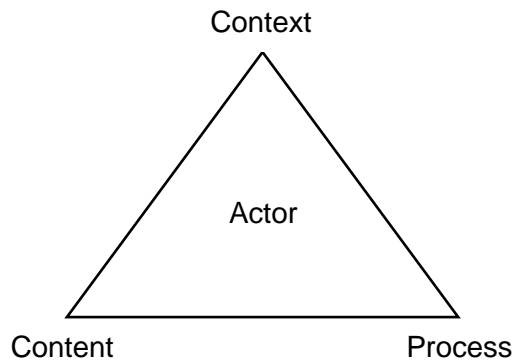
A variety of different theories are utilised for analysing political economy. Nevertheless, the reality is that they are only distinguished by minor differences and these theories are fundamentally similar in analytical terms, providing guidance to users in their investigations of the manner in which power is applied, the nature of decision-making processes, and the process of implementing incentives and disincentives for particular organisations or persons (Edelmann 2009). This subsection will review the common analytical core of conceptual and methodological approaches to PEA:

2.2.1.1 *Health Policy Model*

The Health Policy Analysis model (triangle) was originally proposed by Walt and Gilson (1994). This model is comprised of four components: context (why the policy is needed),

content (the main focus of the policy), process (the manner in which the policy was developed and applied) and actors (the key stakeholders who are engaged in and impact the process of formulating and implementing the policy). In their model, Walt and Gilson focused on explicating the contextual factors that are influential on policy. They perceived policy to have a dynamic nature that is continually changing, reformulating the relationships among groups and among organisations. They also believed that the policy process has significance for facilitating the understanding of how policy is developed as well the actors that influence this process. Additionally, they claimed that policy content decisions are not purely based on technical concerns, but are also impacted by the nature of the existing political environment. Lastly, they highlighted the important roles of actors engaged in the policy process, who can influence the policy content, and are also influenced by the policy context. The Health Policy Analysis model is illustrated in Figure 3.

Figure 3. Health Policy Analysis Model



Source: Walt and Gilson (1994)

This model is adapted for political economy analysis, and it is called 'Policy Engagement Framework' (PEF) (Buse et al. 2008). The PEF pays less attention to 'policy content' and more emphasis on the function of actors and their role, perspectives, and positions (Nash, Hudson, and Luttrell 2006). The framework takes the position that the dynamics between actors, the context in which policy comes into existence, and the process through which policy is developed leads to policy change. Our study on political economy analysis of PBF in Afghanistan will be guided by this framework.

2.2.1.2 *The Policy Cycle Model*

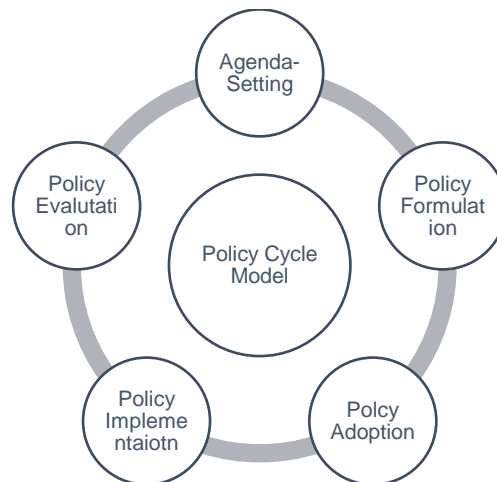
The 'policy cycle' was developed by Lasswell (Lasswell 1956) for modelling the policy process. The policy cycle is beneficial for analytically subdividing the sector policy reform process into separate phases as well as designing support programmes for different sectors based on the particular requirements inherent to the reform stages. It should be noted that there is a degree of overlap between these stages, and the process is essentially infinite. The Policy Cycle Model is shown in Figure 4.

From the late 1950s onwards, changes have occurred to these stages and the order in which they happen, although the fundamental principles are unchanged. In the modern era, the analytical foundations of this theory are frequently defined as involving a sequence of five stages, namely agenda setting, policy formulation, adoption, implementation and evaluation (Jann and Wegrich 2007; Howlett, McConnell, and Perl 2017):

- *Agenda-setting*: Agenda-setting involves the raising of awareness and increasing the focus on important matters through different mediums, including meetings, conferences, and presentations, among others. The objective is to encourage the general public and key actors to prioritise the specific agenda over other matters. Hence, a societal issue can be transformed into a political concern, which occurs after defining and recognising it as a problem and when the level of interest among the public with regard to resolving the issue is sufficiently high. After introducing the issue to the political agenda, it then becomes political and will be tackled by political decision-makers.
- *Policy formulation*: The aim of policy formulation is to establish the main objectives, priorities and options, to determine the advantages and disadvantages of these options, and to identify the associated side effects. At this stage, alternative policies are formulated by political decision-makers to find solutions to the given problem.
- *Policy adoption (decision-making)*: In this phase, the relevant government entities adopt the policies for application in the future.

- *Policy implementation:* In the policy implementation stage, the goals and objectives of the policy are converted into actions. This is particularly important as it dictates whether such policies can be translated into tangible reforms that are anticipated to resolve the highlighted problem.
- *Policy evaluation:* This stage involves the application of evaluation principles and techniques to analyse the content, application or effects of a policy. Put differently, policy evaluation aims to determine whether the policy reform has effectively resolved the issue or whether it is not possible to find a viable solution, meaning that additional political action is required. In the case of the latter, it is necessary to redefine the unresolved problem for the purpose of addressing it in a new policy cycle.

Figure 4. The Policy Cycle Model



The policy cycle model represents a basic model that can be used for analysing complicated and contingent sector reform procedures in developing setting. This model facilitates the analysis of particular needs, possibilities and complexities at individual states of the sector reform process. It can be highly beneficial for analysing policy to determine the status of sector reform, the primary features of the current stage, and what is required for preparing the subsequent stage (Edelmann 2009).

2.2.1.3 Drivers of Change Model

The Drivers of Change (DoC) model of the UK Department for International Development (DFID) was one of the pioneering efforts to comprehend the political economy conditions in a country. The primary question that DoC addresses pertains to how policy and institutional reforms are introduced and maintained, or why they are obstructed. The objective is to determine the specific factors (change drivers) that can motivate change over time. This approach focusses on the dynamic interplay among three groups of factors (Warrener 2004; DFID 2005):

- *Structures*: Structures are regarded as long-term policy contextual factors. In general, they cannot easily be influenced as either a long time is required, or due to the fact that they are controlled by external forces. This can include social and economic structures, demographic changes, climate change and developments in technology.
- *Institutions*: Institutions can either be formal in terms of constitutional regulations and law, or informal in terms of social, political and cultural conventions. In environments in which the formal institutions such as the rule of law, elections and the division of powers are not strongly embedded or applied, the process of doing things is generally based on informal conventions.
- *Agents*: Agents could be internal actors like legislators, public servants, political parties, business organisations, trade unions, among others, whereas external actors can include governments of other countries, regional organisations, donors or multinational companies (Warrener 2004; DFID 2005).

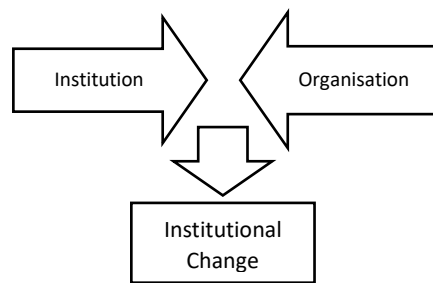
2.2.1.4 The Intuition and Institution Change Model

This theory was originally proposed by North (North 1990) and aims to provide an explanation for significant differences in the performance of economies over extended time periods. The institutional change model is shown in Figure 5.

As suggested by North, institutions decide what people are allowed to do and the specific conditions under which they are allowed to do so. As earlier explained, institutions can operate formally (laws and regulations) and informally (norms or behavioural codes). North claimed that institutional reforms are formed by the interplay among organisations and institutions. The prevailing institutional structure determines the organisations that are created and the manner in which they develop. Organisations attempt to enact

reforms and dissolve institutions based on their requirements. While institutions are inflexible in the short term, they become less rigid over time. They generally transform in an incremental manner. Incremental changes emerge as a result of the belief of entrepreneurial individuals within economic or political organisations that improvements could be made if they modify the prevailing institutional structure to a certain extent. The differences between organisations and institutions enable the analysis of political economy to concentrate on the main aspects of institutions or actors and allows organisational analysis to focus on the key aspects of actors (e.g., strategies, resources, or awareness of the regulations). The theory also facilitates the understanding and application of information, knowledge and perception in the process of reforming public policy (North 1990).

Figure 5. The Institutional Change Model



2.2.1.5 Theory of Veto Player

The 'veto player' approach was created by Tsebelis (Tsebelis 2003) for analysing, classifying and comparing distinct political systems with regard to the likelihood of policy change. Tsebelis aimed to enhance the understanding and prediction of the political viability of applying political reforms within a specific political system. According to this theory, policy reforms can only be effective when the primary actors in the political framework consent to changing the existing system. The reason for this is that certain political actors must express agreement with the implementation of new policies or reforms to extant policies. They are defined as 'veto players', since they essentially have the power to veto a suggested policy or policy reform. Veto players are either individuals or groups of actors whose consent is required for changing the existing situation. Tsebelis divided veto players into three different categories: (i) institutional veto players whose rights are preserved by the constitution, which could only be changed by the

passing of new laws; (ii) partisan veto players, who are created from institutional players via political machinations (e.g., government coalitions or powerful opponents within the Parliament); and (iii) additional veto players (e.g., civil society) who can be observed in particularly policy or decision-making environments. Based on the theory, the political feasibility of sector reforms can be evaluated rapidly by assessing the amount and configuration of veto players in addition to their ideological beliefs and political programmes. The theory makes the assumption that veto players prefer specific policies and aim to optimise their utility by limiting their acceptance of policy suggestions to those that most resemble their preference compared to the existing situation. Resultantly, the success of proposed policies can only be achieved in the event that all veto players believe that the policy reform will generate change that approaches their specific preference (Tsebelis 2003).

2.2.1.6 The Path Dependency Theory

At the beginning of the 1980s, the pioneering explicit path dependence concept was proposed by Paul David (David 1985). The main concept of Path Dependency Theory is that the decisions made in the process of forming an institution, or when developing a policy, place certain limitations on future events (Greener 2005). The concept of path dependence emphasises that after selecting a path, changing this path is challenging due to the institutionalisation and reinforcement of the processes over time. The system establishes feedback loops and actors develop an interest in maintaining that particular distribution of benefit (Reich 2019). The ability to modify institutional decisions is progressively more constrained as not adhering to regulations and conventions determined by past decisions produces 'costs' related to investments, learning, coordination and expectations. For this reason, modifications are normally made to extant institutions rather than replacing them entirely even though they are not considered optimal, thus leading to institutional inertia (Greener 2005).

2.2.2 Political Economy Analysis of Health Financing

Though health financing is inherently political, there has been a few application of PEA examining health financing reforms. Recently, the special issue of *Health Systems & Reform (HSR)* examined health financing strategies using PEA (Sparkes et al. 2019). Some of the articles in *HSR* utilised the political economy of UHC reform framework originally designed by (Campos and Reich 2019), which acknowledges that the stakeholder analysis of key actors as well as methodologies for changing the political environment incorporating how resources is distributed are the main elements of an implemented PEA. The framework guided the studies in six categories of politics: interest groups, bureaucrats, budgets, leadership, beneficiaries, and external actors (Sparkes et al. 2019). The special issue of *HSR* explains that health financing reforms are political (Gilson 2019) and the plausibility of executing distinct mechanisms for financing healthcare is mostly dependent on the political dimensions of the related setting. The opposition posed by interest groups (i.e. civil society), which have particular strength due to wide support from public, have a significant effect on health financing reforms (Croke et al. 2019). Institutional veto gates are also considered important factors influencing health financing policies (Sparkes, Bump, and Recich 2015). Lack of coherent policies, parallel and opposing mandates from central government, fragmented regulatory framework (Jacobs 2019), poor governance, insufficient data for reviewing and assessing implementation progress and limited capacity of human resources in the public sector (Hipgrave, Anderson, and Sato 2019) are other factors preventing health financing reforms from being designed and implemented effectively. It is important to note that health financing reforms can often lead to disagreements and conflicts, especially during the legislative stage (Habich 2019). Therefore, strategic preparations for change should incorporate the political management of the government and interest groups, in addition to the key actors and certainly the wider public, to whom the reforms are targeted (Gilson 2019). Building a consensus among a wide range of political actors as well as pro-active identification and resolution of conflicts that might emerge during the legislative stage are key elements that require attention during the design and implementation of health financing reforms (Habich 2019).

2.2.2.1 Political Economy Analysis of Results-Based Financing

We searched online literature to access published literature about political economy analysis (PEA) of RBF. We searched Google Scholar, the websites of development partners such as WHO, USAID, World Bank, DFID and PBF Community of Practice, using the key words “results-based financing” or “performance-based financing” or pay for performance” and “political economy” or “political economy analysis”. We also reviewed the reference list of the papers which aimed to study the RBF PEA. There have been only a limited number of RBF studies have used political economy analysis. These studies examined political economy factors underpinning the adoption and implementation of RBF (Bertone, Falisse, et al. 2018; Witter et al. 2019), RBF policy processes (Bertone, Wurie, et al. 2018), interaction between structure (historical legacies, context, institutions) and agency (agendas, actors, power relationships) concerning the implementation of incentive-based policies (Bertone and Witter 2015), and interplay between actors in formulating and implementing RBF programmes (Chimhutu et al. 2015). The findings of the studies reveal that distinctions in terms of actors and contexts could cause changes in practice from RBF policy if the distribution of resources among actors are not well balanced (Bertone and Witter 2015). Similarly, if RBF policy process is significantly politicised by external actors allowing minimal flexibility for local authorities (country) to lead the process, it can cause frustration and lack of trust between actors (Chimhutu et al. 2015). Therefore, the approach through which the processes of design and implementation are defined should retain flexibility, thus providing time for the development of capacity and ownership at the country level to establish extended political support and enhanced integration within the health framework (Bertone, Wurie, et al. 2018). Adapting a model to fit the specific conditions within the country to sustain a systemic approach can engender national ownership (Witter et al. 2019).

To sum up the last two subsections, this review reveals that efforts to introduce health financing policies, including the establishment of an RBF programme are fundamentally political. However, evidence shows that despite the broad implementation of RBF programmes, particularly in FCAS, there has been minimal focus on RBF and PEA. The special issue of HSR emphasised on the role of institutions and actors in shaping health financing policies. However, the studies in this special issue have limitations in assessing the processes and the context that could influence policy decisions. Likewise, the current

RBF resources mostly focused on one or two components of political economy factors (e.g. adoption and or implementation). PEA can facilitate policy processes in the three ways: (i) PEA generates an analysis of the political environment, an estimation of resources and the status of political actors, in addition to an evaluation of the political feasibility of policy reform; (ii) PEA provides an explanation with regards to the manner in which policy processes impact policy reforms as well as how the process can be managed politically; and (iii) PEA emphasises the attributes of political economy forces during all stages of the policy cycle (setting agendas, designing the policy, adoption, implementation and evaluation) (Reich 2019).

This review shows that successful implementation of health financing programmes calls for alignment with political economy factors (e.g. context, actors, processes, distribution of resources). In a situation in which health financing programmes are adapted according to the local context, and the interactions between actors are well managed in all stages of the policy cycle, a health financing programme can meet its objectives successfully.

To the best of our knowledge, there is only one study concentrated on the political economy of RBF in a comprehensive manner from a low-income setting (Witter et al. 2019). There is no study from FCAS. This justifies the need for a comprehensive application of PEA for RBF in low-income settings, especially FCAS.

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2.3 Paper 1: Cost-Effectiveness of Results-Based Financing in Health Care: A Systematic Review

Paper 1

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Cost-Effectiveness of Results-Based Financing in Health Care: A Systematic Review

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2.3.1 Abstract

As a method to improvise on the quality and availability of health services, result-based financing is becoming more popular. There has been growing attention to the effectiveness of this type of programme, but much less attention to its efficiency, or whether it represents value for money. Economic evaluation, which involves the comparison of costs and consequences of alternative health care programmes is a widely used tool guiding investment decisions in health care. We conducted a systematic review of economic evaluations of results-based financing in low, middle and high-income countries. The economic evaluation, as well as results-based financing concept, were searched in EMBASE, Medline, Cochrane Library, CINAHL, HEED, Global Health, and Econlit. Consultation of various experts on major papers and screening of the reference lists were conducted for relevant studies. There were seven studies analysed in the review. The previous reviews suggested that weak methodological designs limited the conclusiveness of findings from economic evaluations of RBF programmes. Our review outcomes suggest that RBF might be a cost-effective option to obtain improvements related to a specific disease such as diabetes or kidney diseases. However, we need to be precautionous when we conclude and generalize the findings of the studies as three studies in this review did not use any cost-effectiveness thresholds, and two studies applied the WHO suggested cost-effectiveness threshold, which is questionable. Further rigorous research on the impact of results-based financing interventions related to its cost-effectiveness, particularly in low and middle-income countries is required.

2.3.2 Background

Results-based financing (RBF) involves the payment of incentives to institutions and or healthcare workers, after measuring and verifying the results, based on predefined targets (Musgrove 2011). RBF is drawing attention as a promising approach to improve the quality and availability of health care services in low and middle-income countries (Carrin and Hanvoravongchai 2002; Van Stolk, Bjornsson, and Goshev 2010; World Health Organization 2010; Eldridge and Palmer 2009). RBF is given different names. The most common names used interchangeably are RBF, Pay for Performance (P4P) and Performance-Based Financing (PBF) (Eichler and De 2008).

Economic evaluation plays a significant role in the appraisal of health care programmes and serves as an input into policy decisions and resource allocation for health (Cunningham 2000). The primary aim of economic evaluation is to ensure investments represent value for money, or to maximise health outcomes for a given level of resources (Griffits, Legood, and Pitt 2016). A full economic evaluation estimates the costs and consequences of two or more alternative courses of action (Wonderling, Gruen, and Black 2005).

A growing number of studies have examined the costs and outcomes of RBF interventions in a variety of settings. However, most of these studies were carried out in high-income countries (Emmert et al. 2012; Meacock, Kristensen, and Sutton 2014; Turcotte-Tremblay et al. 2016).

To date, three systematic reviews have sought to examine the economic evidence related to RBF. From January 2000 to April 2010, Emmert *et al.* (2012) focused on synthesizing information on the cost-effectiveness of RBF interventions by reviewing nine papers from high-income countries. Three out of these were considered as full economic evaluations (examining costs and outcomes); while, the remaining six evaluations were categorized as partial economic evaluations as the studies were unable to establish a connection between cost and the effects. Similarly, seven studies, published between 2012-2014, were reviewed by Truscott-Tremblay *et al.* (2016). Six of the studies were from a low-income setting and one from a middle-income country. Five of the studies could not be termed economic evaluations, while two studies focused only on the costs of RBF interventions. Meacock *et al.* (2014) reviewed fourteen published studies including the nine studies reviewed by Emmert et al. Thirteen of the studies

focused on high-income countries while only one study was from a middle-income setting. Only one of the studies was a complete cost-effectiveness analysis, and it was from a high-income country.

There have been new studies published since the last systematic review. Furthermore, previous reviews mainly relied on partial economic evaluations with a specific focus on high-income countries.

The present study aims to synthesize the results of a review of full economic evaluations of RBF programmes from high, middle and low-income countries.

2.3.3 Methodology

We reviewed studies that were published between April 2014 and December 2019 to avoid overlapping the search timeframe of the previous systematic review.

This review includes all peer-reviewed papers on economic evaluations of results-based financing interventions in LMICs. The following electronic databases were searched: CINAHL, Cochrane Library, Econlit, EMBASE, and Global Health, and Medline.

While reviewing the above databases, we used a combination of the following key search terms: *((Cost effective* OR cost-effective* OR cost-utility analys* OR cost utility analys* OR economic-effective* OR economic effective* OR cost per death averted OR cost per DALY averted OR cost analys* OR cost-minimisation analys* OR cost minimization analys* OR cost saving OR efficiency OR economic evaluation) AND (results based financ* OR results-based financ* OR performance-based financ* OR performance based financ* OR pay for performance OR pay-for-performance))*.

Experts were consulted for key papers, and reference lists were screened for relevant studies. We did not set any limitation for geographic coverage while researching; however, we restricted the language of the study to English.

Selection Criteria

In total, 822 titles and abstracts were screened to verify their relevance against several inclusion and exclusion criteria; whilst, setting aside systematic literature reviews for later reference. Table 2 showcases the inclusion and exclusion criteria applied to various studies included in this review. The goal of this review were studies based on primary

economic evaluation published in peer review journals. As a supply-side programme, results-based interventions at the provider level (individual, group, or facility) were included. Conditional cash transferred to patients without incentives to providers were excluded. Comparative, experimental or observational studies using quantitative data were included; however, qualitative studies were excluded. At least one structural, process, or outcome measure on the effectiveness of the intervention related to the quality of care and/or utilisation of services needed to be present. Nonetheless, studies with no quantitative measure on quality and or utilisation of services or health outcome were excluded.

Table 2. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Language	
English	Other languages
Period	
April 2014 to December 2019	Before April 2014
Geographic Location	
All locations, categorised as Higher Income Country (HIC), Middle Income Country (MIC), and Low-Income Country (LIC) based on the World Bank classifications	No exclusion criteria specific for geographic location
Publication type	
Peer-reviewed journal articles	Reports, Editorials, perspectives, comments, letters, conference presentations
Study design	
Experimental or observational assessment of outcomes and clear quantitative analysis of costs	Studies that had not explicit economic evaluation methodology
Intervention type	
Pay for performance, results-based financing, performance-based financing	Conditional Cash Transfers without incentive given to the provider
Economic evaluation type	
Economic evaluations (cost-utility analysis, cost-effectiveness analysis, cost-benefit analysis)	Qualitative studies, non-economic evaluations
Targeted population	
All	No exclusion
Outcomes	
At least one structural, process, or outcome measure on effectiveness of intervention related to the quality of care and/or utilisation of services, or DALY/QALY	No quantitative measure from a validated instrument of the effectiveness of an intervention on quality of care and/or utilisation of services

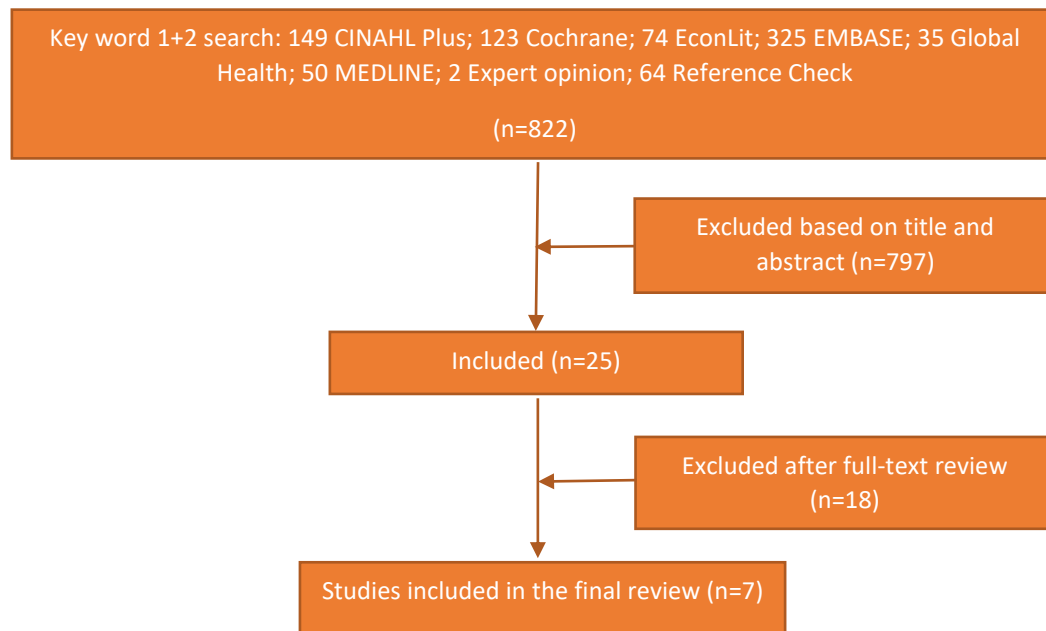
Appraisal of studies

We used the following set of measures adapted from Drummond *et al.* (Drummond et al. 2015) and combined with those used by Turcotte-Tremblay *et al.* (Turcotte-Tremblay et al. 2016) and to evaluate the quality of each paper:

1. Were the descriptions of the study perspective and the competing alternatives given?
2. Was a relation between costs and effects established empirically?
3. Was the design to examine the effectiveness of RBF explained?
4. Were costs and effects for each option identified, measured, valued, and variance in timing adjusted?
5. Was uncertainty in the evaluations of costs and effects sufficiently addressed?

Figure 6 illustrates the flow of our search strategy, screening process, and the evaluation of the entire paper.

Figure 6. Flow chart of search strategy, screening process, and quality review



2.3.4 Results

Twenty-five full-text studies were reviewed. Of those, seven studies were selected for inclusion for analysis (Tan et al. 2014; Hsieh et al. 2015, 2017; Pandya et al. 2018; Garner et al. 2018; Zeng et al. 2018; Borghi et al. 2015). Five studies (71%) from high-income countries (HIC) focused on Taiwan (Tan et al. 2014; Hsieh et al. 2015, 2017), UK (Pandya et al. 2018), and the USA (Garner et al. 2018); one study (14%) from a lower middle-income country (LoMIC) focused on Zambia (Zeng et al. 2018); and one study from a low-income country (LIC) focused on Tanzania (Borghi et al. 2015).

Majority of studies (86%) considered a payer's perspectives (Garner et al. 2018; Pandya et al. 2018; Zeng et al. 2018; Hsieh et al. 2017, 2015; Tan et al. 2014), while only one study (14%) carried out an economic evaluation from a societal perspective (Borghi et al. 2015).

Four of the studies (56%) examined costs and outcomes within a primary healthcare (Borghi et al. 2015; Zeng et al. 2018; Garner et al. 2018; Pandya et al. 2018); followed by two studies (29%) based on hospitals (Hsieh et al. 2015, 2017); one study (14%) was based on both, primary healthcare centres as well as hospitals (Tan et al. 2014). Furthermore, five of the RBF schemes (71%) specifically targeted a sub-population with a particular behaviour or disease (diabetes, kidney, cardiovascular, substance use disorders) (Tan et al. 2014; Hsieh et al. 2015, 2017; Pandya et al. 2018; Garner et al. 2018) and two studies (29%) assessed maternal and child healthcare services (Borghi et al. 2015; Zeng et al. 2018).

The intervention study period was 2-6 years, but four and a half years on average among the studies.

Every study conducted a full economic evaluation in the form of cost-effectiveness analysis, where a clear relationship between the RBF costs and effects was established (Tan et al. 2014; Borghi et al. 2015; Hsieh et al. 2015, 2017; Zeng et al. 2018; Garner et al. 2018; Pandya et al. 2018). Each of the studies looked at competing alternatives in different forms. The comparison was conducted between the RBF groups and either control groups or the status quo.

Table 3 provides a description of all the seven studies.

Table 3. Brief description of included studies

Reference	Study Location	Targeted population	Level of intervention	Patient population	Duration of the study	Type of payment	Study Design	Discount	Study Outcome	Sensitivity Analysis	Type of Economic Analysis
Tan <i>et al</i> (2014) (Tan <i>et al.</i> 2014)	Taiwan (HIC)	Doctors	Hospital and primary care	Diabetes	2 years	Rewards	Retrospective observational study	Not used	QALYs	No	CEA
Hsieh <i>et al</i> (2015) (Hsieh <i>et al.</i> 2015)	Taiwan (HIC)	Doctors	Hospital	Diabetes	6 years	Rewards	Retrospective observational cohort study	0.03	QALYs	No	CEA
Hsieh <i>et al</i> (2017) (Hsieh <i>et al.</i> 2017)	Taiwan (HIC)	Doctors	Hospital	Chronic kidney diseases	6 years	Rewards	Longitudinal observational matched cohort study	0.03	Yl	No	CEA
Pandya <i>et al</i> (2018) (Pandya <i>et al.</i> 2018)	UK (HIC)	Doctors	Primary care	Cardiovascular diseases	6 years	Rewards	Lifetime simulation cohort model	0.035	QALYs	Yes	CEA
Garner <i>et al</i> (2018) (Garner <i>et al.</i> 2018)	USA (HIC)	Therapists	Primary care	Substance use disorders	4 years	Rewards	Randomized control	Not used	QALYs	No	CEA
Zeng <i>et al</i> (2018) (Zeng <i>et al.</i> 2018)	Zambia (LoMIC)	Health facilities	Primary care	Maternal and child health	5 years	Rewards	Randomized control	0.03	QALYs	Yes	CEA
Borghi <i>et al</i> (2015) (Borghi <i>et al.</i> 2015)	Tanzania (LIC)	Health facilities	Primary care	Maternal and Child	3 years	Rewards	Controlled before-and-after study	0.03	Facility-based birth	Yes	CEA

CEA: Cost-Effectiveness Analysis, HIC: High-Income Country, LIC: Low-Income Country, LoMIC: Lower Middle-Income Country, QALYS: Quality Adjusted Life Years, YL: Life Years

All the studies (100%) described the source of information and the methods used in establishing effectiveness; two studies (29%) used randomised control methods (Garner et al. 2018; Zeng et al. 2018); one study (14%) used a controlled before and after design (Borghini et al. 2015); two studies (29%) took a retrospective observational approach (Tan et al. 2014; Hsieh et al. 2015); one study (14%) used a longitudinal observational cohort study (Hsieh et al. 2017); and one study (14%) used a lifetime simulation cohort model (Pandya et al. 2018).

The studies conducted in high-income setting (56%) included the direct costs of service utilisation such as the costs of out-patient department (OPD) services, hospital admission and drugs in addition to performance payments (Tan et al. 2014; Hsieh et al. 2017, 2015; Garner et al. 2018); while one study (14%) included the costs of only incentives and drugs (Pandya et al. 2018). One study (14%) from a high-income setting and two studies (29%) from LMICs estimated not only the direct costs of service utilisation and performance payments but also administration costs including data verification costs (Zeng et al. 2018; Garner et al. 2018; Borghini et al. 2015). None of the studies reported on the allocation of administration costs to lower-level cost centres. Only one study (14%) annuitized the costs (Zeng et al. 2018).

Five studies (71%) discounted costs and outcomes (Borghini et al. 2015; Hsieh et al. 2017, 2015; Zeng et al. 2018; Pandya et al. 2018); four studies (57%) used a 3% discount rate (Borghini et al. 2015; Hsieh et al. 2017, 2015; Zeng et al. 2018); whilst one study (14%) applied a discount rate of 3.5% (Pandya et al. 2018). Other two studies (Tan et al. 2014; Garner et al. 2018) did not use a discount rate. All the studies (100%) estimated both the additional costs as well as the effects of alternatives (Tan et al. 2014; Borghini et al. 2015; Hsieh et al. 2015, 2017; Zeng et al. 2018; Garner et al. 2018; Pandya et al. 2018).

Six studies (86%) used generic outcome measures in the form of incremental costs quality-adjusted life years (QALYs) and incremental cost per life years (LYs) to compare costs and outcomes (Tan et al. 2014; Hsieh et al. 2015, 2017; Zeng et al. 2018; Garner et al. 2018; Pandya et al. 2018). Only one study (14%) used an intermediate outcome in terms of incremental cost per additional facility-based birth (Borghini et al. 2015).

Sensitivity analysis was applied only by three studies (43%) (Pandya et al. 2018; Zeng et al. 2018; Borghini et al. 2015); whilst the other studies (57%) did not consider it (Tan et al. 2014; Hsieh et al. 2017, 2015; Garner et al. 2018). Only one study applied a probabilistic sensitivity analysis (Pandya et al. 2018).

One study (14%) (Tan et al. 2014) adopted 0–50,000 \$US per QALY as the CEA threshold based on the USA cost-effectiveness threshold standard. One study (14%) (Pandya et al. 2018) considered cost-effectiveness thresholds of £13,000 and £20,000–£30,000 per QALY based on Claxton *et al.* (2015) estimation (£13,000 per QALY) (Claxton et al. 2015) and the UK National Institute for Health and Care Excellence (NICE) recommendation (£20,000–30,000 per QALY). Two studies (29%) (Garner et al. 2018; Zeng et al. 2018) followed the recommendation of WHO's Commission on Macroeconomics in Health as the cost per QALY averted less than per capita Gross Domestic Product (GDP) or three-times the per capita GDP interventions were considered “very cost-effective” and “cost-effective”, respectively (World Health Organization 2001). Two studies (29%) (Hsieh et al. 2017, 2015) considered RBF interventions cost-effective if the average incremental costs saved per QALY in RBF intervention group was higher than the comparison group, and one study (14%) (Borghini et al. 2015) did not have a clear indication on how they determined the cost-effectiveness of the intervention.

Overall, amongst the seven studies identified, five studies (71%) found the RBF intervention to be cost-effective (Garner et al. 2018; Zeng et al. 2018; Hsieh et al. 2017, 2015; Tan et al. 2014); one study (14%) was related to the likelihood of RBF cost-effectiveness if the intervention was expanded at the national level (Borghini et al. 2015); however, there was only one study (14%) reported that the intervention was not cost-effective (Pandya et al. 2018). Only one study found the RBF programme in a low-income setting to be cost-effective (Zeng et al. 2018). However, the methods used in this study was found inadequate by Paul et al. (2020).

Quite a few studies (75%) found the RBF intervention to be cost-effective at the primary health care setting (Borghini et al. 2015; Zeng et al. 2018; Garner et al. 2018). Borghini *et al.* (2015) noted that the RBF programme run in a resource-poor setting (Tanzania) could be cost-effective if it was implemented at a national level, as an integrated part of the health system. According to Zeng *et al.* (2018), the RBF intervention was cost-effective as many more lives were saved in the RBF group as compared to non-RBF groups in a time span of five years in Zambia. The estimates of Garner *et al.* (2018) suggested that a 5 per cent increase in the intervention cost resulted in a substantial increase in the competent delivery of treatment procedures by therapists in the US, treatment targets and period of abstinence per substance used by RBF group patients. However, an estimation from the UK found that the incremental cost-effectiveness of Quality Outcome Framework was close to £49,400

per QALY, which was below the set cost-effectiveness thresholds in the UK (Pandya et al. 2018).

At the hospital level, the RBF intervention was found to be cost-effective in both studies (100%). Considering the management of diabetic patients in Taiwan, Hsieh *et al.* (Hsieh et al. 2015) noted a 1.2 higher QALYs in RBF group as compared to non-RBF groups. Similarly for kidney patients in Taiwan Hsieh *et al.* (Hsieh et al. 2017) reported a longer life span was projected in RBF groups (2.8) as compared to non-RBF group (2.7); a lower dialysis incidence was noted in RBF groups (0.85) as compared to non-RBF groups (0.79).

Tan *et al.* (Tan et al. 2014) from the primary health care and hospital level reported 8 per cent increase in QALYS in RBF intervention group with an additional cost of 422 \$US and an ICER of 5400 \$US per QALY gained in diabetes patients in Taiwan.

2.3.5 Discussion

Seven full economic evaluations conducted between April 2014 and December 2019 based on five high-income settings, one lower middle-income country, and one low-income setting that covered RBF interventions in primary health care as well as hospitals were reviewed. All the studies showed positive effects of RBF interventions. It helped improve quality, increase utilisation, save costs, and gain QALYs. Within 2 to 6 years, short-term results were seen; however, one study projected the likely future effects of RBF intervention on outcome if the programme was scaled up to a national level. Additionally, one study showed the initial investments for the intervention group were higher, considering the utilisation and service cost. However, the difference in the cost could decrease over time.

The strengths of the studies can be summarised as follows: Firstly, all the studies conducted a full cost-effectiveness analysis in which a clear connection between costs and outcomes was established, and a comparison was made between two or more alternatives. A well-structured economic evaluation assesses costs and outcomes based on two alternatives using incremental analysis of both costs and outcome (Gray et al. 2011). Secondly, the costs and outcome data were from reliable sources. Analysing cost-effectiveness relies on the estimates pooled from various sources; thus, it is important to document the source of evidence (Cartwright 2009). Thirdly, the major outcome of the studies was an incremental cost per QALY estimates. It is essential to measure the costs and outcomes in suitable units such as the number of deaths averted, the number of disability-adjusted life years (DALYs)

averted or number of QALYs gained (Drummond et al. 2015). Fourth, some studies applied sensitivity analysis. Though economic evaluations allow combining data from different sources (Briggs and Gray 1999), the reliability of a study depends on the degree of confidence or certainty in parameters. In case, there are uncertainties in the parameters, the sensitivity of the result is examined by applying sensitivity analysis (Taylor 2009).

On the other hand, we observed some methodological limitations in a few studies. In this review, only two studies used effectiveness data from RCTs, while other studies relied on non-RCT designs. RCTs can be considered as a gold standard for economic evaluations (Cartwright 2009). Though observational studies are largely used in economic evaluations, the potential for bias is high (Boyko 2013). Furthermore, only four studies included the administration (overhead) costs using a direct cost allocation method. This method is the simplest costing in which the administration costs are allocated directly to the final cost centres without having interactions among administration cost units. Nevertheless, this method is prone to underestimation (Drummond et al. 2015).

More importantly, three studies did not use a cost-effectiveness analysis threshold and relied only on the cost-saving outcome of the studies and two studies relied on the WHO suggested cost-effectiveness threshold. The cost-effectiveness threshold is a tool to represent the stance of a country or an organisation in investing in health interventions to produce an additional QALY (Cleemput et al. 2011). Currently, the thresholds of cost-effectiveness analysis is controversial (Cameron, Ubels, and Norström 2018). The United Kingdom applies values of £20,000 to £30,000 (Claxton et al. 2015), and the United States uses 0-50,000 \$US (Neumann, Cohen, and Weinstein 2014). The WHO's Commission on Macroeconomics in Health defines cost-effectiveness ratios as cost per DALY averted less than per capita Gross Domestic Product (GDP) or three-times the per capita GDP interventions in LMICs as "very cost-effective" and "cost-effective", respectively (World Health Organization 2001). Ochalek et al. (Ochalek, Lomas, and Claxton 2018) argue that the WHO method underestimates the impact of costs on health effects. Providing a framework to estimate country-level cost per DALY averted thresholds, they recommend that LMICs can generate their data or they can use cross-country data to produce country-level estimates on the degree of health opportunity cost (Ochalek, Lomas, and Claxton 2018). Woods et al. estimated cost-effectiveness thresholds for a large number of LMICs. They concluded that the WHO recommended estimations have been too high. They recommend the cost-effectiveness threshold of 1 – 52 per cent

GDP per capita for low and middle-income countries and 18 – 71 per cent for middle and high-income countries (Woods et al. 2016).

Future research should focus on rigorous full economic evaluations, especially in low-income countries where a large number of RBF programmes have been implemented. Besides, given none of the studies conducted a comparative analysis between the RBF programmes and other alternative improvement interventions, future studies should compare RBF programmes to alternative health systems improvement interventions such as improved input management of health facilities, improved monitoring and supportive supervision, capacity building of health care workers, and interventions to promote health worker trust and intrinsic motivation.

Although the review has been based on fixed criteria, a few limitations of this review could be observation bias, its search strategy, and its publication; in turn, affecting RBF programmes related to cost and the quality. Limitation of published evidence available about the cost-effectiveness of RBF programmes in LMICs, especially when considering large numbers, are disturbing. In spite, the numerous works of literature available, termed as grey literature, there is little economic evidence based on the effectiveness of these interventions in LMICs.

2.3.6 Conclusion

The previous reviews suggested that weak methodological designs limited the conclusiveness of findings from economic evaluations of RBF programmes. Our review outcomes suggest that RBF might be a cost-effective option to obtain improvements related to a specific disease such as diabetes or kidney diseases. However, we need to be cautious when we conclude and generalize the findings of this review as three studies in this review did not use any cost-effectiveness thresholds, and two studies applied the WHO suggested cost-effectiveness threshold, which is controversial.

Further rigorous research on the impact of results-based financing interventions related to its cost-effectiveness, particularly in low and middle-income countries is required.

Conflict of Interest

We hereby declare that we do not have any conflict of interest.

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CHAPTER THREE: OBJECTIVES AND METHODOLGOY

3.1 OBJECTIVES

This thesis aims to conduct a political economy analysis and cost-effectiveness analysis of results-based financing within the context of BPHS in Afghanistan. The main objectives are as follows:

1. To assess contextual, institutional and contractual factors influencing the performance of PBC programme in Afghanistan.
2. To examine the political economy factors influencing the adoption, design and implementation of the PBF programme in Afghanistan.
3. To assess whether the implementation of PBF was cost-effective for Afghanistan.
4. To offer policy recommendations.

3.2 METHODOLOGY

This chapter presents the overarching methodology for the thesis. Our proposed research methods for each objective are explained in the relevant research papers in detail.

In this section, Table 4 shows the methods used for each objective. Next, the rationale for each method is discussed, and then the methods for sampling, data collection and analysis are explained.

Table 4. Objectives, methods and status of research papers

No	Objectives	Methods	Techniques	Papers
1	To assess contextual, institutional and contractual factors influencing the performance of PBC programme in Afghanistan.	Political Economy Analysis	In-depth interviews Focus group discussions Document review	<i>Research Paper 2:</i> Salehi AS, Saljuqi T, Akseer N, Rao K, Coe Kathryn, Factors influencing performance by contracted non-state providers implementing a basic package of health services in Afghanistan <i>Status:</i> Published in BMC International Journal for Equity in Health <i>Chapter:</i> 4
2	To examine the political economy factors influencing the adoption, design and implementation of PBF programme in Afghanistan.	Political Economy Analysis	Semi-structured interviews with policymakers, health managers and healthcare workers Document review	<i>Research Paper 3:</i> Salehi AS, Blanchet K, Vassal A, Borghi J. Political Economy Analysis of the Performance-Based Financing Programme in Afghanistan <i>Status:</i> Ready for submitting to a journal <i>Chapter:</i> 5
3	To assess whether the implementation of PBF was cost-effective for Afghanistan.	Cost-effectiveness analysis	Cost-effectiveness analysis compared to the standard of care	<i>Research Paper 4:</i> Salehi AS, Borghi J, Blanchet K, Vassal A. Cost-Effectiveness of Results-Based Financing in Health Care: A Systematic Review <i>Status:</i> Submitted to the Lancet Global Health <i>Chapter:</i> 6

3.2.1 Rationale for study methods

3.2.1.1 *Choice of methods for objective 1 and 2*

We found qualitative research methods to be the most appropriate for studying Afghanistan's PBC and PBF programmes given the exploratory nature of the studies and the requirements for examining numerous processes and testing the driving forces that have shaped and affected the RBF programmes. Qualitative research can generate understanding of factors influencing programme processes and outcomes (Liu, Hotchkiss, and Bose 2007).

Researchers provide numerous definitions to describe what is meant by qualitative research. Denzin and Lincoln (Denzin and Lincoln 2000) define qualitative research as a tool that exposes the researchers to the real world and allows them to make the world visible through material practices. Creswell (Creswell 1998) defines qualitative research as "an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem" (Creswell 1998). Qualitative research aims to deeply understand and interpret the social world from the perspective of research participants by examining their social situations, viewpoints, experiences, and stories; researchers have opportunities for direct interaction with research participants; collected data are rich and informative; analysis provides detailed information on common themes and shared ideas; and the results intend to provide interpretations on the social meaning of the research participants' views and experiences through mapping and descriptions (Snap and Spencer 2003).

Additionally, given RBF programmes are inherently political as the provision of performance-incentives assumes changes not only in overall productivity and management at the service delivery level but also on provider behaviour (Magrath and Nichter 2012; Oxman and Fretheim 2009), we considered a political economy analysis (PEA) approach to guide our data collection, analysis and interpretation. PEA allows us to examine situational factors, clarify processes, and highlight roles and interactions of actors for greater understanding of the RBF programmes. PEA can complement economic evaluation (objective 3) by highlighting the factors that shaped the PBF programme and affected PBF outcomes.

3.2.1.2 Choice of methods for objective 3

We used economic evaluation and specifically cost-effectiveness analysis to produce evidence on the efficiency of the resources used in Afghanistan by the PBF programme.

Cost-effectiveness analysis can support the decision for how to assign limited resources to competing priorities. Sometimes, additional requirements could be accommodated by expanding the healthcare budget through levying higher taxes or increasing insurance premiums. However, this is not always a feasible solution. In a low-income setting such as Afghanistan where the healthcare system is managed by a fixed budget, any decision to address additional demands or introduce new programmes means interrupting health services elsewhere. Cost-effectiveness analysis (CEA) examines whether the outcomes produced by a new programme prevail over the losses in health taking place from the dislocation of services elsewhere. This is called 'value for money' (World Health Organization 2003). The primary motive of economic evaluation is whether intervention value validates its cost or not (Drummond et al. 2005). In other terms, an economic evaluation is about attaining value for money to improve health by employing scarce resources in the most efficient way (Griffits, Legood, and Pitt 2016).

Secondly, the total budget invested in PBF projects in low-income and FCASs is estimated at 1.5 billion US\$ (RBFHealth 2018) in the past decade. Though this has been an enormous investment, there has only been only two studies (Borghi et al. 2015; Zeng et al. 2018) from low-income countries reporting on the cost-effectiveness of PBF intervention so far. To our knowledge, our study would be the first CEA of PBF informed by a pragmatic controlled randomised trial in an FCAS to provide insight into the understating of value for money in the context of PBF.

Lastly, this CEA was carried out alongside a PEA qualitative study, which will increase the chances of the technical outcome of the CEA being suitably received in the context of highly political situations, by better understanding the policy context. Furthermore, policymakers are not only interested in understanding the factors shaping and affecting a programme, but also are interested in whether or not the programme is cost-effective.

3.2.2 Study Design, Data Collection and Analysis for Objectives 1 and 2

3.2.2.1 *Study Design for Objectives 1 and 2*

The study design for Objectives 1 and 2 is based on the case study method. Political economy analysis requires to examine a research subject from different perspectives. Therefore, the case study method allows us to examine the RBF programmes through multiple lenses rather than a single lens, which enables different aspects of the programmes to be uncovered and comprehended.

The aim of a case study is to combine all facets and data regarding the subject being studied, thus facilitating the explanation or description of a particular thing from various angles. A qualitative case study help study particular problems within the constraints of a particular setting, context or organisation (Baxter and Jack 2008). They can be utilised in situations where one perspective is unable to thoroughly explain the issue being studied and where the understanding should be holistic and put into context (Heale and Twycross 2018).

Distinct terminology for describing different case studies is used. For example, Stake (1995) stated that case studies could be categorised as exploratory, descriptive, or explanatory. Case studies are also categorised as instrumental, intrinsic, or collective (Baxter and Jack 2008). The objective of explanatory case studies is to determine answers to 'why' or 'how' questions. Essentially, they aim to provide an explanation for real-life interventions whose complexity is too high for the application of surveys or experimental approaches. Descriptive case studies are targeted at describing interventions or phenomena as well as the actual contexts in which they happen. The aim of exploratory case studies is to determine opinions and to discover answers to 'what' or 'who' questions. This kind of case study is utilised to investigate scenarios where there is no obvious, individual group of outcomes related to the intervention in question (Yin 2003).

Stake employed the term intrinsic, suggesting that researchers who are interested in the case should adopt such an approach when the aim is to improve the understanding of that case (Stake 1995). The aim of instrumental studies is to achieve more than the comprehension of a specific situation. It facilitates the understanding of an issue or assists with refining a theory. The case is frequently examined in great detail, its contexts are analysed, its normal activities explained, and it also enables the researcher to follow external interests. Stake employed the term 'collective case study' in situations where multiple cases are investigated. Such case studies have

similar characteristics and descriptions to multiple case studies. In multiple case studies, various cases are investigated to comprehend the commonalities and distinctions between them (Stake 1995).

3.2.2.2 Conceptual framework for Objectives 1 and 2

In this thesis, we used a framework developed by Liu et al. (Liu, Hotchkiss, and Bose 2007) as a foundation and a guide for designing the study, developing data collection tools, and analysing data for objective 1. Likewise, we adapted a PEA conceptual framework (Buse et al. 2008) to guide our data collection and analysis for objective 2. This framework was originally developed by Walt and Gilson (Walt and Gilson 1994) and adapted by Buse et al. This framework aims to understand the fundamental dynamics that influence policy adaptation, design and implementation. The framework takes the position that the dynamics between actors, the context in which policy comes into existence, and the process through which policy is developed leads to an outcome. The framework places greater emphasis on the function of actors and their role (Nash, Hudson, and Luttrell 2006).

These frameworks have been used in other settings (Nash, Hudson, and Luttrell 2006; Liu, Hotchkiss, and Bose 2007; Kent, Hawkes, and Jones 2008; Buse et al. 2007, 2008) to evaluate health programmes. While the specifics of the geographical and historical situation in Afghanistan are unique, adopting tested and proven frameworks contribute to the validity of the findings.

The two frameworks have numerous common aspects as well as certain distinctions. Each of the frameworks captures contextual factors as well as policy cycle processes; additionally, both make the assumption that a particular outcome is caused by the interaction between the components of the frameworks. Nonetheless, the Liu et al. framework (Liu, Hotchkiss, and Bose 2007) focuses less on the role of and interaction between actors; conversely, the Buse et al. framework (Buse et al. 2008) strongly emphasizes the interplay between actors during policy adoption, formulation and implementation. Table 5 displays the commonalities and distinctions between the framework proposed by Liu et al. and Buse et al.

Table 5. Similarities and differences of PEA frameworks used in this thesis

Framework	Context	Content	Process	Actors
Liu et al. 2007	Strong emphasis	Some emphasis	Strong emphasis	Less emphasis
Buse et al. 2008	Strong emphasis	No emphasis	Strong emphasis	Strong emphasis

3.2.2.3 Data collection for Objectives 1 and 2

Qualitative studies use different methods to collect, as well as analyse and interpret data. Data collection methods are divided into two large groups: (i) “generated data” methods that produce data by conducting research, and (ii) the methods that focus on “naturally occurring data”. Generated data methods are the only means of examining certain phenomena such as beliefs, attitudes and motivations. The common methods developed to generate data are interviews and focus group discussions (Snap and Spencer 2003). Naturally occurring data methods are developed to help investigate a phenomenon in its natural setting. These methods provide data that represent social behaviours (e.g. study of culture or community) of specific social settings. Some examples of natural occurring data methods are observations and discourse analysis (Snap and Spencer 2003). Following, we will explain the most common data collection methods.

The most common methods used in qualitative studies are as follows (Pope 2002):

- *Interview:* This method is based on a face to face interview with an individual study participant either by in-depth or semi-structured interview. In an in-depth interview, the researcher explores the opinion and experience of the participant by posing open-ended questions. In semi-structured interviews, the questions are led by the topic guide with some flexible questions.
- *Focus Group Discussion:* Focus group discussions (FGDs) are similar to face-to-face interviews, but they are organised among a group of more than two people. Typically, six to eight participants take part in the discussion. They discuss a concerned subject, argue, raise questions, express opinions and provide some shared ideas. This method is usually used in health care to discuss materials or a particular health problem to develop an interpretative description or formulate a hypothesis and action plans to improve quality of care.

- *Observations*: Observations focus on the interaction and behaviour of people and or systems. This method is increasingly used in the study of organisation and health care provision.
- *Secondary Sources*: Secondary analysis, which refers to the re-use of data that was primarily collected for another study, has gain popularity in recent decades. The researchers argue that many qualitative datasets have narratives that were not analysed in the primary research study.

In this thesis, we used three main data collection methods, namely document review, individual interviews and focus group discussions for objective 1 and document review and individual interviews for objective 2. Our document review incorporated academic papers, grey literature, reports, official policy documents and minutes of meetings. Given RBF programmes intend to focus on the motivation of healthcare workers, apart from strengthening health systems, we believe “generated data” collection methods are the best approach to examine the experience, thoughts and beliefs of study participants.

Unlike statistical research that uses probability sampling (random sampling), qualitative studies follow a non-probability sampling method in which the research target population (participants) are selected purposively to represent specific characteristics of groups in the sampled population. These characteristics make the sampled population qualified to the small scale in-depth research studies (Dworkin 2012). In purposive sampling, the selection of the research participants is based on predefined criteria or purposive (Mason 2002). The characteristics appears from social-economic features or a specific background or a particular behaviour. It is highly important to make sure that all respective constituencies are included while some level of diversity in each of criteria is considered (Snap and Spencer 2003).

We used a purposive sampling technique in both studies (objective 1 and 2) to ensure diversity among our respondents. The sampling plan was stratified according to different categories of stakeholders: representatives of the MoPH at both the central and provincial levels, development partners, NSPs, and healthcare workers. The variety allowed us to explore perceptions and ideas from a diverse group, identifying similarities and divergences across the respondent categories. The participants for the FGDs were also selected through a purposeful sampling process that sought to keep the composition of the FGDs constant across provinces.

3.2.2.4 Data analysis for Objectives 1 and 2

An analysis is an essential part of qualitative research in which analytical categories and explanations are provided based on the data collected by the qualitative methods (Sofaer 2002). We provide a brief overview of the various qualitative analysis methods and then explain the choice of analysis method for our case studies.

Content Analysis Method: The content analysis technique is beneficial for analysing various types of data, including self-reported data in order to enhance the understanding of cultural patterns and experiences. Content analysis is defined as the process by which verbal or behavioural information is categorised for the purpose of classifying, summarising or tabulating the information. To accomplish this, it is important that researchers determine their objectives and hypotheses and also increase their familiarity with the data so that they can develop an appropriate system of coding. After identifying appropriate codes, it is then possible to methodically examine the data to discern examples of all the codes. A 'code' could be denoted by a word or brief phrase that is representative of a theme or concept. When performing content analysis, it is important to consult the data numerous times, firstly for identifying codes, secondly to refine these codes, and lastly to count instances of the codes (Hsieh and Shannon 2005).

Thematic Analysis Method: Thematic analysis is a different option to content analysis in which qualitative data is converted into quantitative data. This approach is frequently employed as a qualitative technique to focus on the content of statements made by participants, particularly the identification, analysis and reporting of patterns (themes) in the data. The analysis could be inductive, where codes emerge from the data via open coding, or deductive, in situations where pre-set categories are utilised. Themes capture important aspects of the data with regard to the research question and denote a certain degree of patterned response or meaning in the dataset (Braun and Clarke 2006).

Discourse Analysis Method: This analysis technique involves naturally occurring discourse and all forms of written text. Essentially, discourse analysis studies language-in-use. A fundamental notion that underpins these techniques is that the function of language extends beyond the communication of content information. From the perspective of discourse analysis, discourse is a group of ideas that are reflective of the manner in which a specific topic is formed within society. Gee focused more on language structure, but also addressed cultural, social and political meaning. Like

approaches based on content, the reading and annotating of data are conducted in an iterative manner based on the tool being used (Gee 2011).

Framework Analysis Method: Framework analysis is a technique utilised for analysing data in primary qualitative research. This is a more state-of-the-art approach that comprises various phases including familiarising with the data, identification of a thematic structure, coding, charting, mapping and interpretation. Framework analysis is a method based on matrices that involve the formulation of thematic categories that enable the coding of data. A key aspect of this approach is that, dissimilar to other qualitative techniques, themes or concepts can be determined based on the theory that can be designated as coding categories from the beginning and then amalgamated with new themes or categories that arise after the data is inductively analysed. A tangible advantage of this approach is that any questions or issues determined in advance by different actors can be clearly and methodically incorporated into the analysis, while still allowing sufficient flexibility for the detection and characterisation of issues that arise from the data (Dixon-Woods 2011).

Grounded Theory (GT) Method: This qualitative data analysis approach commences with the analysis of an individual case to develop a theory. Subsequently, further cases are analysed to determine if they are capable of contributing to the theory. When using GT, researchers create new theories from the available data. GT research questions endeavour to ascertain why or how something occurs. Grounded theorists attempt to establish explanatory linkages among categories rather than providing descriptions of these categories. The processes of collecting and analysing data run concurrently, and the research question can transform as the analysis develops. Ultimately, GT analysis enables the researcher to describe a theoretical model for the given process (Charmaz 2006).

In this thesis, regarding objectives 1 and 2, we adopted the content analysis approach in which key issues, core elements, and shared outcomes are considered.

As indicated above, our case studies follow specific frameworks. Content analysis is a perfect choice for qualitative studies which uses conceptual frameworks. Content analysis can predict variables of interest and interactions between variables; thus, help assign coding or establish a relationship between the codes (Hsieh and Shannon 2005). RBF is a complex programme. Therefore, content analysis allows us to follow a structured process to remain focused on the subject of research (Mayring 2000).

Applying Snap and Spencer (2003) guidance, the following steps were employed to

analyse the data. First, all transcriptions and notes were carefully reviewed. All key topics and concepts were then identified and sorted. Important themes and statements were coded using the conceptual framework described previously. Based on their relationships, the highlighted data were selected and grouped under specific categories. Information on the same opinion was combined, and transcribed quotes then used under the relevant classifications. Finally, each classification was studied and interpreted carefully. The interpretation was based on the aim and objectives of the study and the conceptual framework. Common viewpoints were then described, and essential responses elucidated.

3.2.3 Study Design, Data Collection and Data Analysis for Objective 3

3.2.3.1 *Study perspective*

Perspective is central in determining the necessary costs and outcomes, and it highlights the standpoint of researchers when carrying out a cost-effectiveness analysis (Neumann 2009; Bilvick Tai, Bae, and Le 2016). A provider perspective implies that only the costs incurred by providers (e.g. Ministry of Health, NGOs) are considered (Maxwell Ayindenaba et al. 2013). If costs incurred by society members, public, private and individual are taken into account in addition to the provider of the programme, the study is taking a societal perspective (Hansen and Yeung 2009).

We implemented this study from a provider perspective (Polimeni et al. 2016), as decision-makers such as those in the MoPH, that are faced with allocating resources from a fixed annual budget, are interested in those costs that are accrued to the health sector. Therefore, the costs incurred on patients, such as transportation costs and opportunity costs of patients due to loss of productivity and opportunity costs of caretakers (Zilberberg and Shorr 2010; Jönsson 2009) were not included in the study due to the perspective of the study.

3.2.3.2 *Conceptual framework for Objective 3*

Given that PBF programme aimed at increasing utilisation of MCH services, a framework called “Maternal Health Policy Model” (Guldie et al. 2010) was adapted to evaluate the costs and health outcomes of the PBF programme. This framework has been used in similar settings including Afghanistan to conduct cost-effectiveness analysis of MCH programmes (Guldie et al. 2010; Carvalho, Salehi, and Goldie 2012; Carvalho, Goldie, and Salehi 2012). This framework simulates the history of

pregnancy such as antenatal care, delivery, abortion, pregnancy-related complications, and postnatal care. In this framework, women of child bearing age (15 to 49 years old) are the target population for this study, why may or may not use antenatal care services, deliver the baby or have an abortion, and incur complications of pregnancy or not, and use or not use post-natal care.

3.2.3.3 Approach to Costing

The cost of a project is defined as “the monetary value of all the resources used as a result of the project under consideration” (SAFE International Research Partnership 2003).

There are two types of costs, economic costs and financial costs (Evans et al. 2005). Financial costs reflect the amount of money paid for specific resources. The central concept of economic costs is that of opportunity costs or the value of resources in their best alternative use (Gold et al. 1996). For example, if an ultrasound is donated to a health facility, the financial cost will be zero while the economic cost will be the estimated market value of the ultrasound.

A cost analysis could include full or incremental costs. The full cost analysis considers all costs used in an approach while an incremental cost analysis reflects the additional inputs incurred by the approach compared to the alternative option(s) (Mogyorosy and Smith 2005). There are some terminologies used commonly in cost analyses:

- ‘Total cost’ refers to all costs incurred by an approach (Hansen and Yeung 2009);
- An ‘average cost’ includes the mean cost of the total costs (Hansen and Yeung 2009);
- A ‘fixed cost’ is a cost that does not vary in the short term (around one year) regardless of the quantity of outputs (Drummond et al. 2005);
- A ‘variable cost’ is a cost which varies if the quantity of outputs are changed (Drummond et al. 2005);
- A ‘marginal cost’ accounts for the cost of one more unit of production (Mogyorosy and Smith 2005);
- A ‘unit cost’ takes into consideration the cost of production of a unit of service (Creese, Parker, and Who 1994). The latter might also be called an ‘average cost’ (Conteh and Walker 2004);
- A ‘direct cost’ which is directly related to a programme or activity. If the programme or activity is stopped, this type of cost is removed (Creese, Parker, and Who 1994); and

- An ‘indirect cost’ which is not directly related to a programme or activity. If the programme or activity is stopped, there are still some costs associated with the organisation (Creese, Parker, and Who 1994).

Cost studies can be carried using a top-down approach and or bottom-up approach. In a top-down approach, in order to attain the cost of a health service, the total cost is allocated to the service based on allocation factors such as staff time spent on the targeted service, transportation millage used for the service and the proportion of building usage (Conteh and Walker 2004; Cunnama et al. 2016). The methods used in top-down cost analyses are as follows:

- *Direct cost allocation method:* This is the simplest costing method. Under this method, the overhead costs (e.g. administration unit in an office or a laundry unit in a hospital) are allocated directly to final cost centres without having interactions among overhead cost units. This method is prone to underestimation (Drummond et al. 2005).
- *Step-down cost allocation method:* Step-down cost allocation allows assigning the resources used to selected cost centres on an allocation basis. The process runs from top to the lower levels as far as the final cost centres of interest are obtained (Cunnama et al. 2016). The process also includes interaction among the overhead units (Drummond et al. 2005). The step-down cost allocation approach is broadly used in costing health services and it has a high potential of comparability across settings. This method is also called ‘reciprocal method’ (Debusk and Forsyth 2011).

The bottom-up cost approach (micro-costing) is a quite common practice and the most feasible method to obtain the unit costs of services (Drummond et al. 2005; Cunnama et al. 2016). In this method, detailed costing of activities is conducted to estimate the unit costs.

PBF Programme Cost: In this study, we estimated financial as well as economic costs of the PBF programme at central and provincial levels. The cost centres at the central and provincial levels included salaries, health management information system (HMIS) verification, equipment, building, transport, and administration. The administration costs were further divided into monitoring, communication, training, workshop, and tax. At the health facility level, in addition to the above costs, the cost centres included the performance incentive cost and drug costs.

Unit cost of services: To measure the unit costs of PBF supported services, we conducted a primary data collection from 25 random sample of health facilities (Table

6). The sample size was estimated based on the mean (2.58) and standard deviation (1.74) of cost per personnel in 463 PBF BPHS health facilities with an assumption that this allows error to be 40 per cent of standard deviation in the health facility population. Provided that it was planned to apply a sensitivity analysis around those parameters (± 30 per cent), the estimated number of health facilities was enough to generate sound estimates of parameters for the health facilities. The formula below presents the sample size calculation (Hajian-Tilaki 2011):

$$\text{Sample size} = \frac{Z^2 * \sigma^2}{d^2}$$

Where: $d = 0.4 * \sigma$

$z = 1.96$ for two-side test

σ = standard deviation of the continues outcome

The costs of PBF services were arrived at by adding the costs found in the step-down allocation method and a bottom-up cost allocation method. Health facility costs were estimated using a bottom-up cost allocation method, including the costs of salaries, incentives, equipment, building, drug, and administration.

Table 6. The characteristics of study health facilities

No	Health Facilities	Province	Number of Staff	Type of Health Facility	Geographic Location	Population Covered
1	Ali Abad	Balkh	2	Sub-Centre	Rural	6,300
2	Ali Chopan	Balkh	4	Basic Health Centre	Urban	34,200
3	Baghche-Sarhang	Balkh	12	Comprehensive Health Centre	Rural	9,436
4	Baharak	Takhar	11	Comprehensive Health Centre	Urban	44,688
5	Chahartoot	Takhar	6	Basic Health Centre	Rural	9,737
6	Deh Hassan	Balkh	6	Basic Health Centre	Rural	7,500
7	Hairatan	Balkh	12	Comprehensive Health Centre	Semi Urban	29,984
8	Hazar Bagh	Takhar	13	Comprehensive Health Centre	Semi Urban	19,635
9	Kalafgan	Takhar	14	Comprehensive Health Centre	Rural	27,286
10	Kaldar	Balkh	6	Basic Health Centre	Rural	12,483
11	Khatayan	Takhar	6	Basic Health Centre	Rural	27,286
12	Khwaj Bahawuddin	Takhar	14	Comprehensive Health Centre	Rural	37,506
13	Khwaja Ghor	Takhar	13	Comprehensive Health Centre	Semi Urban	26,047
14	Kushkak	Balkh	6	Basic Health Centre	Rural	8,360
15	Langar Khana	Balkh	11	Comprehensive Health Centre	Urban	27,100
16	Lataband	Takhar	6	Comprehensive Health Centre	Rural	9,681
17	Mashi	Balkh	6	Basic Health Centre	Semi Urban	13,190
18	Nahri Chaman	Takhar	6	Basic Health Centre	Semi Urban	35,154
19	Noor Khoda	Balkh	12	Comprehensive Health Centre	Urban	57,700
20	Qolbars	Takhar	5	Basic Health Centre	Semi Urban	35,889
21	Qurghan	Balkh	16	Comprehensive Health Centre	Rural	17,100
22	Sher Abad	Balkh	5	Basic Health Centre	Semi Urban	19,586
23	Tooroq	Takhar	6	Basic Health Centre	Rural	15,449
24	Ultajo	Balkh	2	Sub-Centre	Rural	5,200
25	Yokh	Takhar	6	Basic Health Centre	Rural	12,131

3.2.3.4 Effectiveness Data

According to the Afghanistan Mortality Survey 2010, postpartum haemorrhage is the leading cause of maternal deaths in Afghanistan, followed by hypertensive disorders (19.8 per cent), obstructed labour, and sepsis (Ministry of Public Health, Central Statistics Organization, ICF Macro, Indian Institute of Health Management Research 2010). Further, sepsis/infection, low birthweight, and birth asphyxia are the leading causes of newborn deaths in Afghanistan (L. Liu et al. 2012). As most maternal and newborn-related complications can be prevented during pregnancy and delivery time (Almutairi 2016; World Health Organization 2015; Lawn et al. 2012; L. Liu et al. 2012), we considered pregnancy-related complications and newborn morbidity and deaths as the clinical outcomes of pregnancy and delivery in the model in both control and treatment groups.

We obtained utilisation data for both treatment and control groups from the PBF impact evaluation (Ministry of Public Health & KIT Royal Tropical Institute 2015). We estimated the absolute effect of PBF intervention on the utilisation of ANC, SBA and PNC parameters. We obtained maternal and neonatal mortality and morbidity data from Afghanistan Mortality Survey 2010 (Ministry of Public Health, Central Statistics Organization, ICF Macro, Indian Institutedd of Health Management Research 2010), Afghanistan Demographic Health Survey 2015 (Central Statistics Organization 2015), and relevant published literature (Carvalho, Salehi, and Goldie 2012; Halloran et al. 2009; Bailey et al. 2017; Ugwu, Abedi, and Ugwu 2012; Fleischmann-Struzek et al. 2018). In addition, we obtained disability weights for each complication from the Global Disease Burden study (World Health Organization 2004), and the duration of the complications from expert opinion.

3.2.3.5 Cost-Effectiveness Threshold

The cost-effectiveness threshold is a cut-off point beyond which an intervention is deemed cost-effective (Cleemput et al. 2011). There are two approaches to determine cost-effectiveness thresholds. The first is based on the notion of opportunity cost, (Baker et al. 2011; Claxton et al. 2013), based on the principle that investing in a new health intervention could divert resources from another investment (CE and C-L 1995). Another group argues that willingness-to-pay (WTP) should be used as thresholds in cost-effectiveness studies. Given that health care services are financed through tax systems, the populations' views should be considered with reference to the value they place on health care services (Baker et al. 2011; Claxton et al. 2013).

Currently, there is no common approach to determining cost-effectiveness thresholds (Cameron, Ubels, and Norström 2018). For example, the United Kingdom applies values of £20,000 to £30,000 (Claxton et al. 2015), and the United States uses \$50,000 (Neumann, Cohen, and Weinstein 2014). The World Health Organization's Commission on Macroeconomics in Health defines cost-effectiveness ratios as cost per DALY averted less than per capita Gross Domestic Product (GDP) or three-times the per capita GDP interventions in low and middle-income countries as "very cost-effective" and "cost-effective", respectively (World Health Organization 2001). Ochalek and colleagues (Ochalek, Lomas, and Claxton 2018) argue that the WHO method underestimates the impact of costs on health effects. Providing a framework to estimate country-level cost per DALY averted thresholds, they recommend that low and middle-income countries can generate their own data or they can use cross-country data to produce country-level estimates on the degree of health opportunity cost (Ochalek, Lomas, and Claxton 2018). Woods and colleagues (Woods et al. 2016) estimated cost-effectiveness thresholds for a large number of low and middle-income countries based on opportunity costs, empirical data of GDP per capita of countries, the cost-effectiveness threshold used in the UK English National Health System, relationship between GDP per capita and the elasticity of value of statistical life (value of benefiting from a death aversion) on income, and the assumptions that the values used for opportunity costs of health care spending and elasticity of value of statistical life are suitable estimations, and that the income elasticity of the value of statistical life is equivalent to the income elasticity of the consumption value of a DALY. They concluded that the WHO recommended estimations have been too high. They recommend a cost-effectiveness threshold of between 1-52 per cent GDP per capita for low middle-income countries and 18-71 per cent for middle/high-income countries (Woods et al. 2016).

In this study, based on Wood et al. estimation (Woods et al. 2016), we considered 349 US\$ per capita as the cost-effectiveness threshold for Afghanistan. Given Afghanistan's GDP (570 US\$) and an annual total health expenditure per capita of 71 US\$ (Ministry of Public Health 2016), this is a realistic estimation.

3.2.3.6 *Discounting*

The concept of "discounting" is a process of adjusting future costs or health effects to 'present value', or adjusting for the timing of costs relative to health benefits. It is based on the general belief that societies prefer benefits earlier rather than later, and prefer incurring costs later than sooner (World Health Organization 2003) (Nair et al.

2017). It is thus important to undertake discounting of costs and benefits within economic evaluation using the discount rate (Nair et al. 2017). Although there is unanimity among researchers that discounting costs is crucial, controversies loom towards discounting benefits, whether they should be discounted, and whether the discount rate should remain constant or not (Evans et al. 2005; Weinstein et al. 1996; Drummond et al. 2005; Goldie, Goldhaber-Fiebert, and Garnett 2006).

Even though it has been challenged (Brouwer et al. 2005), using a constant discounting rate is the common phenomenon as witnessed a similar rate for both cost and effect. The Panel on Cost-Effectiveness in Health and Medicine (Karlsson and Johannesson 1996) as well as WHO (World Health Organization 2003) do endorse discounting of 'costs' and 'effects' at the same rate. The guidelines suggest a 3 per cent discount rate although suggestions were put to also evaluate the study results without any discount rate as well as 7 per cent to ensure that the result of the study is useful in future (Muenning 2008). The UK National Institute for Health and Clinical Excellence (NICE) too put the guidelines through endorsing 3.5 per cent discount for costs and effects alike (Brouwer et al. 2005). Some studies on the global sphere have suggested a 5 per cent discount rate (Drummond et al. 2005).

In this study, we considered a 3 per cent discount on cost and effects.

3.2.3.7 *Sensitivity Analysis*

The trustworthiness of the results relies on the degree of confidence or uncertainty in parameters. In some cases, values are based on assumptions, or there is a lack of data. The study methodology and the actual values that feed the model play a vital role in defining the degree of confidence. As an example, if one parameter seems very low in a model, the researcher may wish to examine the sensitivity of the model's results by applying a five or ten per cent higher value. Health economists apply different ways of sensitivity analysis (Briggs and Gray 1999; Taylor 2009):

- *One-Way Sensitivity Analysis*: This is the simplest type of sensitivity analysis in which the change in which one examines how the study results vary with variation in the value of one uncertain parameter. This can be exercised with all uncertain parameters one by one.
- *Multiway Sensitivity Analysis*: In a multiway sensitivity analysis, simultaneous changes are brought in the values of more than one uncertain parameter against the model's results. This is a complicated exercise; the more parameters are involved, the more becomes difficult the presentation and interpretation. In order

to make sure that the confidence around the parameters is considered carefully, the highest and the lowest values or the confidence intervals of the concerned parameters are chosen (Taylor 2009). A subsection of multi-way sensitivity analysis is *scenario analysis* in which the base case scenario, as well as the best-case scenario and the worst-case scenarios, are used against the model's results. Alternatively, the researcher can apply the scenarios that he or she might feel appropriate (Briggs and Gray 1999).

- *Threshold Analysis*: This is a special case of the one-way sensitivity analysis that examines the value a parameter would need to take to make the ICER fall below or above the cost-effectiveness threshold. In this type of analysis, the researcher considers an increase in, say, ICER to the extent to which the intervention would become unacceptable. In this case, the researcher could assess the situation to identify what combination of values surpassed the threshold (Drummond et al. 2005).
- *Probabilistic Sensitivity Analysis*: This is the most common form of sensitivity analysis (Drummond et al. 2005) in which probability distributions to key model's parameters are assigned to draw random samples, using computer software, to generate an empirical distribution of the ICER including ICER's confidence interval (Hatswell et al. 2017).

In our study, we used a one-way sensitivity test for all parameters, multiway sensitivity analysis for incremental cost and incremental DALYS, as well as a probabilistic sensitivity analysis for incremental cost and incremental DALYS.

3.2.4 Ethical Considerations for objective 1, 2, and 3

Ethical approval was obtained for all objectives from the Institutional Review Board of the Ministry of Public Health of Afghanistan and Ethics Committee of the London School of Hygiene and Tropical Medicine. In addition, the World Health Organisation Ethical Review Committee approved the study for objective 1.

Voluntary informed consent was sought from the participants of the studies and confidentiality was assured. Participation in interviews was voluntary, and all information was provided anonymously. All interviews were assigned codes to ensure anonymity when citing quotations. Data were accessed only by the research team.

The candidate had full access to the data of qualitative studies and cost-effectiveness analysis. He is accountable for data integrity and the accuracy of data analyses.

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CHAPTER FOUR: RESULTS

4.1 Paper 2: Factors Influencing Performance-Based Contracting

(Cover sheet on next page)

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Paper 2

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Student	Ahmad Shah Salehi
Principal Supervisor	Dr. Josephine Borghi
Thesis Title	Factors influencing performance by contracted non-state providers implementing a basic package of health services in Afghanistan

If the Research Paper has previously been published please complete Section B, if not please move to Section C

Section B – Paper already published

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RESEARCH

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Factors influencing performance by contracted non-state providers implementing a basic package of health services in Afghanistan

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Abstract

Background: In 2002 Afghanistan's Ministry of Public Health (MoPH) and its development partners initiated a new paradigm for the health sector by electing to Contract-Out (CO) the Basic Package of Health Services (BPHS) to non-state providers (NSPs). This model is generally regarded as successful, but literature is scarce that examines the motivations underlying implementation and factors influencing program success. This paper uses relevant theories and qualitative data to describe how and why contracting out delivery of primary health care services to NSPs has been effective.

The main aim of this study was to assess the contextual, institutional, and contractual factors that influenced the performance of NSPs delivering the BPHS in Afghanistan.

Methods: The qualitative study design involved individual in-depth interviews and focus group discussions conducted in six provinces of Afghanistan, as well as a desk review. The framework for assessing key factors of the contracting mechanism proposed by Liu et al. was utilized in the design, data collection and data analysis.

Results: While some contextual factors facilitated the CO (e.g. MoPH leadership, NSP innovation and community participation), harsh geography, political interference and insecurity in some provinces had negative effects. Contractual factors, such as effective input and output management, guided health service delivery. Institutional factors were important; management capacity of contracted NSPs affects their ability to deliver outcomes. Effective human resources and pharmaceutical management were notable elements that contributed to the successful delivery of the BPHS. The contextual, contractual and institutional factors interacted with each other.

Conclusion: Three sets of factors influenced the implementation of the BPHS: contextual, contractual and institutional. The MoPH should consider all of these factors when contracting out the BPHS and other functions to NSPs. Other fragile states and countries emerging from a period of conflict could learn from Afghanistan's example in contracting out primary health care services, keeping in mind that generic or universal contracting policies might not work in all geographical areas within a country or between countries.

Keywords: Contracting out, Non-state providers, Afghanistan

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4.1.1 Abstract

Background: In 2002, Afghanistan's Ministry of Public Health (MoPH) and its development partners initiated a new paradigm for the health sector by adopting performance-based contracting (PBC) of the Basic Package of Health Services (BPHS) to non-state providers (NSPs). This model is generally regarded as successful, but literature is scarce that examines the motivations underlying implementation and factors influencing program success. This paper uses relevant theories and qualitative data to describe how and why contracting out delivery of primary health care services to NSPs has been effective.

The main aim of this study was to assess the contextual, institutional, and contractual factors that influenced the performance of NSPs delivering the BPHS in Afghanistan

Methods: The qualitative study design involved individual in-depth interviews and focus group discussions conducted in six provinces of Afghanistan. The framework for assessing key factors of the contracting mechanism proposed by Liu et al. was utilised in the design, data collection and data analysis.

Results: While some contextual factors facilitated the contracting out (e.g. MoPH leadership, NSP innovation and community participation), harsh geography, political interference and insecurity in some provinces had negative effects. Contractual factors, such as effective input and output management, guided health service delivery. Institutional factors were important; management capacity of contracted NSPs affects their ability to deliver outcomes. Effective human resources and pharmaceutical management were notable elements that contributed to the successful delivery of the BPHS.

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4.1.2 Introduction

Afghanistan has experienced profound difficulties over the past decades, especially since the 1978 invasion by the former Soviet Union which led to political instability, pervasive conflict and, at times, outright war. In 1992, the Mujahedeen (groups of religiously driven warriors) took power, initiating a new period of civil war and inter-Mujahedeen conflicts. From 1996 until November 2001, the Taliban emerged as the ruling group in the country with a limited interest in the development of health systems (Sondorp 2004).

In December 2001, a new democratic government was established in Afghanistan with international support. The new government inherited extreme disorder in the health sector. No policies were in place to guide the delivery of services, and there was a notable lack of coordination among the many actors working on health. The health sector was characterized by the absence of infrastructure, lack of capacity in the public sector, the shortage of health human resources, and inconsistency in the quality of services being delivered (Waldman and Newbrander 2014). Health outcomes were poor as a result of the disarray: the maternal mortality rate was one of the highest in the world (1600 per 100,000 live births) and the under-five mortality rate was one of the worst in the region (257 per 1000 live births) (Bartlett et al. 2005). Given these challenges, the development of a functioning health care system, which included a programme that prioritized maternal and child health, was deemed by the new government to be critically important.

Six months after the new government took power, in May 2002, the Ministry of Public Health (MoPH) established a Basic Package of Health Services (BPHS) with technical support from donors and international organisations. The BPHS was designed to ensure equitable access to a core set of health services in remote and underserved populations. In recognition of the extent of its problems, the Afghan health sector adopted a new paradigm for operations. While health care services were regarded previously as a state responsibility, in 2002 the MoPH and its development partners decided to contract-out delivery of vital health care services to non-state providers (NSPs) (Hansen et al. 2008). This paradigm shift from input-based financing to results-based financing (RBF) was critically important given that, after decades of war, the newly-established government did not have sufficient capacity to deliver health care to the most underserved in the population. To rapidly scale up country-wide delivery of the BPHS, the MoPH needed NSPs (Loevinsohn and Sayed 2008). NSPs (both formal and informal) already provided a wide range of health care services and had extensive geographic reach. Formal NSPs such as non-governmental

organisations (NGOs) had extensive local networks, roots and experience providing health services in districts not controlled by the central government. NGOs - most of which had headquarters in Peshawar, Pakistan - had trained and supported Afghan health providers in many provinces and had gained the trust of communities. These NGOs were well-placed to assume more responsibility for delivering health care services (Newbrander et al. 2014). The MoPH launched BPHS implementation in 2003 with financial support from the United States Agency for International Development (USAID), the World Bank (WB), the European Union (EU) and others in the international community. 31 of 34 provinces were contracted with NSPs and were supported by different donors. As a result, different contracting mechanisms were established to implement standardized and unified BPHS across the country. The MoPH served as the steward and owner of the programme.

Several years later, the reform's impact was evident in increased health services coverage (defined in terms of having a health facility within walking distance), from 9% in 2002 to 91.6% in 2018 (Ministry of Public Health and KIT Royal Tropical Institute 2018). The country has also made improvements in health systems performance indicators, including maternal and child health (Akseer et al. 2016). Under-five and infant mortality rates have fallen from 257 and 165 in 2000 (Ministry of Public Health 2006) to 55 and 45 live births in 2015 (Central Statistics Organization 2015), respectively, per 1,000 live births. Likewise, maternal mortality ratio (MMR) has witnessed a considerable decline (Ministry of Public Health, Central Statistics Office, ICF Macro 2011).

Proponents of PBC in Afghanistan have regarded it as effective in rapidly scaling up health services throughout the country (Alfonso et al. 2015; Newbrander et al. 2014; Edward et al. 2011; Kim et al. 2016; Peters et al. 2007), but critics have expressed concerns about sustainability and cost-effectiveness (Trani et al. 2010; Mbaeyi et al. 2017; Frost et al. 2016; Haidari, Zaidi, and Gul 2018). The factors that have promoted the success of contracting out to NSPs in Afghanistan are not yet well understood. Identifying these factors would provide important lessons for Afghanistan and, more generally, for comparative studies of health systems in fragile states.

PBC of health services to NSPs is an increasingly prevalent trend in developing countries (Palmer 2000; Loevinsohn and Harding 2004). Liu et al. (Xingzhu Liu, Hotchkiss, and Bose 2008) systematically reviewed the effect of contracting out on primary health care services in low and middle-income settings. While they acknowledged that contracting out can help increase the use of services, they could not draw a conclusion on the effect of contracting on the other performance aspects

such as efficiency, quality and equity. They reported that contextual factors play a major role in the success and or failure of a PBC programme and it should be carefully examined when contracting programmes are assessed (Xingzhu Liu, Hotchkiss, and Bose 2008). In a similar effort, Lagarde and Palmer (Lagarde, Haines, and Palmer 2009) reviewed the impact of PBC on the utilisation of health services in low and middle-income countries. The result of their review showed that PBC could increase the use of health services; however, in order to better understand the systematic differences in contracting mechanisms, assessing the processes of implementation is paramount important (Lagarde, Haines, and Palmer 2009). Loevinsohn and Harding conducted a comprehensive review of 10 contracting mechanisms in low-resource settings. They found that the systems for contracting needed to be adjusted to address specific needs in each country's unique context. Moreover, the authors argue, optimal service delivery outcomes are likely to result under the following conditions: when the NGOs maintains autonomy from the state; when a focus is placed on outcomes, outputs and cost-effectiveness; and when rigorous evaluation of the contracted projects is planned for and conducted on a regular basis. They recommended examining PBC between different conditions and assessing cost-effectiveness of PBC to learn about the sustainability of the model (Loevinsohn and Harding 2004). Odendall et al. (Odendaal et al. 2018), in a systematic review of contracting programmes, found no difference in contracting with the government-provided services. They urged for conducting qualitative studies to assess the role of stakeholders in managing the contracts, the processes of implementation, and the mechanisms of effects of contracting out approach (Odendaal et al. 2018).

A few studies have been conducted in Afghanistan on PBC. Only one review discussed contractual factors, such as how partners are selected and what payment mechanisms are used (Edward et al. 2011). Though this review focused on the level of quality of care provided by NGOs and identified some factors associated with variations in quality, it did not explore contextual or institutional factors related to the contracting structure.

The present study aims to address this gap in the literature on health system development in Afghanistan with an in-depth evaluation of the factors underlying the successes and continuing challenges facing a health system in transition from post-conflict development to long-term sustainability.

4.1.3 Methods

Conceptual Framework

Taking a political economy approach, our evaluation of Afghanistan's PBC for BPHS used a conceptual framework developed by Liu et al. as a foundation and a guide for designing the study, developing data collection tools, and analysing data (Xingzhu Liu et al. 2004). Using the Liu et al. framework provided guidance on methodology. Further, it enables comparisons of the situation in Afghanistan with that of other contracting schemes in other contexts that have also been assessed using the same framework. While the specifics of the geographical and historical situation in Afghanistan are unique, adopting a tested and proven framework contributes to the validity of the findings and makes the findings comparable with other situations.

As the Liu et al. framework suggests, this study seeks to develop an overview of the contextual, institutional and contractual arrangements that have influenced NSP performance (Figure 7) (Xingzhu Liu et al. 2004). The study identifies various factors and reviews programme performance measures, including "contractual factors", "contextual factors" (or the external environment) and "institutional factors" such as hiring and retention of staff, and interactions between providers and purchaser. It seeks to capture both intended and unintended effects.

In order to represent the varying contexts in Afghanistan, the research was conducted in six provinces: Balkh, Bamyan, Herat, Kabul, Kandahar, and Ningarhar. Aspects of the context included the level of security, geographical features, ethnic variations, the donors involved, and implementing NSP organisation.

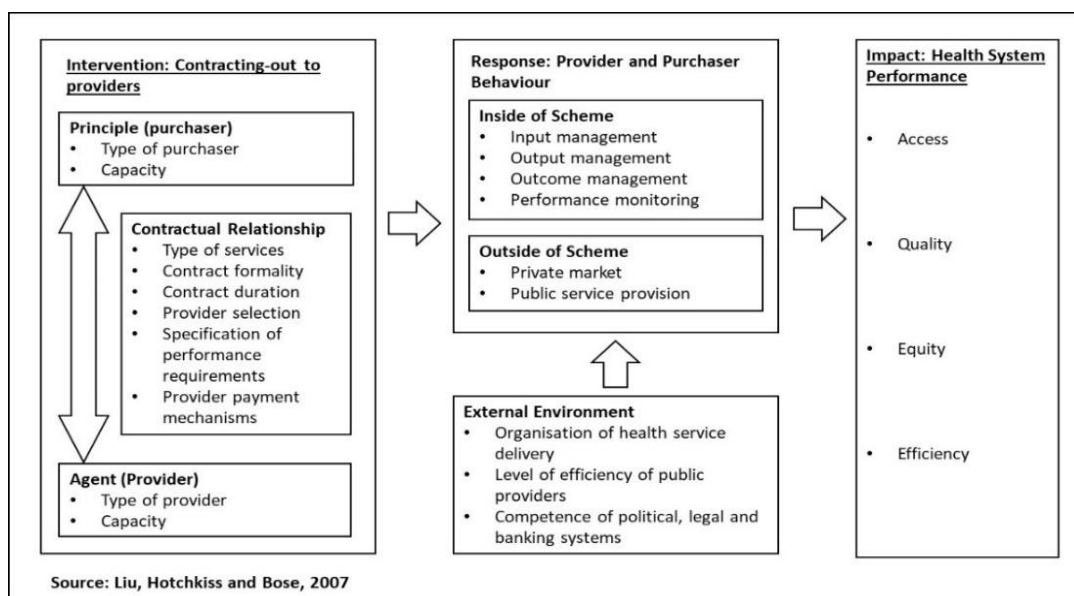
Data sources

Three main data collection methods were used: desk review, individual interviews and focus group discussions.

Desk Review

Our literature review explored a range of documents pertaining to the research objectives, including addressing critical issues and major policy arguments related to the role of NSPs in Afghanistan. The desk review incorporated academic papers, gray literature, reports, and official policy documents.

Figure 7. Conceptual Framework (Xingzhu Liu et al. 2004)



Qualitative data collection methods: KI interviews and FGDs

Liu et al. noted that qualitative data provides rich insights on factors influencing programme effectiveness (Xingzhu Liu et al. 2004). In line with this comment, this study involves two qualitative data collection methods: in-depth interviews with key national and provincial stakeholders and focus group discussions with local-level stakeholders. We used a purposeful sampling technique to ensure diversity among our respondents (Patton 2002). The sampling plan was stratified according to different categories of stakeholders: representatives of the MoPH at both the central and provincial levels, donors, NSPs, health care workers, and health professional associations. The variety allowed the team to explore perceptions and ideas from a diverse group, identifying similarities and divergences across the respondent categories. The stakeholder and focus group interview guides were developed and translated into both Dari and Pashto local languages and then cross-translated, piloted, and corrected in order to finalize the study instrument. All interviews and discussions were conducted in either the Dari or Pashto language based on participant preference.

Transcriptions were generally made on the same day or as soon as possible. In total, 40 in-depth interviews and 6 FGDs across all categories of study participants were carried out. By design, we focused on health workers' experiences with the results-based contracting mechanism. Table 7 lists all types of interviewees and their affiliations.

Table 7. Sampling frame for in-depth key informant interview

Institution	Interviewee	Number	Reason for Selection
Central MoPH	Deputy Minister of Policy and planning	1	One of four people at MoPH who initiated the PBC and continues to oversee the provision of health services by NSPs
	General Director Policy and Planning	1	Has essential information on contextual, contractual and institutional standards and variations
	Head of Health Management and Information System	1	HMIS manages self-reported data from the NSPs on a monthly basis; the department has been involved since the start of the BPHS
	Head of Monitoring & Evaluation	1	The department works with the third-party evaluator to develop and oversee the Balanced Scorecard (BSC)
	Head of Grant and Contract Management Unit (GCMU)	1	GCMU was created specifically for the purpose of facilitating the contracting process; manages procurement, contract management and compliance evaluation of the NSPs for implementation of BPHS
Provincial MoPH	Provincial Liaison Director	1	Responsible for coordinating provincial-level activities; can provide detail on provinces
	Provincial Health Directors	6 (one per province, 6 provinces)	Provide key information about the context, type of contract and institutional factors for the respective provinces
Third Party Evaluator	Evaluator	1	Assessed the performance of BPHS across the country from 2004 to 2013, applying BSC and conducting household surveys
Donors (EU, USAID, WB)	Health Team Leaders	3 (3 main donors)	Represent the interests and opinions of three main donors supporting the PBC
NSPs	NSP Managers, Kabul	6 (one per province, 6 provinces)	Understand the type of contract in their province; provide key information about contractual arrangements, context and institutional factors
	Provincial NSP Managers	6 (one per province, 6 provinces)	Province-specific input to contextualize information and get field-level knowledge about each contracted NSP
	Heads of health facilities	12 (two per province, 6 provinces)	Views of frontline health workers on PBC and the contractual, institutional and contextual variations

The interviewees for in-depth interviews were selected using purposeful sampling that considered institutional affiliation (i.e. government or NSP), geographical distribution (representing all the provinces where the study was conducted), and function in the system (policy maker, manager or field level worker).

Interviews were conducted at the respondents' workplaces or other locations where the participants felt comfortable. The participants for the FGDs were also selected through a purposeful sampling process that sought to keep the composition of the FGDs constant across provinces. The members of each FGD were recruited based on pre-defined criteria and in collaboration with local health authorities. The FGDs were conducted in neutral settings where the participants could freely express themselves. Only the research team had access to the data collected and all interviews and FGDs were assigned codes to preserve anonymity when citing quotations. Characteristics of FGD participants are summarized in Table 8.

Data analysis

Interview transcriptions and field and diary notes were included in the data analysis. We used 'content analysis' to consider the key issues, elements and outcomes (Basit and Lwis 2003). Topics and concepts were identified, highlighted and placed in categories of association. Themes and statements were coded according to the conceptual framework. Representative quotes were selected and allocated to the relevant classifications. Common viewpoints were described, and particularly important responses were elucidated. Finally, each category was studied and discussed to develop interpretations of the data that addressed the aims and objectives of the study.

Findings from the interviews and FGDs were triangulated with other data sources in three ways. First, we assessed the consistency of the findings generated using different data collection methods. Second, we examined the consistency of different data from the same method. For instance, we compared multiple sources' perspectives about the procurement of medical supplies; a topic we discussed with donors, MoPH policy-makers and NSPs. Third, we used various perspectives and theoretical frameworks when interpreting the data. In all cases, we made sure that the personal opinions of the research team members were not reported as part of the results.

Table 8. Sampling frame for focus group discussions

Institution	Participant	Number	Reason for Selection
MoPH	Preventive Health Care (PHC) Officer	1	Is aware of all the contractual and service delivery programmes in the province
	HMIS Officer	1	Responsible for collection of data from all health facilities at the provincial level and relaying it to central HMIS in Kabul; collects all indicators of BPHS on a monthly basis
	Reproductive Health Officer	1	Provides technical perspective on components of BPHS related to maternal and child health services
	Expanded Programme of Immunization (EPI) Officer	1	EPI is the largest health programme in the country; officers are experienced and familiar with NSP service provision
NSPs	Deputy Project Manager	1	Oversees monitoring and evaluation of all programmes under contract
	Finance Manager	1	Manages inputs and financial mechanisms of NSPs; understands provider payment mechanisms
	Community Supervisor	1	Provides views from community and frontline health workers

4.1.4 Results

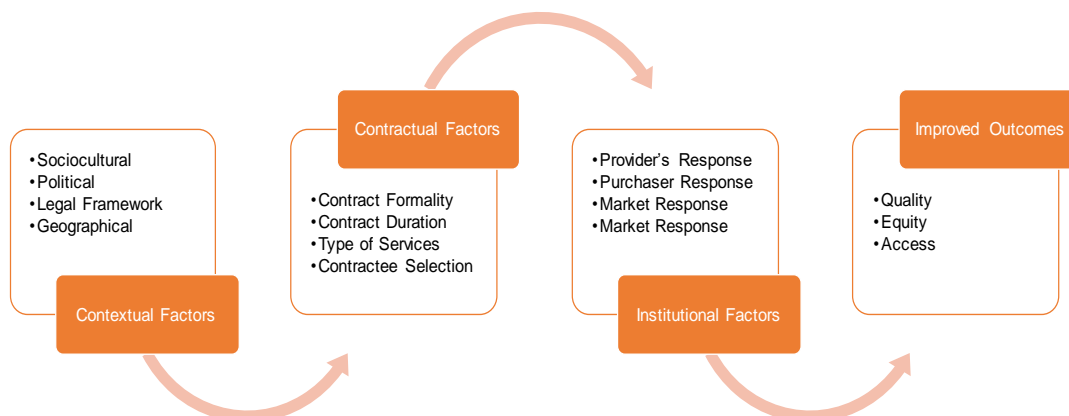
The results of the study are presented in line with the study's main objective: to understand the key contextual, contractual and institutional factors that have influenced contracted NSPs' performance in delivering the BPHS in Afghanistan. These factors are presented in briefly in Table 9. Each factor is discussed in detail in the following sections.

Table 9. Factors assessed in this study

Contextual	Contractual	Institutional
Sociocultural environment	Contractor selection	External
Political environment	Contract duration	Performance monitoring
Legal and policy environment	Contractual requirements	
Geography	Type, formality and duration of services to be provided Payment mechanism	Internal: Inputs, outputs and outcomes

The Liu et al. framework proposes that creating an impact on the health status of a population through PBC depends on the interplay among three types of factors: contractual, contextual and institutional (X Liu, Hotchkiss, and Bose 2007). When these three sets of factors interact effectively, the health system produces better outcomes, namely: quality, access and coverage of health services. These, in turn, combine to produce the final goals: improved and equitable health status of the population. For example, favorable contextual factors pave the way for a better contractual mechanism to function, which in turn smooths potential pitfalls faced by the institutions involved. The interactions among the three types of factors are therefore as centrally important as identifying and categorizing the factors. These interactions are depicted in Figure 8.

Figure 8. The interaction of various factors and their relationship with outcomes



In the following sections, we describe how each factor contributes to improving the performance of the contracting mechanism for NSPs. We then discuss how their interaction produces impact.

Contextual factors

Contextual factors include any conditions that create either a conducive or an unfavourable environment for an effective programme of PBC. In Afghanistan, the sociocultural and geographic factors were long-standing conditions. On the other hand, the political changes that followed the fall of the Taliban created a new legal and policy foundation for PBC. Table 10 summarises the contextual factors that emerged from the study data.

Socio-cultural norms

Socio-cultural norms at provincial level were identified by all categories of participants, from policy makers at the MoPH to donors to provincial and field-level health workers, as a key factor influencing the delivery of health services. For example, in some provinces it is culturally unacceptable for a male health worker to examine a female patient. Coupled with a relative lack of women with higher education, leading to a shortage of local female health workers, this situation compromises health care access for women. In other provinces, different sociocultural rules about female modesty and gender apply. In these provinces, socio-cultural norms allow women to be examined by male health workers and as a result, women have better access to health care regardless of educational level. For instance, in Bamyan, women actively participate in the health care system, which is functioning. Women provide some health services, and female and male health workers working together is the norm. In other parts of the country,

such as Nooristan, this would not be considered culturally acceptable, requiring a different health system structure [MoPH-01].

Table 10. Summary of contextual factor findings

Contextual factor	Features (positive (+) or negative (-) impact)
Contextual factor features affecting PBC sociocultural environment	<ul style="list-style-type: none"> - Ethnic and religious traditions and cultures (+/-) - Traditional gender constructs (-) - Social capital and culture of community participation (+) - Capacity and structure of provincial health departments (+/-)
Political, policy and legal environment	<ul style="list-style-type: none"> - Influence of political leadership on hiring of staff and implementation of services (-) - Conflict and insecurity (-) - MoPH and central government's enabling legal and policy environment (+)
Geography (+/-)	<ul style="list-style-type: none"> - Accessibility of health services to the population - Willingness of health professionals to serve in remote/insecure areas (+/-) - Ease of access for supplies (+/-) - Ease of access for monitoring (+/-)

Political and security factors

Successful leaders are marked by their ability to maintain close relationships with local people and agencies (Mukhopadhyay 2016). The level of, capacity at, and structure of, the provincial health department was mentioned by participants as a key element affecting the delivery of health services in general, and PBC in particular. Participants' views were similar at the central and provincial levels. For instance, policymakers in Kabul felt that a provincial health director could facilitate better provision of health services by NSPs by making resources available and promoting the success of health service delivery efforts [MoPH-02]. The capacity and structure of the provincial health department is linked to other provincial leaders such as political figures, influential local residents and the provincial governor. However, all participants described unwanted political interference in decisions related to the delivery of health services, such as choosing where to deliver services, pushing for the hiring and firing of certain health workers or

contracting with specific companies for logistical support. One respondent stated:

“Sometimes, the politicians interfere [with the implementation of the health services]. They recommend to the NGO an irrational establishment of a health centre. [As a result] underutilised clinics are created due to political reasons. The CHC [Comprehensive Health Centre] is established but population around it is not sufficient” [to reach the targeted number of clients]. [DPR-01]

“Political interference has proven a key challenge to the programme, as NSPs have to work with local officials, warlords, members of Parliament and other influential members of the community on a regular basis.” [MGR-03].

Provision of services by NSPs was also considered a challenge to government authority. Several provincial government officials interviewed reported that the PBC had undermined the role of the government in service provision, consequently calling into question the legitimacy of the government. Government officials expressed concern that the population only perceives that the services are provided by NSPs and does not understand the government’s role in providing health care services [PPHD-06] [PPHD-04].

Respondents in all categories unanimously stressed that security is an essential factor in creating an enabling environment for the effective provision of health services by NSPs. Respondents from Ningarhar and Kandahar expressed the most concern about security. Insecurity is debilitating to the delivery of health care. Several interviewees described the impact of worsening security in some provinces after 2007. Increasing insecurity in these areas affected both the delivery of services and reduced the ability of the MoPH to conduct monitoring and supervision [MoPH-02]. Those NSPs with long-established relationships with local communities had generally managed to continue delivering services even in areas controlled by anti-government groups, although many incidents were mentioned when clinics had to close or were even attacked, during a local conflict. A respondent from one of the least secure areas summarized the problem:

“War, and the local situation, have a huge impact on health services. If somewhere there is war and the situation is not normal, then an NGO can’t find qualified staff and can’t provide health services”. [PPHD-06]

Geography

Geographical features also have a significant impact on the reach and effectiveness of health services. Each province of Afghanistan has distinct geographic characteristics that affect the distribution of health facilities and provision of health services. It is particularly difficult to guarantee regular supplies of medicines and medical equipment in hard-to-reach areas in mountainous regions. The difficult geography is compounded by challenges created by the climate. NSPs have to plan ahead to maintain services during often long periods of road closures in winter.

Many NSPs, therefore, prefer to provide services in regions that are easier to access. NSPs with contracts to deliver health services in regions with harsh geography need to develop innovative strategies, in particular, to incentivize recruitment and retention of health professionals willing to work in difficult conditions. Several participants from NSPs mentioned instances when they had to offer more benefits to get staff to accept positions in hard-to-reach areas. This was particularly the case for female doctors, whose packages might include also hiring the doctor's husband, providing hardship payments and offering special vacation opportunities [PMGR-03]. One participant described:

NGOs' salary rates are according to geographical grading. It's different in different provinces. The hard-to-reach areas and conflict-affected areas have more salary. [HW-303]

Contextual factors lay the foundation on which institutional responses are built and in terms of which the contractual factors are defined.

Contractual factors

The category of contractual factors includes various aspects of the contracting mechanism: types of services covered, contract formality, contract duration, contractor selection, specifications of requirements, processes of contract implementation, output and outcome indicators and finally the contract payment mechanism.

Types of services

Respondents were generally able to describe the main types of services contracted out by the government to NSPs and those provided directly such as provincial hospital services. One focus group agreed:

“The Basic Package of Health Services provided in [our] province includes all the BPHS components, such as maternal and neonatal health services, immunisation and child health services, public nutrition, control of communicable diseases services, mental health and disability health services, and pharmaceutical services. There is also EPHS, which provides secondary health services through the regional hospital in [a neighboring] province.” [FGD-02]

Some respondents also mentioned contracting of capacity building programmes and research projects.

Contract formality

MoPH policymakers expressed generally favourable perspectives on the PBC. Several respondents mentioned that the selection process established for PBC and the creation of the Grants and Contracts Management Unit (GCMU) had become examples that other national sectors seek to follow [MoPH-02] [PPHD-02]. From the outset, the BPHS programme has emphasized formality in its contracts. They require NSPs to abide by all governmental laws (after undergoing a rigorous selection process). These structures enabled the NSPs and the government alike to trust each other and fostered reliability of the services.

Contract duration

Both NSP managers and MoPH officials interviewed noted that contract durations differed by donor and that contracts were commonly extended beyond the original contractual agreement. While the initial contract durations ranged from 18 to 36 months (with an average of 26 months), extensions lengthened them. One MoPH official explained:

“The durations are different, normally between two and three years. But these [contracts] were extended. Even if it is for three years, it is subject to the evaluation by the [third party] organisations. Performance review is a condition for the extension. There were extensions up to five years. The small project [non-BPHS] did not last more than six or seven months.” [MOPH-02]

Respondents had mixed reactions towards the extensions. Some argued that the

extensions of contracts had a positive effect on service delivery by preventing disruptions that would occur with another long tendering process. This view was supported by NSPs, who stressed that the longer an NSP worked in a given location, the stronger their relationship with the community [PMGR-02]. However, others presented a different viewpoint. This view was widely expressed by provincial MoPH authorities, who reported that following an extension the NSPs tended to relax, undertaking fewer quality improvement efforts or innovations [PPHD-05]. Another concern raised about contract extensions was that they reduce competition, undermining its benefits.

Contractor selection and parties to the contracts

Funding for the contracts comes from multiple donors with the MoPH now serving as the purchaser; in the earlier stages of the PBC programme, donors interacted directly with NSPs believing that the government lacked the requisite capacity for financial management and procurement. Indeed, some donors temporarily used their own mechanisms for procurement of NSPs until the government's procurement capacity was ready to manage a large programme like the BPHS [PPHD-01]. Once the MoPH had developed the capacity to handle procurement for large scale programmes, a unified system was developed with the leadership of the MoPH. This transition occurred gradually, beginning with the 2003 transfer to GCMU of contract management for all the World Bank funded provinces. In 2010, USAID delegated its contract management to the MoPH, as did the EU in 2013 (Newbrander et al. 2014).

The study reviewed the contract specifications from the MoPH. According to these documents, the process for contracting to NSPs is well-designed and clear. The process is governed by the MoPH with active participation from relevant stakeholders, including provincial health directors. A selection committee (GCMU officers, provincial health director, UN agency representative and MoF representative) reviews and awards contracts, while the administrative aspects are managed by GCMU.

While the process seemed clear on paper, interviewees expressed concerns. Some respondents suggested that there was little real competition. Some felt that the participation of provincial health directors were merely symbolic; moreover, MoPH officials at both central and provincial levels expressed concern that a small number of Provincial Public Health Directors (PPHDs) were unable to be impartial.

Specification of contract requirements

BPHS documents specify the services to be provided by NSPs. They detail the requirements for all processes, inputs and monitoring, as well as targets for outputs and outcomes. Among our respondents, MoPH managers, donors and central NSP managers had more precise knowledge of these details than health workers and provincial managers.

Implementation of contracted services

The process for implementing health services is specified by the BPHS implementation guidelines. Each contract includes a log frame and approved and agreed-on indicators that help guide implementation and monitoring and evaluation of the performance of NSPs. Thus, there is a common understanding between the government purchaser (MoPH) and the NSP contractors about what types of services are to be provided and how they should be implemented [MoPH-03].

In this study, all groups of respondents demonstrated high levels of awareness of performance specifications and most discussed performance indicators. The responses from NSP employees in particular showed that these indicators play a meaningful role in ensuring that services are delivered per the plans and expectations of the contracts [PMGR-01], [PMGR-02], [PMGR-03], [PMGR-04], [PMGR-05], [PMGR-06].

Output and outcome indicators

Each contract includes specific and clear target output and outcome indicators. These contribute to transparency and clarity on how to measure activities and facilitate quantification of the services provided by NSPs. Output indicators may include number of health workers trained, number of health education sessions conducted or number of institutional deliveries. Output targets are based on the population of a clinic catchment area. Provincial targets are set using provincial population data. Outcome indicators are captured and measured separately by third party evaluators using the Balanced Score Card (BSC). The BSC has six domains (Rowe et al. 2014).

Outputs are the primary focus for USAID-funded contracts, which reimburse NSPs for services delivered. This payment system facilitates evaluation, as data are reported. The World Bank funded contracts, on the other hand, are based on lump-sum contracts and emphasize outcome indicators. One Ministry official explained:

“The three donors have had different performance indicators. For USAID, input process and output and outcome indicators were used. We had a datasheet that contained both output and outcome indicators. The World Bank had more focus on outcome indicators and did not emphasize process or inputs. EU was in between, with a tendency towards outcomes.” [MOPH-02]

Contract payment mechanism

As noted, two mechanisms have been used to pay contracted NSPs: lump-sum payment and cost-reimbursable payment. The World Bank funded projects were contracts with a lump-sum payment mechanism, as one respondent described:

“The contract was lump-sum, with some flexibility in movement across the budget lines. The staff is provided with salary and money for some other items, such as running cost, maintenance and emergency medicine.” [PMGR-04]

The cost-reimbursable payment mechanism, on the other hand, is the main model under USAID. In USAID-supported provinces, payments were made based on reported outputs.

The EU contracts fell between the two distinct models. They were cost-reimbursable, but with a greater focus on performance outcomes rather than inputs and outputs.

NSPs managers we interviewed expressed preferences for the lump-sum mechanism, which they see as offering more flexibility and less rigorous reporting and monitoring [PMGR-02, FGD-01]. However, this mechanism risks making evaluation using reported data more difficult. Respondents from the government, therefore, generally preferred a reimbursable mechanism, which entails more scrutiny and closer supervision of the NSPs [MOPH-02, PPHD-05].

The choice of payment mechanism can affect performance. With lump-sum payments, NSPs have more freedom in terms of their implementation processes. They have latitude to initiate innovative approaches to attain the contractually agreed upon outcomes. However, it also creates more opportunities to diverge from the contract.

With the launch of the SEHAT programme (2013), however, all payment mechanisms are lump sum. However, “lump-sum” may mean different things to

different partners. One respondent highlighted this conundrum:

“Everyone talks about lump-sum mechanism but still there is not enough clarity about it. NGOs have their own definition where they want more freedom and flexibility, while MoPH has its own definition trying to make NGOs more accountable. Both parties should come together and decide what they mean.” [MoPH-02]

Frontline health workers understood “payment mechanism” in reference to their salaries, regardless of the contract model used to support the payroll. One provincial manager described:

“The payment mechanism for the employees is working in such a way that first the reports from the health facilities are collected by the NGO. Then, the reports are analyzed and the financial report is prepared and finally, the employee payment is deposited into their bank accounts on a monthly basis. In the past, this payment mechanism was different. The staff payments were processed in the form of a cash transfer.” [PMGR-03].

The payment systems for employees have evolved. In the first few years, NSPs determined salaries based on their budgets. In 2005, a national salary scale was established by the MoPH that standardized payments across the provinces and organisations. Most health workers interviewed thought that a Results-Based Financing (RBF) approach would be more appealing than a fixed salary, because they would get both a basic standard salary and extra payment based on performance [HW-05].

The contractual factors establish parameters for how contractors respond to contextual factors and set limits within which the institutional factors operate.

Institutional factors

We classified institutional factors in two categories: *internal* responses (created by either the purchaser or the contractor) and *external* responses (X Liu, Hotchkiss, and Bose 2007). *Internal* responses are further divided into three sub-categories: 1) managing inputs, 2) managing outputs and outcomes, 3) performance monitoring. *External* response sub-categories are: 1) provider market and 2) public service.

Internal institutional factors

Managing inputs, outputs and outcomes

These factors address NSPs' various approaches to using the inputs they receive under the contract to implement health services. Human resources management, our respondents reported, is a pivotal and highly challenging aspect of contract management for NSPs [MoPH-02, MoPH-03, PMGR-01, PMGR-02]. While national regulations and contract specifications exist to regulate hiring (and firing) of staff employed under the contract, some flexibility exists and further exceptions can be made. This enables NSPs to avoid lengthy government human resource management procedures, resulting in more efficient provision of quality health services. The contracts oblige NSPs to provide a list of key staff to the MoPH in advance; field officers and health workers must be recruited as soon as possible once the project starts. NSPs are responsible for filling vacancies and planning coverage for staff vacations [PMGR-01].

Health workers' commitment to the project has been a persistent challenge. Despite the fact that the number of health workers trained has increased exponentially in all categories (doctors, nurses, midwives and others) since 2003, the country continues to face a shortage of health human resources. NSPs are authorized under their contracts to offer relatively high salaries based on the National Salary Policy; however, the rate of staff turnover was high in some provinces. As mentioned, finding women to fill key field positions proved particularly challenging for NSPs [FGD-01].

NSPs described effective and innovative responses to human resource management issues. One effective strategy was to hire staff from neighbouring countries to be deployed in Afghanistan. On other occasions, NSPs consulted with the MoPH to create attractive payment packages for serving in difficult to reach areas [PMGR-04, HW-10].

Equipment and medical supplies are also critical inputs. However, these were less frequently discussed in our interviews. The importance of on-time and regular supply was noted, as was the key challenge with equipment: maintenance. Although biomedical engineers and companies with post-purchase services are present in Kabul, they generally unavailable outside the capital city. Instruments that break down are not repaired in a timely way, leaving health care providers without important tools. As mentioned in the geography

factors, health centres located in hard-to-reach terrains also face seasonal challenges, as NSPs must receive sufficient medical and pharmaceutical supplies to last through the winter [HW-201] [MGR-01].

Pharmaceuticals are vital inputs to health services. The availability of medicines in a health facility is one key indicator of functionality; stock-outs limit effectiveness of health services and undermine patient satisfaction. Respondents reported that the purchase of medicines is a critical issue in the provision of inputs for NSPs. Two mechanisms were used for purchasing medicines. One is the centralized purchasing system recommended under USAID grants. In USAID-funded provinces, medicines were procured from internationally accredited companies by Management Sciences for Health (MSH) or another organisation and distributed to provinces in response to requests from NSPs. This model emphasizes ensuring quality of medicines. The alternative model is a decentralized mechanism that provides NSPs with funds to purchase medicines directly from certified pharmaceutical companies according to criteria provided by the MoPH. This model provides more flexibility for NSPs and reduces the risk of stock-outs [MoPH-02]. Since all provinces were brought under the SEHAT project, all medicines purchases are now decentralized. One respondent, however, felt that the most efficacious mechanism still needs to be determined. While the various donors had different preferences regarding purchasing, representatives of NSPs indicated that they prefer the decentralized system because it allows them to procure pharmaceuticals from the local market on a regular basis [PMGR-09].

Infrastructure is another input that affects the effective provision of services. Because the construction of new health centers is expensive, it is generally not included in NSPs' proposals. This situation originates from two flaws in the contracts' legal framework. First and foremost, NSPs seek to minimize costs to reduce the total budget of their proposals to make them more attractive bids. Second, the procurement policies of both the government and donors discourage infrastructure development. However, in 2003, the USAID provided funding to construct a large number of health facilities across the country. Where government facilities are not available to serve as health centers, some NSPs rent local houses or other buildings and convert them into health facilities. This, according to some respondents, is the most common practice for a swift startup.

Performance monitoring

Our interviews found that most stakeholders have a positive impression of performance monitoring for PBC. A national HMIS system and third-party evaluations are included in the contracts to track input, output and outcome measures, as well as to assess overall impact.

The HMIS is based on a set of indicators gathered at the health facility level by frontline health workers, such as the number of deliveries that occurred in the health centres or were assisted by skilled birth attendants and the number of children vaccinated through routine immunisations. However, since the HMIS data are based on self-reports from providers, their quality and accuracy were called into question by some respondents. The new system for HMIS data verification, which involves a third party, received positive feedback from some respondents, who indicated that it is helping to improve the reliability of HMIS data [DPR-02, FGD-01].

A second concern with HMIS data is its usefulness for decision-making. Some respondents mentioned that HMIS data are indeed informing decision making at different levels, from the individual health facility to the ministerial level. One policy area in which HMIS data is considered highly valuable is in the rationalisation of distribution of health facilities. HMIS data provide information to help assess whether, considering both the investment costs and the needs of communities, proposed locations or functionality levels of new health centres are rational.

Respondents reported that NSPs have also created systems to utilize collected data in improving the delivery of health services at different levels. Data collected from clinics are analyzed and presented back to health facility managers on monthly and quarterly basis. Any indicators that have not been achieved are highlighted and corrective measures discussed. For instance, if the number of deliveries in a facility is low, the NSP conducts a follow-up assessment to understand why. This informs decision making on how to address problems so corrective measures can be integrated into the plans for the next cycle.

In summary, the MoPH in collaboration with donors and its development partners has established a comprehensive, intensive and responsive HMIS to measure and provide timely feedback on the contracted NSPs' performance on indicators. Some concerns remain about the quality of the data and the efficiency of M&E processes. However, on the whole, the system covers all aspects of the project and is well integrated, thus constituting the backbone of PBC for health services.

External (provider market) responses to the scheme

The contracting approach to health service delivery has affected three provider types: not-for-profit NSPs, for-profit NSPs and the government. Because health services have been contracted only to not-for-profit organisations thus far, the first category is discussed in more detail than the other two.

Non-profit NSPs

Most of the interviewees agreed that PBC has improved competition and quality among NSPs delivering health services in Afghanistan. Previously, each NSP had its own donors and catchment areas, and they paid little attention to competing with each other. The advent of the PBC process revolutionised the provider market and drastically changed the context. NSPs now had the opportunity to apply for BPHS contracts for specific locations and periods of time, while the funding from all donors was aggregated in one basket fund and channeled through one bidding mechanism.

One positive outcome of the shift to PBC has been the provision of growth opportunities to new and local NSPs. Local NSPs are increasingly winning bids, as one respondent described:

“For example, in the beginning [before the start of outsourcing health services], there were few organisations in the health sector [with the capacity] to manage health facilities, but now by contracting there are many local NSPs who could properly manage around 90 health facilities at a time.” [PMGR-06]

Our study revealed two perspectives on the roles of NSPs in Afghanistan. One perspective expressed by NSP managers and some MoPH officials focused on the positive outcomes and impact of health services delivered. In contrast, however, some MoPH provincial staff expressed antagonism towards NSPs, referring to cases when NSPs did not fulfil their requirements effectively or efficiently [PPHD-05].

Thus, while some see the increase in the number of NSPs as a positive outcome, others remain skeptical and concerned about having too many NSPs in the market. The debate is currently of paramount significance, as local public health departments have begun arguing that the government should contract with the public health directorates at the sub-national level, instead of NSPs, for service delivery. At the same time, debate is occurring at the cabinet-level

regarding the merits of the contracting the NSPs and the option to switch to a contract-in mechanism [FGD-01]. One interviewee expressed reservations about the motivations of some involved in the debate:

“I have a concern about PPHDs. Although PPHDs are the owners of the projects, they have a negative competition with NGOs [and] they are dissatisfied all the time and show jealousy towards NSPs because they [PPHDs] could not implement such projects.” [PMGR-09]

Other respondents expressed their opinion that provincial-level teams should focus on their roles as regulatory and enforcement bodies, providing leadership and monitoring for BPHS programmes rather than implementation.

For-profit NSPs

BPHS has so far never been contracted to a for-profit company or organisation, although there is no regulation against it. The for-profit private sector market has been affected nevertheless by contracting of NSPs. Some respondents suggested that for-profit companies have been restricted to providing secondary and tertiary health services in urban settings because they cannot compete with government-supported primary health centres in rural areas:

“In my province, the for-profit organisations could not grow because most of the services are provided by health centers supported by the government and as a result, there is no place for them.” [PPHD-5]

As a result, for-profit health centers remain weak in provision of primary health services. Other respondents felt, however, that the private sector has grown stronger where NSPs failed to provide quality health services. In these areas, patients seek services from the for-profit private sector when they are not well cared for or not satisfied at primary health centres [PPHD-06].

Government's response

The impact of the PBC programme on the Afghan government's capacity and service delivery arrangements were evaluated positively by respondents. Interviewees highlighted two aspects. First, they stated that the programme helped the MoPH prove itself to be a public agency capable of managing large projects at the national level. Second, respondents pointed to improvements

made in government capacity to conduct procurement and financial management [FGD-01]. These capacities will enable the government to continue implementing services into the future, as one respondent described:

“Contracting mechanism had its positive impact at the level of MoPH: its capacity improved in contract management. This system encourages the government to improve its capacity to implement [something] such [as] this project.” [PMGR-04]

Some respondents also described how PBC had boosted the economy by providing capacity-building opportunities to health workers, creating jobs, supporting local pharmaceutical and medical supply markets, and encouraging competition among providers. Whether the government can and should itself become a competitor, providing health services is still under evaluation. It could be a good option in the long run, but for now, the MoPH is successfully supporting NSPs to provide health services [MoPH-03].

4.1.5 Discussion

The present study offers a theoretically sound and in-depth qualitative exploration of the contextual, contractual and institutional factors that affect the implementation of contracting out health services to NSPs. These factors form the key elements of a framework used frequently for evaluating contracting of health services (X Liu, Hotchkiss, and Bose 2007). The framework suggests that interactions among the many factors in the framework can result in better health care delivery, which in turn improves health impact. This study also did not look at health impact directly; however, it projects that the collective impact of these and possibly other factors have had positive impacts on health in the regions of Afghanistan receiving the services. Maternal mortality and child mortality rates improved considerably. The Afghanistan Mortality Survey (AMS), conducted in 2010, also showed improvements in the overall health of the population compared to the data from a survey in 2002 (Ministry of Public Health, Central Statistics Organization, ICF Macro, Indian Institute of Health Management Research 2010; Bartlett et al. 2005).

Our findings on how contextual factors affect the PBC process are aligned with others' findings. Mills proposed that the social, economic and political environment can facilitate or restrict a successful PBC programme (Mills 1988). For example, if the legal system, banking system and government procedures

are weak, contracting will be difficult (Mills 1988). Another study proposed that the state and private sectors can play an important role in creating a conducive environment for the smooth implementation of PBC services (Kadaï et al. 2006). Our study followed Liu et al. by categorizing contextual factors into political, geographical, and economic and sociocultural factors in the external environment (Xingzhu Liu et al. 2004). We expanded the external environment also to include climate and security concerns; we recommend that other researchers applying the Liu et al. framework in a fragile and conflict-affect setting also expand their focus to include these or other relevant contextual determinants.

The health care delivery programme in Afghanistan was designed to promote equity, focusing on reaching poor people and individuals living in remote areas with health services. However, we found that insecurity (including risk and fear of violence, being killed or kidnapped, and the presence of armed conflict in general) was one of the main factors adversely affecting the PBC health services. Similar trends are reported elsewhere. For example, a study of post-conflict health reform in Uganda enumerated insecurity and lack of institutional capacity as predominant factors affecting the process of building up the health system (Kadaï et al. 2006). Newbrander, Waldman and Sheperd-Banigan (2011) emphasized security as a critical determinant for a successful PBC programme. These authors also point out that conflict areas may require different types of health services from peaceful areas. Our study supports this: the full package of health services has been provided in more secure provinces in Afghanistan, while insecure areas may only receive emergency services.

In Afghanistan, NSPs were needed to support the urgent delivery of health services that the government was not in a position to provide. The legal framework in Afghanistan, paired with support from the government, enabled the initiation and implementation of contracting NSPs (Batley and Mcloughlin 2010), although resistance and tension at the outset of the PBC programmes were reported. Newbrander et al. reported that some NSPs were concerned about maintaining their independence (Batley and Mcloughlin 2010); another tension comes from the concern that there is a dichotomy between state-building and delivery of services through NSPs (Batley and Mcloughlin 2010).

Institutional factors, such as management of human resources, also influence the success of PBC. Newbrander et al. described human resource management as a central aspect of contracting out (Hansen et al. 2008; Newbrander et al. 2014; Arur et al. 2010). They suggested that to improve human resources

requires establishing collaborations with training institutions and transitioning towards certification/accreditation programmes (Edward et al. 2011). The shortage of health workers in all categories was reported as a key challenge in our study; however, contracted NSPs have coordinated with the MoPH to identify innovative solutions. Some proved more successful than others, finding female health workers willing to serve in hardship posts remains a significant challenge, as is the supply of pharmaceuticals. The shortage of female health workers has also been described by the MoPH and others (Hansen et al. 2008; Newbrander et al. 2014; Arur et al. 2010; Peters et al. 2007).

NSPs and the MoPH have also collaborated to address challenges with other institutional factors such as procurement mechanisms. Stock-outs and low-quality medicines at facilities reduce patient satisfaction and can lead to declines in outpatient visits. Purchasing from local markets through a decentralized mechanism improves the availability of medicines but may undermine quality.

Study participants extensively discussed the institutional approaches to performance monitoring, noting that a significant amount of energy and resources are invested in measuring progress of contracted programmes. M&E of the performance of NSPs contributes to accountability and the effective provision of services. The government emphasizes close monitoring of inputs, outputs and outcomes of health services contracted out to NSPs; NSPs have complied with these requirements. At central and provincial levels, the MoPH utilizes various monitoring mechanisms through its M&E department, the HMIS programme and GCMU administrative procedures. Independent evaluations conducted by external organisations and based on BSCs are another hallmark of the PBC programme. NSPs have developed their own M&E systems to comply with their contractual requirements (Kim et al. 2016). Edward et al. emphasized the pivotal role of BSCs in improving transparency, governance and NSP performance benchmarking (Edward et al. 2015). The important contributions of the HMIS in monitoring NSPs' performance have also been emphasized by numerous authors over the past decade (Hansen et al. 2008; Newbrander et al. 2014; Arur et al. 2010; Peters et al. 2007). Outside the PBC programme, the health care provider market has been affected by contracting health services to NSPs. Contracting created new opportunities and competition on quality and cost of services among the not-for-profit NSPs bidding to provide BPHS and EPHS services. International NSPs have increasingly been under bid by local NSPs, whose administrative and overhead costs are lower. The impact

on for-profit health care providers seems mixed. Contracting reduced the market share of for-profit organisations providing primary health services, but private clinics and hospitals reportedly remain effective in providing specialized medical services. Contracting has, as yet, changed little for the government as a health care provider. Except in three provinces, the government is not competing with NSPs to provide primary care.

Liu et al. proposed that contracting has an impact on contestability in the provider market, improving the environment for competition among providers (Liu, Hotchkiss, and Bose 2007). Our findings concur with this in the case of the not-for-profit NSPs providing primary health care. For-profit organisations, on the other hand, focus on secondary and tertiary health services (Liu, Hotchkiss, and Bose 2007; Amare et al. 2009). We suggest further research be undertaken to understand how to better involve the private for-profit sector in the provision of primary health services.

Key recommendations to policymakers for addressing all three sets of factors are presented in Table 11.

Liu et al. (Liu, Hotchkiss, and Bose 2007) note that systematically understanding the interaction of factors requires comparators; this was beyond the scope of this individual country-level analysis. Other limitations related to three aspects of the research process. The study design focused on collecting and analysing qualitative data to generate an in-depth picture of the contracted health care delivery system in Afghanistan. However, the findings could also have been triangulated with quantitative data, in particular to understand the PBC programme's outcomes.

Execution was limited by insecurity, the geographic size of the catchment areas and difficulties posed by transportation. Further, given time and resource limitations, the qualitative research design used purposive sampling of provinces and participants in order to capture a breadth of experiences in terms of payment mechanisms, contracting processes and KIs' roles. However, we cannot make claims about how common or widespread any of the perspectives were. During data collection, we faced particular challenges when interviewing PPHDs. In some cases, they lacked institutional memory about PBC, while others were not reachable. In an exceptional case, one director of health was interviewed while hospitalized and recovering from a roadside explosion.

Finally, our main objective in this study was to present a description of the

factors influencing a specific intervention. However, analyzing interactions among the factors proved beyond of the scope of this study. Future studies are recommended to delve further into this.

Our relatively narrow case study on the BPHS allowed us an in-depth view of the factors that affect PBC's performance. We omitted discussion of the PBC of EPHS or other programmatic, training and research services. We sought to highlight this gap by mentioning them in the background section and recognize that they present areas for additional research.

4.1.6 Conclusion

PBC to provide the BPHS has been a successful strategy in Afghanistan that is influenced by many factors. We recommend that the MoPH considers various factors beyond the BPHS specifications when developing contracts to deploy NSPs. In particular, a universal BPHS policy may not work equally well in all provinces. Province-specific criteria for selecting and contracting NSPs could strengthen BPHS implementation. In addition, awarding multiple contracts to a single NSP may lead to a monopoly, resulting in inefficiency. We recommend that the MoPH explores engaging with the private for-profit and government sectors for BPHS service provision in order to engage a wider range of stakeholders, with their own innovative and creative approaches, to reach all Afghan citizens with accessible quality primary health care services.

Table 11. Recommendations derived from the study findings

Contract Specification	<ul style="list-style-type: none">- Hire a third party to conduct evaluation of the intended outcomes- Include clear selection criteria
Contract Formality	<ul style="list-style-type: none">- Establish a unit/mechanism to ensure that the criteria are enforced
Payment Mechanism	<ul style="list-style-type: none">- Install a unified and homogenous payment mechanism at the outset- Foster political will for initiating and enforcing contracting out - this is the single most important and appropriate legal framework exists
Political Context	<ul style="list-style-type: none">- Ensure that appropriate legal framework exists- Develop mechanisms to limit inappropriate interference by local government leaders
Geographical Context	<ul style="list-style-type: none">- Establish a contracting out system that acknowledges, respects and addresses geographical variations and relevant adaptations
Security Context	<p>For a country in a conflict or post-conflict situation:</p> <ul style="list-style-type: none">- Ensure that NSPs fully understand the risks of service provision in insecure areas and the difficulties likely to arise- Establish direct and clear communication with all partners and stakeholders on all sides of the conflict
Internal Response: Input, output and outcome management	<ul style="list-style-type: none">- Explore innovative approaches to recruitment of female health workers to address access issues- Improve pharmaceutical procurement management and monitoring to avoid stock-out and low-quality medicines- Focus on making observable change in the health of communities. Enhance patient satisfaction by monitoring behaviour of health workers and managers
Internal Response: Performance monitoring	<ul style="list-style-type: none">- Use multiple triangulation methods to assure quality of data- Establish a single department and system responsible for all performance monitoring- Align monitoring and evaluation mechanisms among NSPs, government and donors
External Response: Provider market	<ul style="list-style-type: none">- Develop and implement policies that prevent a few large organisations from monopolizing health care delivery- Encourage economies of scale by coordinating multiple contracts to any individual NSP- Identify strategies to engage the for-profit sector in the provision of health services
Overall	<ul style="list-style-type: none">- Consider multiple factors when contracting out to NSPs- Recognize that a universal BPHS policy might not be appropriate across the country; province-specific criteria could strengthen implementation

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4.2 Paper 3: Political Economy Analysis of Performance-Based Financing in Afghanistan

(Cover sheet on next page)

Paper 3

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Student	Ahmad Shah Salehi
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Thesis Title	Political Economy Analysis of Performance-Based Financing Programme in Afghanistan

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Political Economy Analysis of the Performance-Based Financing Programme in Afghanistan

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All authors participated in the production of the manuscript. Salehi AS conducted data collection and data analysis and wrote the first draft. Other authors provided analytic feedback and contributed to improving the writing of the manuscript. All authors read and approved the final manuscript.

4.2.1 Abstract

Performance-based financing (PBF) has attracted considerable attention in recent years in low and middle-income countries. Afghanistan implemented a PBF programme between 2010 and 2015 to strengthen the utilisation of maternal and child health services in primary health facilities. The programme had some effects on the utilisation and quality of maternal and child services. However, the impact of PBF on utilisation was minimal. In this study, we examined Afghanistan's PBF programme using a political economy analysis (PEA). Thus far, despite the rapid expansion of PBF programmes globally, there have been few studies assessing the political economy dimension of PBF in low-income settings and fragile and conflict-affected states (FCASs). We used a PEA framework which aims to understand the main dynamics that influence the adoption and design of a policy and facilitates the exploration of policy processes and the roles played by key actors at various stages of implementation. Retrospective qualitative research methods were employed in this study. Stratified purposive sampling was used to recruit groups that were homogenous (PBF actors) but was likely to demonstrate variations in their perspectives, roles and positions. The data comprised transcripts of key informant interviews and a review of PBF related documents. This study highlighted a number of contextual factors including global and local forces supporting the introduction of PBF in Afghanistan. The process underlying the design and implementation of the PBF programme was a result of power and resource dynamics between PBF programme actors (e.g. MoPH, donor, NSPs, healthcare workers). Finally, the MoPH support for PBF adoption was partly linked to their past positive experience of performance-based contracting (path dependency). However, the health system lacked adequate capacity to manage the PBF programme on a large scale. This study makes an important contribution to the global literature through its focus on a low-income setting and a fragile and conflict-affected state where numerous forces have combined to bring a programme into existence and have influenced its implementation and outcome. Future studies are required to focus on conducting empirical research to understand the main political economy dynamics that influence the policy cycle of such programmes. If PBF programmes are designed around a full understanding of political economy, PBF can potentially be a powerful tool to achieve better outcomes. We recommend utilising the potential of political economy analysis in such studies.

4.2.2 Introduction

Performance-based financing (PBF) has become a popular financing mechanism in low and-middle income countries (LMICs) in the past 15 years (Shroff et al. 2017). PBF is defined as a cash payment issued after attaining and verifying predefined results (Eldridge and Palmer 2009). PBF in the health sector comprises direct payments to health professionals such as doctors, nurses, and community health workers (Ashir et al. 2013; Gavagan et al. 2010; Norton 1992), organisations such as health facilities or medical groups (Lindenauer et al. 2007), and government or non-government entities, typically based on quality and/or utilisation outcomes (Basinga et al. 2010). Those paying can be governments, donors, or insurance programmes (Curtin et al. 2006). PBF is seen not only as a tool to increase the motivation of healthcare workers and improve health systems performance but also a strategic purchasing reform (Sophie Witter et al. 2013). PBF aims to improve outcomes by motivating healthcare workers through incentives (Shroff, Bigdeli, and Meessen 2017), introducing a results-based culture where 'doing business as usual' is no longer the norm (OECD 2014).

The concept of paying for results proved popular with international donors, and country governments saw PBF as a way of making progress towards the Millennium Development Goals (MDGs) to improve maternal and child health (MCH) (Oxman and Fretheim 2009). PBF programmes have been implemented in more than 30 low and middle-income countries (LMICs) in Sub-Saharan Africa alone with the aim of improving maternal and child health services (Bonfrer, Van de Poel, and Van Doorslaer 2014). However, the international debate regarding the impact of PBF on healthcare service delivery is on-going. Some studies have demonstrated that PBF resulted in improvements in targeted services (Soeters, Havineza, and Peerenboom 2006; Kane et al. 2019; Celhay et al. 2015; Janssen et al. 2015; Soeters et al. 2011; Powerll-Jackson, Yip, and Han 2015) while others found limited effects of PBF (Van Herck et al. 2010; S Witter et al. 2012; Ngo, Sherry, and Bauhoff 2017).

PBF introduces different rules and arrangements for the sharing of resources and represents a risk or opportunity to actors as a result of changes to their roles and responsibilities and the modification of organisational processes (Sparkes et al. 2019). In many LMICs, donors contribute substantially to the health sector, which may increase their role in shaping and influencing health financing policy reforms together with other actors. Understanding the role and involvement of different actors in shaping the design of PBF programmes and its subsequent implementation, will therefore be key to shedding light on why PBF programmes succeed or fail in different

contexts.

Political economy analysis, which studies power and resource distribution and contestation, the roles played by different actors and their interactions, and how this shapes programmes and policies (Poole 2011; Buse et al. 2008; Reich 2019), is well suited to the study of PBF. Experiences from health financing reforms in Turkey and Mexico have demonstrated the importance of political economy in shaping and adapting policies. Mexico in 2000 and Turkey in 2002 started unifying fragmented health insurance schemes under a single health insurance programme. However, both countries encountered substantial resistance by actors, especially social security institutions. Turkey had to delay legislative actions until trust was built between actors. Mexico could not combine formal employed sector health insurance schemes with other social security programmes, and instead they adapted their reform agenda (Sparkes et al. 2019).

Though PBF is inherently political, so far, there has been a limited number of studies that assessed the political economy dimension of PBF programmes in LMICs (Chimhutu et al. 2015; Bertone and Witter 2015; Bertone et al. 2014; Bertone, Wurie, et al. 2018; Sophie Witter et al. 2019). These studies focused on the dynamic interaction of political economy factors such as context, policy process and actors on shaping and implementing PBF programmes. However, such an approach has not yet been adopted in an FCAS. In FACAs, contestation between formal and informal institutions is predominant and institutions are considerably prone to changes (Mcloughlin 2014).

To strengthen maternal and child health services, the Ministry of Public Health of Afghanistan (MoPH) with financial support from the World Bank (WB) implemented a PBF programme between 2010 and 2015 (Ministry of Public Health 2010). This programme provided incentives to healthcare workers to achieve improved coverage of essential maternal and child health services (Ministry of Public Health, Johns Hopkins University 2010). The programme had some effects on the utilisation and quality of health services; however, these changes were not statistically significant (Ministry of Public Health & KIT Royal Tropical Institute 2015), and the programme was not cost-effective (Salehi et al. 2020).

We used a PEA approach to understand the factors (context, actors, processes) influencing the PBF adoption, design and implementation in Afghanistan, and examine why the PBF programme in Afghanistan did not have intended effects.

This study makes an important contribution to global literature through its focus on a low-income and FCAS where numerous forces have combined to bring the PBF programme into existence and influenced its design and implementation.

4.2.3 Methods

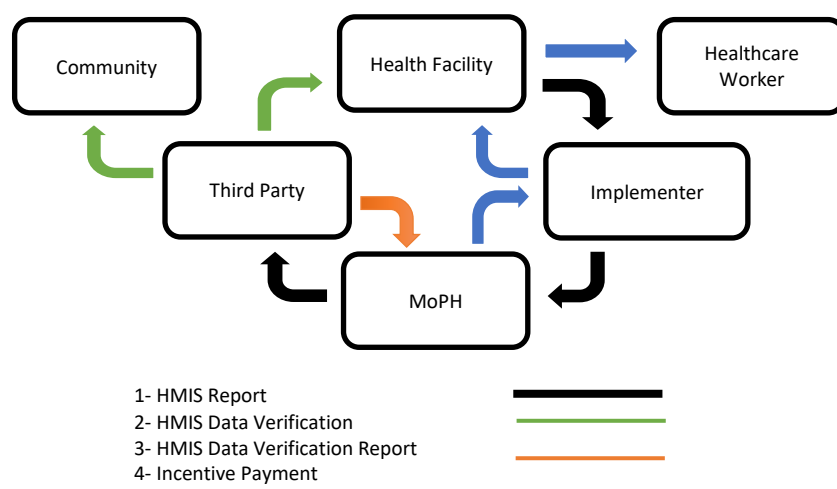
Study Setting

In 2003, Afghanistan introduced the Basic Package of Health Services (BPHS) to ensure equitable access to a core set of health services in remote and underserved populations (Ministry of Public Health 2003). The BPHS has been contracted out by non-state providers (NSPs) in 31 of its 34 provinces while the BPHS was provided by the direct implementation of MoPH known as the “Ministry of Public Health Strengthening Mechanism” (MoPH-SM) in three provinces (Salehi et al. 2018). Under the MoPH-SM arrangement, provincial health offices were contracted by the central MoPH to provide BPHS services in those provinces (Cockcroft et al. 2011).

The introduction of these reforms saw a substantial reduction in under-five and infant mortality rates from 257 and 165 per 1000 live births in 2001 to 97 and 76 per 1000 live births in 2010, and maternal mortality also declined substantially from 16000 in 2000 to 327 per 100,000 live births in 2010 (Ministry of Public Health, Central Statistics Office, ICF Macro 2011). However, maternal and child mortality remain high compared at the regional level.

The PBF programme was initiated in 2010 in the context of BPHS to improve maternal and child health. In total, 463 health facilities in 11 out of 34 provinces were included in the programme. The PBF programme targeted the following maternal and child health services: antenatal care, delivery by skilled birth attendant, postnatal care, and pentavalent vaccination. Health workers were provided incentives based on extra production of outputs (targeted services) above the baseline reported by health information management system (HMIS) and verified by a third party (Figure 9). Verification of the HMIS data occurred on a regular basis on a random selection of PBF health facilities and households. The PBF programme was evaluated by means of two household surveys: a baseline survey in 2010 and an end-line survey in 2015. Households living within the catchment area of a facility exposed to PBF were interviewed together with those living in the catchment area of control health facilities (Ministry of Public Health 2010).

Figure 9. Afghanistan PBF programme arrangements



Study Design and Sampling

This study adopted retrospective qualitative research methods and conducted a review of documents related to Afghanistan’s PBF programme. We selected key informants, who have especially informed viewpoints on the PBF programme, purposively from each level of the health system. At the national level, we interviewed respondents from the MoPH who managed the PBF programme, the World Bank who funded the PBF programme, the third party who conducted the PBF programme monitoring and data verification, and non-state providers (NSPs) who implemented the PBF programme in the BPHS health facilities. At the province level, we interviewed health managers (HM) who were supervising the implementation of PBF programme. At the facility level, we interviewed healthcare workers (HW) who were providing healthcare services at health facilities. We selected two provinces (Takhar and Balkh) based on variations in population ethnicity and health facility geographical location. Four main ethnic groups – Pashtoon, Tajik, Hazara and Uzbek – make the population of Afghanistan, in addition to several other small ethnicities. The selected provinces comprise the indicated ethnicities. In total, we selected 15 public primary care health facilities according to the MoPH geographic classification that comprised urban (n=5), semi-urban (n=5), and rural health facilities (n=5). In total, we interviewed 30 key informants, from national level (n=9), from province level (n=6) and facility level (n=15) (Table 12).

Table 12. Research participants

Institution	Interviewee	Number	Reason for Selection	
MoPH	Deputy Minister of Policy and Planning	1	Led the negotiation process between MoPH and the donor when deciding on implementing a PBF programme	PM
	GCMU Team Member	2	Managed PBF procurement and financial management	PM
	HEFD Team Member	2	Coordinated and supervised PBF implementation	PM
	Provincial Managers	2	Provided key information about the context, content, and implementation of PBF for the respective provinces	HM
	PBF HMIS Team Member	1	Managed PBF reported data from the NSPs on a quarterly basis.	HM
Donor	Team Member	1	Represented the role and opinions of the donor supporting the PBF programme	PM
Third Party	Team Member	2	Verified the HMIS data and assessed the performance of PBF in BPHS health facilities by applying BSC and conducting household surveys	HM
Implementer (NSP)	Provincial Managers	4	Implemented the PBF, monitored implementation, understood the context and content of the programme	HM
	Heads of Health Facilities	4	Views of frontline managers on PBF implementation, its strengths and challenges, their satisfaction with PBF, and contextual factors	HW
	Healthcare Workers	11	Views of frontline workers on PBF implementation, its strengths and challenges, contextual factors, and their satisfaction with PBF.	HW

MoPH: Ministry of Public Health; GCMU: Grant and Contract Management Unit; HEFD: Health Economics and Financing Directorate; HMIS: Health Management and Information System; NSP: non-state provider; PBF: Performance-Based Financing; PM: Policymaker; HM: Health Manager; HW: Healthcare Worker.

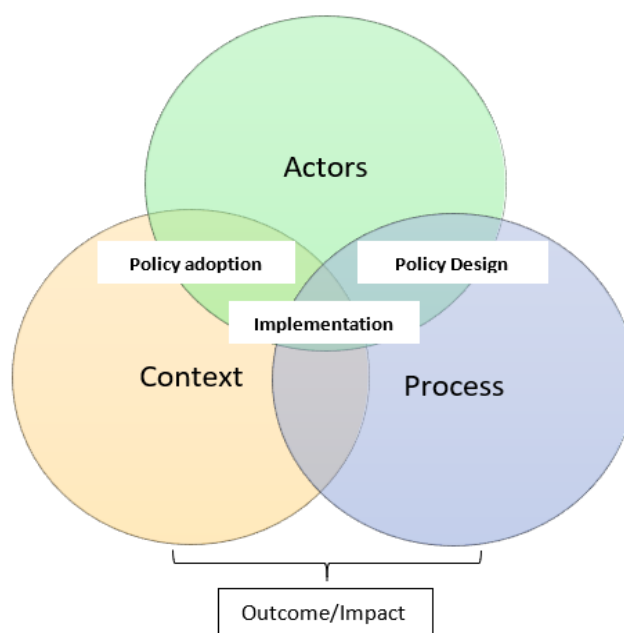
Conceptual Framework and Data Collection

We adapted a conceptual framework based on Buse et al. (Buse et al. 2008) to guide our data collection and analysis. Our framework aimed to understand the fundamental dynamics that influenced the PBF programme adoption, design and implementation. Our framework characteristics are as follows:

1. *Context*: Understanding the contextual factors such as social, economic and political setting as well as global factors which influence the adoption of PBF programme in Afghanistan.
2. *Actors*: Identifying the role, power, interest, and ideas of actors in relation to PBF and the extent to which they were involved in and affected the adoption, design and implementation of PBF. *Power* is considered to be the capability of agents to accomplish results in social practices (Giddens 1984), whether they are competing against each other or acting collaboratively. However, this capacity is additionally determined by the structural power of the social institutions to which such agents belong. Power is acknowledged to be significantly influential on the process of developing and implementing policies (Arts and Tatenhove 2004). *Interest* is considered to be the desire to do a particularly thing. Those who are capable of influencing policy do this with the intention of enhancing their political and or economic interests. Actors who are not in government could have a specific interest in economic outcomes, whereas government actors' interest might be driven not only by their personal economic interest but also their political interests, particularly in terms of sustaining their hold on power. *Idea* is consistently a key driver of policy, along with direct political or economic concerns. In situations where people can not rationally decide, idea provides directions in terms of the actions they should take to ensure consistency with their fundamental values and beliefs in life (DFID 2009).
3. *Process*: The official PBF programme design and how it was implemented in practice, including nonconformities to the initial design and reasons for these.

Figure 10 presents the conceptual framework components and the interactions between actors and context in the adoption stage, between actors and process in the design and implementation stage. The framework takes the position that the dynamics between actors and the context in which PBF came into existence (adoption) and the process through which PBF programme was designed and implemented had influenced the performance of the PBF programme and subsequently the results.

Figure 10. The study conceptual framework



Qualitative interviews were designed with semi-structured questions and probes and were conducted in participants' offices and health facilities over the phone by the principal investigator (PI). Interviews with the third-party evaluation organisation who conducted the PBF programme monitoring and data verification and donors were conducted in English and the rest were conducted in the local languages (Dari and Pashto). To ensure internal consistency, relevance, and clarity of the questions, two pilot-test interviews were conducted in each health facility (n=2) before commencing the interviews. Only minor changes were brought to the questions. Where respondents consented, we used a digital recording device to record interviews (n=24), while notes were taken in six out of 30 interviews. All recorded interviews were transcribed verbatim by the PI. The research framework guided the questions, which focused on three major areas – the PBF programme context, actors and implementation process. The questions examined the contextual factors that were of relevance to the adoption of the PBF programme, and the role of actors and their interactions and how this affected PBF adoption, design and implementation. Questions also examined the implementation process, including what was intended (programme design) and what actually happened (programme implementation), and reasons for any deviation from the original design.

For the document review, the PI reviewed minutes of PBF coordination meetings and workshops, monitoring visit reports, PBF progress reports, donor mission reports (aide memoire), health facility and household survey reports from the impact evaluation, and published literature on Afghanistan's PBF scheme.

Data Analysis

The data analysis was deductive, and it was following the objective of the study and our conceptual framework. We used ‘content analysis’ to analyse the data (Snap and Spencer 2003). First, all transcriptions and notes were carefully reviewed. Key themes were highlighted from the conceptual framework. Based on their relationships, data were selected and accommodated under specific thematic classes. Information on the same opinion was combined, and quotes were copied under the relevant classifications. Finally, each classification was studied and interpreted carefully. Common viewpoints between key informants were then described and important responses elucidated. A similar approach was used to incorporate the concerned content of reviewed documents under the related thematic classes. We triangulated findings from interviews with other data sources (PBF document review, published literature review).

Ethics Considerations

Ethical approval was obtained from the Institutional Review Board of the Ministry of Public Health of Afghanistan and the Ethics Committee of London School of Hygiene and Tropical Medicine. Participation in interviews was voluntary and all information was provided anonymously. All interviews were assigned codes to ensure anonymity when citing quotations.

4.2.4 Results

PBF Programme Context

There was a range of contextual factors contributing to the introduction of the PBF programme in Afghanistan. First, at the global level, focusing on ‘results’ is a fundamental ideological shift from input-based financing to outputs and outcomes. PBF was regarded as an innovative solution to help utilize limited resources effectively and efficiently (Loevinsohn and Harding 2005), and make progress towards global health goals: initially MDGs 4 and 5 (Oxman and Fretheim 2009), and subsequently Universal Health Coverage (UHC) (RBFHealth 2017). Therefore, an increasing number of developing countries were adopting PBF schemes, and it was seen by local stakeholders to be desirable to join this global movement.

“The funding trend at the global level was towards PBF programmes and Afghanistan could not miss this opportunity” [PM, National level].

Second, at the local level, maternal mortality ratio was considered one of the highest worldwide at 1600 per 100,000 live births (Bartlett et al. 2005), contraceptive use was at 15 per cent, ANC use was at 36 per cent, and full immunisation was only at 37 per cent (Islamic Republic of Afghanistan and European Union 2008). The World Bank first advocated for the idea of a PBF programme in Afghanistan, based on the positive experience of improving maternal and child health outcomes in Rwanda using PBF.

*“PBF was not a recognized term in the Ministry [MoPH]. It was the World Bank who attracted the attention of the Ministry towards PBF”
[HM, national level]*

The MoPH was also very receptive to the idea of PBF because of the experience of providing BPHS services through NSPs (Loevinsohn and Sayed 2008) using performance-based contracting (PBC) in which project payments to NSPs were subject to satisfactory performance of NSPs on a yearly basis (Arur et al. 2010). The MoPH found the idea of PBF in line with the MoPH position and idea to be the steward of the health sector in Afghanistan and allow NSPs to implement the basic health services on behalf of MoPH (Ministry of Public Health 2005). Furthermore, PBF, involved the offer of additional financial resources to the health sector, just prior to presidential and parliamentary elections scheduled in August 2009 and December 2010.

In a meeting held in November 2008, the Minister of Health confirmed his decisive support for the adoption of PBF. The MoPH expected that the PBF could expand maternal and child services and strengthen health systems.

“The introduction of PBF is in a critical time when the country is going through some political and security turmoil; therefore, the announcement of the new funding for improving mothers and children health is considered as good news for people.” (Ministry of Public Health 2008a)

PBF Programme Actors

The key actors associated with the PBF programme were the central MoPH, Ministry of Finance (MoF), the WB, other donors, Provincial Health Offices (PHOs), non-state providers (NSPs), third party, healthcare workers including community health workers, and patients/clients. In this section, we present the roles of actors and how they influenced the design and implementation of PBF programme. Table 13 presents

the roles of PBF programme actors, and Table 14 presents the PBF programme actors matrix.

The MoPH showed interest in PBF and undertook numerous roles in adopting and managing the PBF programme. The major entities in the MoPH pertaining to the PBF programme were the Health Economics and Financing Directorate (HEFD) which was in charge of the overall management of the PBF programme; the Grant and Contract Management Unit (GCMU) which assumed responsibility for managing the PBF contracts and disbursing performance payments to implementers; the Health Information Management Information Unit (HMIS) which was responsible for the PBF programme technical reporting; the Monitoring and Evaluation Unit (M&E) which assumed responsibility for monitoring the PBF programme; and the PHOs which were in charge of routine monitoring and provincial level coordination of the PBF programme.

Table 13. PBF programme key actors' role

Actors	Roles	
MoPH	HEFD	The MoPH HEFD assumed responsibility for the daily implementation of the PBF programme including monitoring and preparing yearly reports to track progress on programme implementation. In addition, HEFD cooperated with HMIS in organising training sessions for managers involved in PBF.
	GCMU	The MoPH GCMU assumed responsibility for processing and managing contracts for NSPs and for third-party organisations. The GCMU finance section assumed responsibility for conducting the financial management of the programme such as preparation of payment orders, fund disbursement, reports, and expenditure statements.
	HMIS	The MoPH HMIS Unit introduced changes to the HMIS data capture forms to enable its use to monitor PBF. Furthermore, they led training sessions for the implementers and PHO staff on the new HMIS, NMC, and other PBF-related events. The HMIS also had to maintain and supply any PBF-related HMIS information and provide reports on the main PBF indicators.
	PHO	The MoPH PHOs assumed responsibility for ensuring that oversight from the BPHS health facilities was conducted in coordination with the NSPs. Moreover, the PHOs were responsible for arranging provincial PHCC meetings.
	M&E	The MoPH M&E Unit assumed responsibility for managing and processing NMC data. The staff of M&E assisted the HEFD with monitoring activities associated with the PBF.
MoF	The MoF was the prime recipient of the PBF fund. The MoF role was to strengthen donor coordination, to ensure accountability and transparency, and to align donor funding in accordance with the country development objectives. The MoF delegated full authority in terms of technical decisions and project management to MoPH regarding PBF.	
The WB	The WB provided financing assistance to PBF programme and played an operational role in appraising and monitoring PBF programme activities. The WB provided the final approval on the PBF procurement and financial plan, process of contracting NSPs and third party, the release of funds to implementers, hiring of staff, and adaptation of the design of PBF programme.	
Third Party	The function of the third party was to verify HMIS data and conduct baseline and-end line surveys to evaluate the effect of the programme. Moreover, the third party had the responsibility for assessing the quality of PBF health facilities.	
NSP	The NSPs assumed responsibility for implementing the PBF programme in the BPHS health facilities. They were expected to ensure the availability of quality health services to the people whom they were serving in accordance with their PBF BPHS contracts, as well as make an accurate record of any unintended effect of PBF on the delivery of health services.	
HW	The healthcare workers provided health care services to people.	
Patient	Patients were the prime beneficiary of health care services provided by healthcare workers.	

MoPH: Ministry of Public Health; HEFD: Health Economics and Financing Directorate; GCMU: Grant and Contract Management Unit; HMIS: Health Management and Information System; HW: Health Worker; PHO: Provincial Health Office; M&E: Monitoring and Evaluation; MoF: Ministry of Finance; PHCC: Provincial Health Coordination Committee; WB: World Bank; NSP: Non-State Provider; PBF: Performance-Based Financing

Table 14. PBF programme actor matrix

Actors	Role	Power	Interest	Idea
Central MoPH	Policy maker	Powerful in terms of position & veto player	Interested	Supportive
World Bank	Donor/ Policy maker	Powerful in terms of having money and expertise	Very much interested	Supportive
Ministry of Finance	Policy maker	Veto player	Interested	Supportive
Third Party Organisation	Evaluator	Neutral	Neutral	Neutral
Provincial MoPH	Implementer	Powerful at the provincial level in terms position.	Publically interested, privately not interested	Publically supportive, privately neutral
Non-state providers	Implementer	Not powerful but can influence the implementation of services	Publically interested, privately not interested	Publically supportive, privately feeling burden
Healthcare workers	Service provider	Not powerful but can influence the implementation of services	Interested	Supportive

In our study, the HEFD emerged as a key actor among the MoPH entities in the context of PBF programme. The HEFD had established a close relationship with the MoPH central entities, MoPH PHOs, MoF, the third party and NSPs, and it served as the first contact point for coordination with the WB. The PBF National Coordinator who was placed in the HEFD was managing the PBF contracts with NSPs and third party in close coordination with the GCMU. Meanwhile, the PBF project placed two M&E national consultants, one HMIS national consultant and one financial management national consultant in the HEFD. The M&E consultants were reporting to the Coordinator while the HMIS and financial management consultants were reporting not only to the Coordinator but also to HMIS and financial management units to ensure the main units of the MoPH were closely linked to the PBF programme. The MoPH M&E unit was expected to assist the PBF programme with monitoring activities. Nevertheless, the function of the M&E unit was generally limited because the HEFD M&E national consultants undertook monitoring visits to the PBF health facilities

In principle, the function of the PHOs was to serve as an arm of MoPH in achieving its provincial stewardship role. However, the role of the PHOs was restricted in every facet of PBF, including monitoring. The PBF was managed on a central basis with

MoPH maintaining direct contact with the NSPs. PHOs were engaged with PBF only in two provinces where the implementation of BPHS was with the MoPH-SM.

“The PHOs did not actively participate in the implementation of the PBF. It was obvious that they were not considered an essential actor in the design and management of the PBF” [HM, provincial level].

The WB role in PBF programme design, financing and management was crucial. The PBF programme was designed by the WB experts given the MoPH did not have enough expertise in PBF programming during the design stage. Meanwhile, the WB maintained its crucial role in other areas. The WB was playing an operational role in appraising and supervising PBF programme activities. The PBF procurement and financial plan, the procurement process of contracting NSPs and third party, the release of funds to implementers, and hiring of staff for the PBF project all required the approval of the WB (Ministry of Finance 2013). Some national and provincial managers expressed the opinion that it was the donor who made the final decisions on PBF.

“The role of the MoPH in project design and management did not seem to be as prominent as the donor was perceived to make all important decisions” [HM, provincial level].

Nevertheless, policymakers at MoPH disagreed with this contention and emphasised their stewardship function regarding the management and coordination of every development projects, including the PBF.

“Overall, the MoPH relationship with the donor was either to convince or to be convinced” [PM, national level].

The function of the third party was to verify HMIS data of the PBF programme and undertake baseline and end-line surveys to evaluate the effect of the PBF programme. Moreover, the third party had the responsibility of assessing the quality of PBF health facilities. Initially, the Johns Hopkins University (JHU) and subsequently the KIT Royal Tropical Institute assumed responsibility for this role in 2013 through a competitive process. To maintain independence, the third-party role was limited in the decision-making process, although health managers felt that this party could have taken a more active role in the design stage as well as in improving the programme implementation.

The MoF was the prime recipient of PBF funds. The MoF role was to strengthen donor coordination, to ensure the accountability and transparency of aid assistance

including the PBF, and to align donor funding in accordance with the country development objectives. However, the MoF did not participate in the design and management of the PBF programme as the MoF delegated full authority to MoPH for financial management, programme choices and implementation.

“The MoPH was regularly updating the MoF on the PBF progress. Also, the World Bank had regular meetings with the MoF. Overall, the MoF never interfered in the PBF issues” [HM, national level].

The implementers (NSPs and MoPH-SM) assumed responsibility for implementing the PBF programme in the BPHS health facilities. Nevertheless, the NSPs function in the design of PBF was limited. On the other hand, the implementers perceived the PBF programme to be a burden because they gained no advantage while being under significant pressure to provide timely HMIS reports to MoPH and timely incentive payments to health facilities.

“Trust me it [PBF] was a good programme but a nightmare for us (NSPs), a lot of work” [HM, provincial level].

Healthcare workers were the principal service providers in the BPHS health facilities. Although their role in the design of PBF was limited, and they were not involved in the policy decision-making process, most of them were satisfied with the PBF programme. They gave two reasons for this. Firstly, the PBF performance incentive was simply an extra payment to support their current standard of living. Our finding elsewhere shows that performance payments amounted almost the same level of their monthly salaries (Salehi et al. 2020). Secondly, health workers regarded performance payments as a sign of appreciation from their supervisors and a reward for efficient work.

“Life is very expensive nowadays. The incentive I receive has changed my life. I am really happy! [HW, health facility level]

On the other hand, although healthcare workers knew of the PBF objectives and expected outcomes, they misinterpreted the notion of allocating the health facilities into intervention and control groups. The majority of staff at control facilities were of the opinion that if they improved their performance, they could be entitled to incentive payments in the near future. National-level health managers believed that the provincial managers intentionally disseminated such messages to control facility staff to encourage them to work harder to improve the overall performance of BPHS implementation.

“The provincial managers kept promising control health facilities to provide them incentives if they show better performance” [HM, national level].

The implementers (NSPs, MoPH-SM) had to prepare written agreements with each health facility and define the prices of indicators and the proportion of allocation of incentives among the health facility staff. Initially, this was based on healthcare workers input and discussion. However, this was a matter of dispute in some health facilities. For instance, midwives attempted to justify the significance of their services. By contrast, other staff of health facilities, especially doctors, were of the opinion that midwives were dependent on their cooperation in order to provide services. In other cases, auxiliary staff were excluded from incentive payments, with detrimental consequences for service utilisation in some instances.

“We noticed that our OPD [outpatient department] visits were decreasing day by day. We discovered that the guards, who were the first point of contact in the clinic, were misleading the patients. As soon as the guards were included in the PBF incentive list, the number of OPD patients increased” [HW, health facility level].

Therefore, the managers (NSPs and MoPH-SM) subsequently defined incentive allocation schemes without the consent of healthcare workers and imposed it on some health facilities.

Some key cadres were not considered for the incentive payments, such as community health workers (CHWs) who had responsibility for the provision of basic preventive and promotive services to between 100 and 150 households and referring patients from community to health facilities.

“CHWs are the first point of contact for patients at the community level. Frankly, they have enough influence in the community. People usually listen to what they say” [HW, health facility level].

PBF Programme Implementation Process

To authorize the PBF programme, a memorandum of understanding (MoU) was signed in 2008 between the MoPH and the WB (Ministry of Public Health 2008b). A further financial agreement between the Ministry of Finance and the WB was signed in 2009 (Ministry of Finance 2009). To support PBF implementation, the WB pledged 12 million US dollars grant which was utilised in six years. Negotiations between the MoPH and the WB on the management structure of PBF commenced in 2009. To

furnish MoPH officials with details of the PBF such as the design and management of the programme, the WB encouraged discussions with the WB experts who had experience from the PBF in Rwanda.

In 2009, the MoPH initiated a working group to address the PBF requirement for health systems to be strengthened and to identify target provinces for the implementation of the PBF programme. The working group recognised the urgent need to strengthen the HMIS, monitoring and evaluation systems and financial management. Given that PBF required close monitoring; the working group recommended to implement PBF only in provinces where the level of security was good. Two provinces were selected as pilot sites for three months in early 2010 to identify potential administrative challenges prior to roll out (Ministry of Public Health 2011). As no major challenges were encountered, the PBF programme was subsequently rolled out to the remaining 9 provinces by 2011. In the initial stage, orientation sessions were also offered to BPHS implementers and provincial health officers to acquaint them with the principal features of the PBF programme.

Furthermore, the MoPH signed contracts with NSPs in nine provinces where they implemented the PBF programme in BPHS health facilities, and with the Johns Hopkins Bloomberg School of Public Health (JHU) as a third-party institution to verify the HMIS data and assess the PBF programme. Additionally, the MoPH assumed responsibility for implementing PBF in two MoPH-SM provinces.

In order for incentives to be paid, reported activity had to be verified by a third party. To this end, health facility HMIS data on target indicators were provided quarterly to MoPH. The verification of HMIS data occurred on a three-monthly basis between 2010 and 2013 and a six-monthly basis afterwards on a random selection of health facilities. Facility HMIS data were compared to data in facility registers. In addition, five households for each indicator were interviewed by the third party to verify that the services had been provided. In order to receive incentives, the facility validation rate had to exceed 90 per cent, and the community validation rate exceed 80 per cent. The incentive payments were weighted according to quality of care, which was assessed by a quarterly score on the national monitoring checklist. Figure 9 shows the arrangements for the PBF programme regarding HMIS reporting and incentive payments.

In addition to facility-level incentive payments, PBF performance payments were also paid to NSPs and MoPH provincial health officers. It was anticipated that NSPs would receive 10 per cent of the performance payment paid to facilities for management

purposes: this would be paid at a provincial level. The objective of this allocation was to help implementers manage the operational activity associated with the PBF. Besides, it was anticipated that provincial health officers would receive performance payments to enhance the stewardship function of the provincial MoPH associated with the PBF. Provincial health officers were paid based on the number of health facilities in provinces they monitored PBF programme quarterly, number of recorded minutes from the Provincial Health Coordination Committee (PHCC) meetings and the proportion of activities implemented from the provincial quarterly work plan. However, the allocation of management funds to implementers as well as the payments to provincial health officers was discontinued in the second year of the PBF programme. This may have occurred due to difficulties managing payments to NSPs and assessing the performance of provincial health officers.

The level of incentive to be paid for services at the facility-level was based on the respective burden of disease, the potential to increase coverage, the cost of service delivery in the private market, and the availability of funds. However, initially, incentives were low, but it was increased during the second year of the PBF implementation.

“The data shows that the total amount of incentive earned by each health facility in the last three quarters is too small. Discussion with implementers has revealed that this is partly due to the unit price amount which is too small to motivate the health workers. It is agreed to revise the prices of the outputs” (The World Bank 2011b).

The facility-level incentives were paid based on extra use of services above the baseline for the services. Therefore, the baselines for each indicator were fixed for each health facility according to the 2009 average HMIS data. It soon became apparent that the baseline had been set too high due to the inaccuracy of HMIS data in 2009. Consequently, this was amended in 2011 by applying the HMIS 2010 average data.

“Implementing organisations expressed concern that the baseline against which performance is assessed is set too high. It is agreed to revisit the baseline” (The World Bank 2011a)

It was anticipated that PBF performance payments would be available to implementers every six months, whereas implementers were meant to incentivise healthcare workers every three months. However, lengthy delays occurred in making payments to both implementers and healthcare workers.

“We were told that we would receive incentives each quarter, but this was not the case. Sometimes the delays were so long that we could forget about the PBF incentives” [HW, health facility level].

There were many reasons for the delays, including financial bureaucratic processes within the government and delaying the release of funds, implementers submitting HMIS reports late, and third-party submitting verification reports to MoPH late. In 2011, the fund delay for PBF health facilities was for three quarters. As a result, the MoPH decided to make the incentive payments to health facilities without verification of HMIS data.

“Last year’s findings regarding third party verification showed 95 per cent accuracy of data. Therefore, the incentives should be paid on the basis of the previous year’s report to avoid further delays in performance payments.” (Ministry of Public Health 2011)

The verification process was found to be too resource-intensive and cumbersome. The third party faced challenges identifying households in the community from facility registers due to incorrect names and addresses. Furthermore, recall bias was a challenge with households.

“When a monitor asked a woman whether she had visited the health facility, she was confused in her understanding of which services she had received during her visit from the health facility. In most cases, the patient cards were not available at the household level, or they contained incomplete information which made it impossible for community monitors to verify the services.” [HM, national level]

Some of the managers and healthcare workers argued that PBF could have worked efficiently with fully functional health facilities. Consequently, they felt it would have been better to spend some of the funding of PBF on inputs such as medicine, staff training, equipment, and supplies, all of which were needed by the BPHS health facilities.

“We found ourselves handcuffed by the insufficient availability of pharmaceuticals, dysfunctional [medical] equipment, and lack of, particularly female healthcare workers. I wish the PBF could have helped” [HM, provincial level].

The managers also expressed a stronger preference for the demand side-financing programme. They argued that this would have brought greater benefits as they

believed that the key reason for the low utilisation of services was high transportation costs and poor road quality.

“In extremely impoverished communities, where geographical and financial access is limited, a complementary strategy of cash vouchers allowing women to access antenatal care and facility deliveries would have resulted in a better outcome” [HM, national level].

Table 15 presents the PBF programme lifetime timeline.

4.2.5 Discussion

PBF programmes are inherently political as they enforce distinct arrangements for the sharing of resources, and represents a risk or opportunity to actors as a result of changes to their roles and responsibilities and the modification of organisational processes (Sparkes et al. 2019). However, despite widespread implementation of PBF programmes in LMICs, there has been minimal use of political economy analysis to shed light on why PBF is adopted, and how it is designed and implemented, including why it may not work as planned.

This study highlighted the main dynamics that influenced the adoption, design and implementation of PBF programme in Afghanistan from the lens of political economy. Firstly, we found that a number of contextual factors supported the adoption of PBF in Afghanistan. In general, PBF is seen as a means of achieving global policy goals, initially MDGs 4 and 5 and later UHC (Oxman and Fretheim 2009; RBFHealth 2017). A lot of countries, especially low-income and FCASs were implementing PBF (Gautier et al. 2018) which supported policy uptake in Afghanistan. Besides, Afghanistan embarked on PBF based on the successful implementation of PBF in Rwanda context. Likewise, PBF was seen as an opportunity to improve the provision of healthcare services rapidly. PBF thus aligned well with donors and the Afghan government's wish to produce fast results. Meanwhile, the strategic importance of promoting policy ideas that go with financial support is quite aligned with the interest and idea of donors in PBF. Donors are mostly concerned about achieving their results-oriented programme. Therefore, they see PBF as a suitable programme given it involves the establishment of organised, accountable, and traceable reporting system (Gautier et al. 2018). In Afghanistan, the promise of PBF financial resources came at a time when Afghanistan was encountering not only poor health indicators but also a lack of financial resources to upgrade the country's health system. This finding is in line with other health systems performance studies that the availability of

funding was a key factor influencing health policy uptake in LMICs (Sridhar and Gómez 2011; Khan et al. 2018).

Secondly, the policy process underlying the design and implementation of the PBF programme in Afghanistan was a result of power dynamics and interactions between PBF programme actors. The exercise of power occurs not only between actors usually considered powerful, such as donors and central MoPH, but also actors who were influential in specific local settings such as PHOs, NSPs and health facility workers. The MoPH established a centralised management structure to have more control on resources. Though this arrangement posed the MoPH in a strong position to manage the PBF programme through a 'single-window system', it compromised the notion of institutional embedding which required the engagement of all relevant units in managing the programme to prevent any drawbacks. For example, in Uganda, inattention to the role of some key actors partially led to the failure of the programme (Ssengooba, McPake, and Palmer 2012). In addition, having inadequate knowledge of PBF programming, the MoPH allowed extensive external assistance in the design stage of the PBF programme which led to a flawed design such as focusing only on supply-side financing without assessing the need for a demand-side financing programme. Furthermore, the donor maintained control over the PBF programme procurement and financial decisions during the implementation stage that compromised the notion of local ownership. In this context, the PHOs and NSPs were publicly showing their interest in PBF while privately they assumed it as a burden without gaining an advantage. In Tanzania, like Afghanistan, the PBF policy process was significantly politicised with outside actors having considerable influence on the agenda, thus allowing minimal flexibility for the Tanzanian authorities to effectively lead the process (Chimhutu et al. 2015). PBF can be successful if all actors assume joint responsibility for the programme and the feeling of ownership to value and conform to the programme (Kiendrébéogo and Meessen 2019). The processes of interaction with actors and the implementation approach should retain flexibility, thus providing time for the development of local capacity and ownership, and to enable integration within the health system (Bertone, Wurie, et al. 2018).

Finally, the MoPH support for PBF adoption was partly linked to their past positive experience of performance-based contracting. In political economy, this is called path dependency, the notion that a new policy is shaped by the policy choices of the past (Pearson 1996). However, while path dependency can influence policy choice, the capacity of an organisation in implementing a new policy is equally vital. In Thailand where the population enjoy universal health coverage, in addition to path dependency,

it was the management capacity that facilitated the process of implementing related health financing reforms (Tangcharoensathien et al. 2019). In Afghanistan, the health system lacked an adequate capacity to manage the PBF programme on a large scale. Thus, the PBF programme encountered implementation challenges such as delays in payments, challenges in data verification, disagreement about the distribution of incentives among health facility staff, and misunderstanding of the concept of PBF in control health facilities. As demonstrated in Burundi and Rwanda, national level management capacity, especially in human resources for health, was an essential enabler to scaling up PBF programmes at the national level, whereas Kenya's insufficient management capacity significantly affected the expansion of the PBF programme (Shroff, Bigdeli, and Meessen 2017).

Specific methodological weaknesses in our study also need to be acknowledged. Firstly, the interviews were conducted retrospectively. Thus, participants were asked to recollect events that happened in the past and this may have led to recall bias. To mitigate the risk of recall bias, we considered some methodological approaches such as selecting informed participants, giving the study participants enough time to think before answering the questions and using a standardised and well-structured questionnaire. Secondly, data analysis was done only by the PI. Though this could have introduced bias, the findings were triangulated with PBF documents to the extent possible. Thirdly, the study PI was working for the Ministry of Public Health in a senior position during the lifetime of the PBF programme and his opinion might have biased the study findings. On the other hand, his in-depth understanding from the local context, familiarity with the local languages, and having smooth access to senior level actors benefited this study. Fourthly, this study did not include service users (patients). Future studies could consider the inclusion of service users to understand to what extent PBF is in line with their needs. Finally, our case study was limited to the BPHS; the discussion on PBF could have been expanded to the Essential Package of Hospital Services (EPHS) in Afghanistan. Future PEAs could therefore include EPHS within the scope of their research to portray the picture of PBF in secondary healthcare services in Afghanistan, which may differ from primary care.

Table 15. PBF programme timeline

Date	Main Feature
July 2008	Afghanistan National Risk and Vulnerability Assessment report 2007/2008 released. The report highlighted that only 37% of children received full immunisation, CPR was 15%, 36% ANC use, and 24% SBA use. The cost of transportation was indicated as the main barrier to access health facilities by women and children.
September 2008	A preliminary MoU signed between MoPH and WB to adopt PBF.
April 2009	Health financing and sustainability policy and strategy developed and highlighted the need for supply and demand-side financing
October 2009	Financial agreement on PBF signed between the WB and Afghan MoF. The WB pledged 12 million \$US grant to be used by the PBF programme.
Early 2010	PBF programme pilot started in two provinces (Panjshir and Samangan)
September 2010	PBF programme expanded to additional nine provinces (Badakhshan, Balkh, Bamyan, Jawzjan, Kandahar, Kunduz, Takhar, Parwan, Saripul)
December 2010	PBF workshop conducted to orient the PHOs and NSPs on the PBF objectives, mechanism of implementation, expected outputs and outcomes. The participants were managers from the MoPH and NSPs.
June 2011	PBF baseline survey submitted to MoPH
July 2011	PBF national workshop conducted to share the HMIS findings, discuss the unit costs of services, and find out challenges and way forward.
November 2011	PBF unit cost of services modified. PBF national workshop conducted to present HMIS updates.
February 2013	PBF workshop conducted to discuss about monitoring findings, implementation challenges, 3rd party verification results, implementation challenges and way forward. The participants were managers from the MoPH and NSPs.
Early 2016	PBF end line survey 2015 submitted to MoPH

CPR: Contraceptive Prevalence Rate; ANC: Antenatal Care; SBA: Skilled Birth Attendance; MoU: Memorandum of Understanding; PBF: Performance-Based Financing; WB: World Bank; PHOs: Provincial Health Offices; HMIS: Health Management Information System; MoPH: Ministry of Public Health; NSPs: Non-State Providers

4.2.6 Conclusion

Political economy factors played a critical role in the introduction, design and implementation of PBF programme in Afghanistan. Future studies should focus on conducting empirical research to not only understand the multiple effects of PBF programmes on the performance of health systems but also the main political economy dynamics that influence the PBF programmes in different stages of the policy process. This will facilitate the design and implementation of an effective and flexible PBF model, adapted to the local context and owned by the country. If PBF programmes are designed around a full understanding of political economy, PBF can potentially be a powerful tool to achieve better outcomes. We recommend further use of political economy analysis in such studies.

“It is the politics, stupid!”

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4.3 Paper 4: Cost-Effectiveness Analysis of Performance-Based Financing for the Basic Package of Health Services in Afghanistan

(Cover sheet on next page)

Paper 4

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SECTION A – Students Details

Student	Ahmad Shah Salehi
Principal Supervisor	Dr Josephine Borghi
Thesis Title	Cost-Effectiveness Analysis of Performance-based financing for the Basic Package of Health services in Afghanistan

If the Research Paper has previously been published please complete Section B, if not please move to Section C

Section B – Paper already published

Where was the work published?	
When was the work published	
If the work was published prior to registration for your research degree, give a brief rationale for its inclusion	N/A
Have you retained the copyright for the work?*	Was the work subject to academic peer review?

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Section C – Prepared for publication, but not yet published

Where is the work intended to be published?	BMJ Global Health
Please list the paper's authors in the intended authorship order:	Ahmad Shah Salehi, Josephine Borghi, Karl Blanchet, Anna Vassall
Stage of publication	Initial stage

Section D – Multi-authored work

For multi-authored work, give full details of your role in the research included in the paper and in the preparation of the paper (Attach a further sheet if necessary)	Design, data acquisition, data analysis, write up, submission, response to peer reviewers
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Student Signature: _____ Date: 19 February 2020

Supervisor Signature: _____ Date: 19 February 2020

Cost-Effectiveness Analysis of Performance-based financing for the Basic Package of Health Services in Afghanistan

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Main Figures: 3

Authors' contributions

All authors participated in the production of the manuscript. Salehi AS conducted data collection and data analysis and wrote the first draft. Other authors provided analytic feedback and contributed to improving the writing of the manuscript. All authors read and approved the final manuscript.

4.3.1 Abstract

Performance-based financing (PBF) is a mechanism to improve the quality and utilisation of health benefit packages. There is a dearth of economic evaluations of PBF in the 'real world'. Afghanistan implemented PBF between 2010-2015 and evaluated the programme using a pragmatic cluster-randomised control trial

We conducted an incremental cost-effectiveness analysis of the PBF programme in Afghanistan, compared to the standard of care, from provider payer's perspective. We examined the cost of the PBF programme together with the cost of providing core maternal and child health services that were incentivised by the PBF programme in intervention and comparison areas.

The total financial and economic provider cost of implementing the PBF programme were 10,677,465 US\$ and 11,896,380 US\$ respectively during the six-year life of the scheme. Incentive payments were the main contributor to economic costs (63%) followed by HMIS data verification (21%), programme administration (10%), and staff time (6%). The PBF programme had an incremental cost-effectiveness ratio of US\$ 1,242 per disability-adjusted life year (DALY) averted compared to the standard care. The programme was not cost-effective when compared to an opportunity cost threshold of US\$ 349. Incentive payments were the main contributor to the costs of the PBF programme (70% of the total) followed by performance data verification (23%), staff time (6%), and programme administration (2%). The unit cost per case of antenatal care (ANC), skilled birth attendance (SBA) and postnatal care (PNC) services in the standard of care was US\$ 0.96, US\$ 4.8 and US\$ 1.3, respectively, while the cost of ANC, SBA and PNC services per case in PBF areas were US\$ 4.72, US\$ 48.5, and US\$ 5.4, respectively.

Our study found that PBF, as implemented in the Afghan context, was not the best use of funds to strengthen the delivery of MCH services. It is likely that the incentive amounts provided were too low for some services, there was insufficient flexibility in using those resources to address service performance constraints, and data verification was not economically efficient. Further research into the efficiency and cost-effectiveness of PBF schemes with different designs in different settings is important to ensure that PBF improves performance and inform how best to strategically purchase health benefit packages in LMICS in order to make progress towards universal health coverage.

4.3.2 Introduction

Performance-based financing (PBF) has received considerable policy attention in recent years in low and middle-income countries (LMICs) as a means to improve health system performance as part of Universal Health Coverage (UHC) (Shroff et al. 2017). PBF provides incentives to service providers (facilities and workers) when they achieve pre-defined performance targets (Bertone et al. 2018). A critical concern is whether the overall costs of PBF, including the transaction costs of setting up the payment and information systems required to support PBF, has a greater impact than direct forms of funding health services (such as budgets). To date, there are two cost-effectiveness analysis studies from the PBF programmes implemented in LMICs (Borghi et al. 2015; Zeng et al. 2018). Borghi *et al.* (2015) found that the PBF programme in Tanzania was not cost-effective, while Zeng *et al.* (2018) concluded that PBF was a cost-effective intervention in Zambia.

Research in context

Evidence before this study

LMICs have implemented PBF in the health sector in the past two decades. However, to date, the effect of PBF on improving health service performance in LMICs has produced mixed results, with few studies using rigorous ex-post evaluation designs. To date, there has only been two studies reporting on the cost-effectiveness of PBF interventions, despite the fact that PBF is extensively implemented to improve maternal and child health services.

Added value of this study

To our knowledge, this is the first cost-effectiveness study of PBF informed by a pragmatic controlled randomised trial in a fragile conflict-affected state. This is the first study to combine 'real world' micro-costing with evidence from a pragmatic trial, using a decision analytic model, that estimates cost per disability-adjusted life year (DALYs) averted.

Implications of all available evidence

This study found that PBF, as implemented in the Afghan context, was not the most effective use of funds within the health sector budget constraint. The study highlights the importance of the design of incentive structures within PBF programmes. The

varying level of incentive payments across service types did not reflect their importance for health outcomes nor the difficulty of the underlying behaviour targeted by the incentive payment. This study also suggests that PBF requires corresponding flexibility in financial management at the health facility level to ensure that the health facility has autonomy in financial management to address service delivery constraints at the facility level. The lessons learned from the PBF programme in Afghanistan highlight the importance of designing incentives that are sufficient to offset the effort required by health workers to deliver services, the relative importance of services in terms of improving health outcomes, and the current patterns of resource availability with the health system, to ensure the sustainability of these programmes.

The Ministry of Public Health (MoPH) of Afghanistan implemented a PBF programme to fund their Basic Package of Health Services (BPHS) between 2010 to 2015 aiming to strengthen the performance of maternal and child health services (MCH) in the country (Zeng, Shepard, et al. 2018). This study examines cost-effectiveness of PBF in Afghanistan ex-post, using data from a pragmatic randomised control trial. We aim to contribute to the broad evidence base informing LMICs on whether PBF can extend and improve the performance of health benefit packages in a cost-effective way.

4.3.3 Methods

4.3.3.1 *Study setting*

Over the past four decades, Afghanistan has experienced political instability, civil war and pervasive conflict (Sondorp 2004). A new democratic government was established in December 2001. In 2003, the BPHS was introduced to provide primary healthcare services, specifically MCH services, to the population. BPHS services were contracted to non-state providers (NSPs) in 31 provinces while the MoPH managed the BPHS in the remaining three provinces through direct implementation called the Ministry of Public Health Strengthening Mechanism (MoPH-SM). PBF was implemented to support the BPHS in 11 provinces; covering 463 health facilities out of 1892 nationally in 2010.

4.3.3.2 Intervention Description

The PBF programme in Afghanistan provided financial incentives to health workers based on the increased production of MCH services (e.g. antenatal care, skilled birth attendance, postnatal care) above the baseline for each BPHS health facility and the quality of care provided. These incentives were paid in addition to routine salaries and funding of the health facility. The level of performance payments for each service type is provided in Table 16. Services were monitored using data from the Health Management Information System (HMIS) and verified through household visits, comparing reported visits to those noted in the health facility registers. If the community validation rate exceeded 80 per cent, the health facility was entitled to a performance payment. The payments were weighted according to quality of care assessed by a quarterly score on the national monitoring checklist (NMC). No funding or autonomy was provided to health facilities in control and treatment groups (Ministry of Public Health 2010).

Table 16. Level of performance payment

	Indicator	Payment
1	Visit of antenatal care	US\$ 2.8
2	Skilled birth attendance	US\$ 37
3	Visit of postnatal care	US\$ 2.8
4	Pentavalent3 vaccination	US\$ 3

PBF was evaluated through a large-scale pragmatic cluster-randomized trial, details of which are reported elsewhere (Engineer et al. 2016). All facilities within each province were stratified by type of facility and then pair-matched based on outpatient utilisation rate. Within each matched pair, health facilities were randomly assigned to control and treatment groups. The treatment group received PBF in addition to routine funding, while the control group received only routine funding (Ministry of Public Health 2010). The evaluation of PBF involved two household surveys conducted at baseline in 2010 and end-line in 2015 in the catchment area of a sample of total 140 health facilities (70 health facilities in the treatment area and 70 health facility in the control area). The impact evaluation found that, on average, PBF improved all the payment triggering indicators; however, no statistically significant differences were found between study arms. In addition, facilities exposed

to PBF achieved a statistically higher quality of care index score compared to the control group (Ministry of Public Health & KIT Royal Tropical Institute 2015).

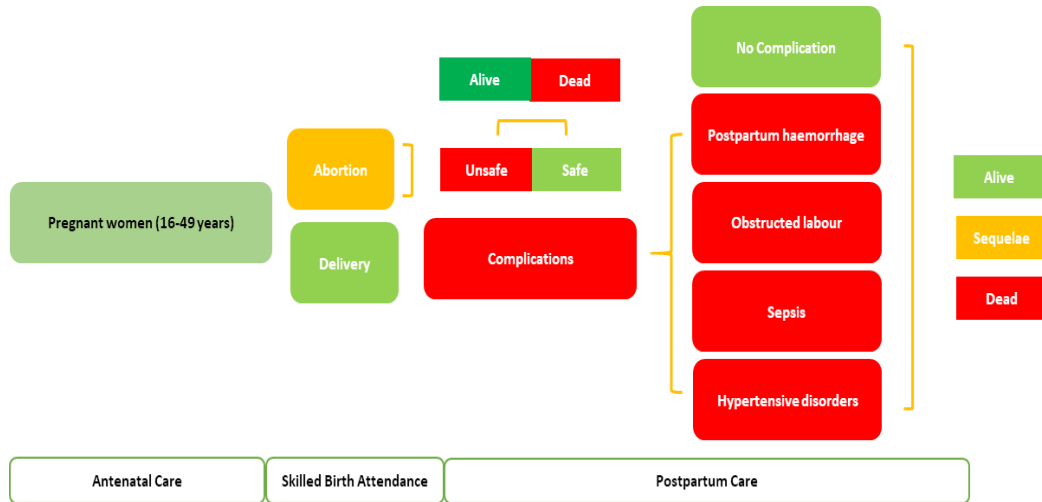
4.3.3.3 Economic evaluation framework

We compared the PBF ‘treatment’ to the standard of care ‘control’ for the population of Afghanistan, assessing cost-effectiveness using incremental cost per disability-adjusted life years (DALYs) averted. We used a time horizon of one year from the start of pregnancy for a hypothetical cohort of women attending BPHS services in Afghanistan between 2010 and 2015. We employed a decision tree model to estimate DALYs averted by PBF for both mothers and neonates as the trial did not report final health outcomes. We parameterised the model with primary cost data, service data from the trial and secondary data. We assessed cost-effectiveness from a provider perspective (MoPH, donor), as decision makers, that are faced with allocating resources from a fixed annual budget, are interested in those costs that are accrued to the health sector.

4.3.3.4 Model design

We adapted a validated model called “Maternal Health Policy Model” to evaluate the costs and health outcomes of the PBF intervention in Afghanistan (Figure 11). This model simulates the natural history, events and service utilisation related to pregnancy and childbirth, including antenatal care, delivery, abortion, complications, and postnatal care (Carvalho, Salehi, and Goldie 2012). Adapting this model, we developed two decision trees, one for pregnant mothers and one for newborns, to predict incremental costs and health outcomes. The decision trees were parameterised with data on the probability of care-seeking and health events occurring and associated costs collected during the trial. Within the maternal decision tree, pregnant women have the option to use or not use antenatal care (ANC) services, to proceed to delivery with or without a skilled birth attendant or have an abortion, to incur potential complications of pregnancy (i.e. haemorrhage, obstructed labour, sepsis, hypertensive disorders, fistula, anaemia, infertility), and to use or not use PNC services. In the neonatal decision tree, newborns may receive postnatal care (PNC) and may develop complications (i.e. low birth weight, neonatal sepsis, birth asphyxia).

Figure 11. Schematic of (original) Maternal Health Model



Source: Carvalho, Salehi, and Goldie (2012)

4.3.3.5 Cost parameter estimation

a. Estimating the cost of implementing the PBF intervention

We estimated the financial and economic costs of implementing PBF, using primary cost data from Afghanistan. Financial costs comprised those payments made to support the implementation of the PBF programme, including the PBF managers' salary, the costs of performance data verification, and PBF project administration cost. Financial cost data were obtained from PBF project accounts and financial reports. Economic costs reflected the opportunity costs of all resources (e.g. space and equipment used) used within the PBF programme including resources which were not directly paid for by the PBF scheme, or where the price paid did not reflect the true opportunity cost of the input. Where PBF costs were shared with other interventions and activities, we allocated costs to PBF using a variety of allocation factors. Further details can be found in the supplementary appendix. For example, the cost of personnel whose salaries were not solely funded by the PBF project was allocated based on the proportion of their time spent on PBF related activities. For shared building space, we allocated according to the percentage of floor space used for the PBF intervention. The cost of transportation was estimated based on the consumption of fuel used for the PBF compared to other activities. Since the MoPH owned buildings, we used estimates of rent of equivalent building spaces to determine building prices. All (non-building) capital costs were annuitized using a

three-per cent discount rate and life span of five years.

The cost centres at the central and provincial levels included salaries, data verification, and administration. The administration costs were further divided into office equipment, building (space), transport, monitoring, communication, training, workshop, and tax. At the health facility level, in addition to the above costs, the cost centres included the incentive cost and drug cost. The incentive cost was not reflected at the programme level as the incentives aimed only for the health facilities. The PBF paid a small amount of incentive to provincial managers at the beginning of the programme, but it was stopped soon.

b. Estimating the unit cost of providing services incentivised by PBF

We also estimated the financial costs of delivering the services supported by PBF and those in the standard of care. The costs of PBF services were arrived at by adding the costs found in the step-down allocation method and a bottom-up cost allocation method. We estimated the unit cost of service delivery in terms of staff time, incentive, drugs, and administration cost. The administration costs included the cost of transportation, equipment and building (space). We conducted primary data collection, using micro-costing methods, in a random sample of 25 health facilities from the 463 BPHS health facilities where the PBF intervention was implemented to estimate the unit costs of services. Staff time spent on each service and equipment use was based on interviews with staff. The percentage of floor space used for each service was measured. The average costs of drugs and supplies used were calculated using the list of prescribed medicine for each service and the pharmacy register book at each of the health facilities. The unit costs, minus PBF incentives and support, were used to estimate service costs in the standard of care.

c. Estimating the incremental cost of the PBF programme

The incremental unit cost of services of PBF programme was then estimated in the decision analytical model by adding the unit cost for each of the services (in both PBF arm and standard of care arm) received by the cohort in the decision analytic model. Utilisation rates of maternal and newborn services at PBF and standard of care (control) facilities were derived from the PBF impact evaluation (Ministry of

Public Health & KIT Royal Tropical Institute 2015). We used secondary data from the literature for the unit costs of maternal and newborn related complications (Carvalho, Salehi, and Goldie 2012). Prices in local currency were converted to US dollars to allow comparisons between countries (1 US dollar to 58 Afghani in 2015). All costs were inflated and adjusted to 2015 US dollars.

4.3.3.6 Service utilisation and outcomes

We translated the impact of PBF on the utilisation of maternal and neonatal services and maternal and newborn complications into DALYs in the model. DALYs are the sum of years of life lost (change of mortality) and years of life lived with disability (change of morbidity) (Rushby et al. 2001). DALYs were estimated as the sum of lives saved from increased use of services and, lives saved and reduced morbidity from a reduction in the incidence of complications.

For each complication, we estimated years of life lived with disability, using disability weights obtained from the Global Disease Burden study (World Health Organization 2004) and duration based on local expert opinion. For the maternal and neonatal complications, we computed years of life lost based on the risk of mortality from obstructed labour, maternal sepsis, haemorrhage, hypertensive disorder, birth asphyxia, neonatal sepsis, and neonatal low birthweight from the literature. In the estimate of years of life gained from increased use of services and reduced incidence of complications, we used age-specific life expectancy of women and newborns obtained from Afghanistan Mortality Survey 2010 (Ministry of Public Health, Central Statistics Organization, ICF Macro, Indian Institute of Health Management Research 2010). We compared our prediction of mortality to current maternal mortality rates in Afghanistan.

Table 17. Model Parameters

Parameter	Source	Base Case Value	Lower Limit	Upper Limit	Distribution in PSA
Pregnant Population in PBF provinces	Survey	79,504	77,388	81,619	
ANC rate	Survey	0.60	0.52	0.68	Beta
SBA rate	Carvalho et al. (2012)	0.52	0.50	0.54	Beta
PNC rate	Carvalho et al. (2012)	0.55	0.51	0.60	Beta
Unit cost of ANC	Carvalho et al. (2012)	4.72	4.7	5.7	Gamma
Unit cost of delivery with SBA	Carvalho et al. (2012)	48.48	48.0	52.5	Gamma
Unit cost of PNC	Carvalho et al. (2012)	5.38	5.1	5.9	Gamma
Management of maternal haemorrhage cost	Carvalho et al. (2012)	0.11	0.05	0.23	Gamma
Management of obstructed labour Cost	Carvalho et al. (2012)	69.33	34.67	173.33	Gamma
Treatment of Maternal Sepsis Cost	Carvalho et al. (2012)	37.46	18.73	93.64	Gamma
Management of hypertensive disorders Cost	Carvalho et al. (2012)	57.31	28.65	143.28	Gamma
Management of abortion cost	Carvalho et al. (2012)	45.98	31.54	79.42	Gamma
Safe abortion cost	Carvalho et al. (2012)	31.96	15.98	47.94	Gamma
Management of unsafe abortion cost	Carvalho et al. (2012)	60.00	30.00	90.00	Gamma
Management of low birth Cost	JHU et al. (2018)	8.91	6.40	8.67	Gamma
Management of Sepsis Cost	Carvalho et al. (2012)	21.31	18.20	22.83	Gamma
Management of birth asphyxia Cost	Carvalho et al. (2012)	6.34	7.65	5.57	Gamma
Haemorrhage incidence	Carvalho et al. (2012)	0.11	0.05	0.23	Beta
Hypertensive disorder incidence	Carvalho et al. (2012)	0.03	0.01	0.05	Beta

Abortion incidence	Carvalho et al. (2012)	0.105	0.084	0.096	Beta
Unsafe abortion incidence	Carvalho et al. (2012)	0.04	0.02	0.10	Beta
Obstructed labour incidence	MoPH et al. (2010)	0.06	0.03	0.07	Beta
Severe anaemia incidence	Ugwu et al. (2012)	0.09	0.08	0.09	Beta
Maternal sepsis incidence	Ugwu et al. (2012)	0.05	0.04	0.06	Beta
Fistula incidence	Carvalho et al. (2012)	0.02	0.02	0.04	Beta
infertility incidence	Carvalho et al. (2012)	0.09	0.08	0.09	Beta
Low birth weight incidence	Carvalho et al. (2012)	0.17	0.12	0.05	Beta
Neonatal Sepsis/Infection incidence	Carvalho et al. (2012)	0.02	0.02	0.01	Beta
Birth asphyxia incidence	Carvalho et al. (2012)	0.03	0.02	0.01	Beta
Fistula duration	Expert Opinion	32.0	28.0	36.0	
Severe anaemia duration	Expert Opinion	0.50	0.50	0.50	
Infertility duration	Expert Opinion	17.00	17.00	17.0	
Low birth weight duration	Expert Opinion	0.06	0.04	0.08	
Neonatal sepsis/all infection duration	Expert Opinion	0.04	0.02	0.06	
Birth asphyxia duration	Expert Opinion	0.19	0.01	0.04	
Severe anaemia disability weight	Expert Opinion	0.16	0.16	0.16	

ANC=Antenatal care; PNC=Postnatal care; SBA = Skilled birth attendance

4.3.4 Analysis

We estimated the incremental cost-effectiveness ratio (ICER) defined as the incremental cost of PBF per DALY averted compared to the standard of care. The ICER was assessed against the US\$ 349 per capita threshold estimated by Wood et al.'s (2015) for Afghanistan, as no more recent estimates were available. We used a three per cent discount rate on costs and DALYs averted in our primary analysis. We undertook a series of one-way sensitivity analyses across key model parameters varying each parameter at a time up to ± 30 per cent of the base case value and two-way sensitivity analysis on the model. In addition, we used probabilistic sensitivity analysis to assess parameter uncertainty and produce a 95%-confidence interval around the ICER.

4.3.5 Results

The total financial and economic provider cost of implementing the PBF programme were 10,677,465 US\$ and 11,896,380 US\$, respectively, during the six-year life of the scheme, as shown in Table 18. Incentive payments were the main contributor to economic costs (63%) followed by HMIS data verification (21%), programme administration (10%), and staff time (6%).

Table 18. The total cost of implementing PBF over six years

Cost Centre	Financial Cost	Percentage	Economic Cost	Percentage
Salary	522,957	5%	772,118	6%
Incentives	7,481,266	70%	7,481,266	63%
Verification	2,475,952	23%	2,475,952	21%
Administration	197,290	2%	1,167,043	10%
Total (US\$)	10,677,465	100%	11,896,380	100%

Incentive payments were the main contributor to economic costs (63%) followed by HMIS data verification (21%), programme administration (10%), and staff time (6%). Table 19 shows the PBF annual financial programme cost. See supplementary annexe 5 for more details.

Table 19. PBF financial programme cost breakdown (US\$)

Cost centre	2010	2011	2012	2013	2014	2015	Total
Salary	20,341	84,074	98,066	98,592	105,870	116,014	522,957
Incentive	39,604	428,397	1,379,626	1,875,394	1,797,594	1,960,651	7,481,266
Data verification	0	591,022	684,582	712,818	229,702	257,828	2,475,952
Administration	27,698	40,822	37,149	36,755	29,836	37,104	197,290
Total (US\$)	87,644	1,144,316	2,199,422	2,723,558	2,163,002	2,371,597	10,677,465

The average annual costs for PBF facilities of providing ANC, SBA and PNC services were US\$ 21,877 (CI 95%: 14,359-26,818) compared to US\$ 2,167 (CI 95%: 2,073-2,438) in control facilities (Table 20)

Table 20. The average costs of PBF indicators in the control and treatment groups per health facility per year (US\$ 2015)

Cost Centre	ANC Cost		SBA Cost		PNC Cost		Cost per HF	
	Control	PBF	Control	PBF	Control	PBF	Control	PBF
Salary	607	867	460	658	419	598	1,486	2,123
Incentive	-	4,345	-	10,170	-	2,353	-	16,868
Data Verification	-	214	-	214	-	214	-	642
Drug	22	32	15	22	12	17	49	71
Administration cost	183	261	316	452	133	190	632	2,167
Cost per health facility	812	5,719	791	11,516	564	3,372	2,167	21,871

ANC=Antenatal care; PNC=Postnatal care; SBA = Skilled birth attendance

Table 21 shows the unit cost of services in the PBF and control groups. The estimated unit costs receiving ANC, SBA and PNC services in the control group were US\$ 0.96 (CI 95%: 0.92-1.0), US\$ 4.76 (CI 95%: 4.1-6.3) and \$US 1.3 (CI 95%: 1.2-1.4), respectively, while the costs of ANC, SBA and PNC services in the treatment group were US\$ 4.72 (CI 95%: 3.6-5.8), US\$ 48.5 (CI 95%: 48.0-52.5), and US\$ 5.4 (CI 95%: 5.1-5.9), respectively. The costs of incentives and data verification were the main driver for the higher unit costs in the PBF facilities.

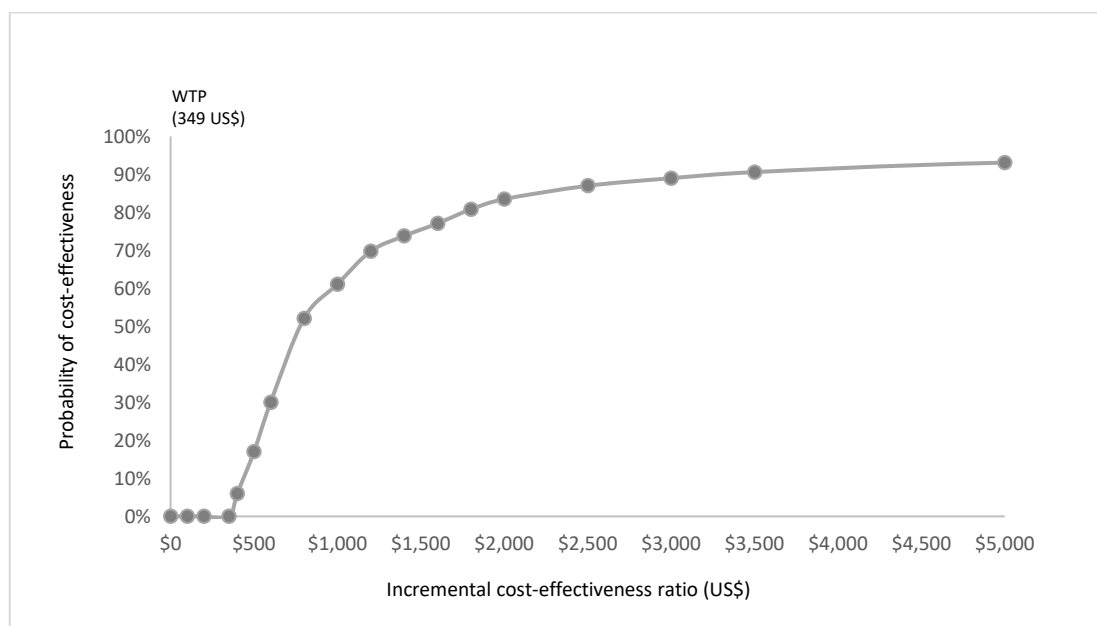
Table 21. The unit cost of delivering selected maternal and neonatal health services for facilities in control and treatment groups

Services	Control	Treatment
Antenatal care (US\$)	0.96 (CI 95%: 0.6-1.5)	4.7 (CI 95%:3.6-5.8)
Skilled birth Attendance (US\$)	4.8 (CI 95%: 4.1-6.3)	48.0 (CI 95%: 31.0-67.8)
Postnatal care (US\$)	1.3 (CI 95%: 0.8-2.1)	5.4 (CI 95%: 4.3-6.5)

CI = Confidence Interval

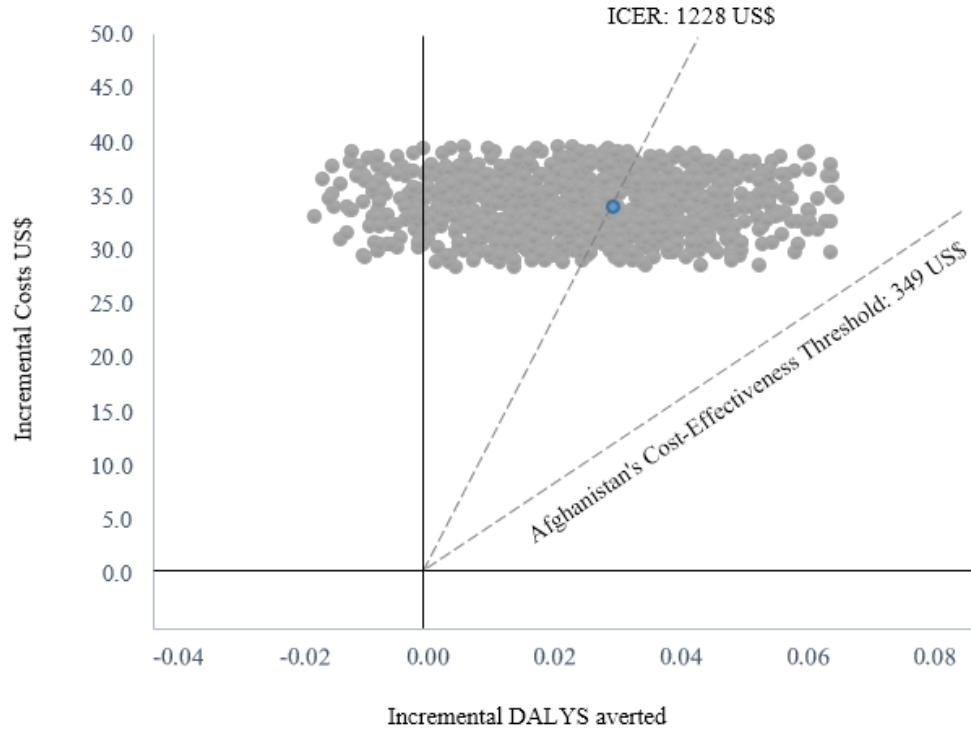
In total, 13,028 incremental DALYs (5,658 incremental maternal DALYs and 7,370 incremental neonatal DALYs) were averted by the PBF programme which corresponds to an incremental 253 deaths averted (138 maternal and 115 neonatal) between 2010 and 2015, across the 11 provinces of Afghanistan, with a total population of 4.06 million living in the coverage area of PBF facilities. The incremental cost of the PBF programme per DALY averted was 1,241 US\$. The probabilistic sensitivity analysis (1228 US\$) found that under zero per cent of simulations the ICER lay below Afghanistan’s opportunity cost threshold (not cost-effective). Figure 11 presents the PBF cost-effectiveness acceptability curve, Figure 12 the cost-effectiveness plane.

Figure 11. PBF Cost-effectiveness acceptability curve



WTP= Willingness to pay; GDP= Gross domestic product

Figure 12. Cost-effectiveness plane of PBF treatment group compared to the control group



DALY=Disability adjusted life years; ICER = Incremental cost-effectiveness ratio

4.3.6 Discussion

Afghanistan implemented a PBF intervention on a large scale aiming to improve MCH services. The PBF intervention was evaluated through a pragmatic cluster-randomized trial. We developed a decision-analytic model of the care pathways, costs and outcomes for pregnant women and newborns to estimate the incremental cost-effectiveness of the PBF scheme relative to the standard of care. Although the PBF intervention resulted in an improvement in the quality of MCH services in the PBF group, our study found this initiative was unlikely to be cost-effective from a provider's perspective. The finding supports that of a study in Tanzania that also reported that the PBF intervention was not cost-effective, despite improvements in utilisation rates, although this study did not measure DALYs averted or the unit costs of service delivery under the PBF programme (Borghji, et al. 2015). However, our study is in contrast to the only previous study from Zambia in which the PBF intervention was found to be cost-effective (Zeng, Shepard, et al. 2018). However, this study was found inadequate in terms of the methods used (Paul et al. 2020).

Our study found that the costs of implementing the PBF programme in Afghanistan were substantial. PBF programme costs were primarily driven by the payment of incentives and data verification linked to incentive payments (together accounting for 93% of the total financial cost and 84% of the total economic cost). The high proportion of the cost accounted for by incentives contrasts with Zambia and Tanzania. In Zambia, incentives and verification accounted for around 50% of the total cost (Zeng, Shepard, et al. 2018). Borghi *et al.* (2015) reported a high administration cost (financial 63% and economic 78%) in Tanzania when implementing the PBF intervention. Similarly, a systematic review of ten studies from the United States, two from the United Kingdom, one from Germany and one from China also reported high administration costs of PBF approaches (~60%) (Meacock, Kristensen, and Sutton 2014).

There are a number of possible explanations for the lack of cost-effectiveness of PBF to support the basic package for MCH services in Afghanistan. Firstly, the theory of change that supported the design of PBF in Afghanistan posited that high levels of financial incentives would motivate healthcare workers to improve quality of care and subsequently increase demand for MCH services (Engineer et al. 2016). While incentives may influence providers, availability of resources such as sufficient healthcare workers, equipment, essential drugs and supplies, and effective referral systems are essential to ensure quality provision of services (World Health Organization 2019). However, the PBF programme was unable to overcome these systemic resource constraints, and the health facilities did not have the financial autonomy to procure resources locally (Salehi et al. 2020). In Zambia, health workers had significant autonomy in addressing the shortage of essential inputs in health facilities (Zeng, Shepard, et al. 2018).

Secondly, the level of incentive is critical to PBF efficiency (Oxman and Fretheim 2009). Too low an incentive might fail to result in behaviour change while too high an incentive consumes resources unnecessarily. In Afghanistan's PBF scheme, the incentive payment for delivery with SBA was set at US\$ 37 per case. On the other hand, the incentives for ANC and PNC were set much lower, at US\$ 2.8 per case. The SBA incentive made 72 per cent of the overall cost of the PBF incentives, and it consumed 51 per cent of the PBF total financial cost whereas the ANC and PNC incentives constituted only 17 per cent and 9 per cent of the PBF total financial cost.

While the substantial effect of SBA on proper management of delivery and prevention of pregnancy complications is critical, both ANC and PNC are also important. ANC has a positive effect on the identification of pre-eclampsia/eclampsia and prevention of anaemia (Oyerinde 2013), and PNC plays a crucial role in early identification and appropriate referral of maternal and newborn complications, family planning, and promotion of healthy behaviours for mother and newborn. Both are designed to encourage a sustained relationship between health services and the mother during pregnancy. It is also important to note that 66 per cent of global maternal mortality happens in the postpartum period, and the first 24 hours after delivery is crucial given 45 per cent of deaths occur in this time (Strover et al. 2016). Therefore, while the incentives set may have reflected a level of workload, it is also essential to consider the value of services in terms of their contribution to health outcomes, and not comparatively disincentivise those services with low or no additional payments.

Thirdly, even though HMIS data verification is a crucial element of PBF interventions, this 'transaction cost' can be relatively high (Zeng, Shepard, et al. 2018). In Benin, the data verification processes were found very costly (50 per cent of the PBF total financial cost) and very time consuming that negatively affected the feedback mechanism to health facilities to improve health service delivery, in addition to delays in performance payments (Antony, Bertone, and Barthes 2017). In Afghanistan, data verification was conducted at the health facility and community levels by the third party bi-annually. The verification cost was 23 per cent of the total financial cost and 21 per cent of the overall economic cost of the PBF intervention in Afghanistan. This cost could be reduced through more efficient modalities. For example, Zambia replaced monthly verification of all health facilities with a risk-based model in which health facilities were assessed based on the expected risk of misrepresenting data (Ma-Nitu et al. 2018). Borghi et al. (2015) estimation shows that if data verification is fully integrated into the systems, the cost of data verification could be reduced significantly.

Our study has some limitations. The main limitation is that we had to estimate health service costs in the non-PBF sites, using micro-costing from the PBF sites. This was done based on the assumption that underlying service costs and expenditures from other sources would be balanced between intervention and control sites due to the randomised design, and similar funding to all sites from other funders (including government payment of staff salaries). While there may have been some fungibility at

the facility level away from MCH services in PBF sites, biasing our PBF site upwards, this will have been minimal, and only applicable to non-salary items. On the effect side, there may have been a spillover effect from the PBF group into the control group due to the location of both facilities in the same province, and the movement of staff and the population across facilities. Control health facilities were likely aware of PBF and tried to compete with treatment health facilities on performance.

4.3.7 Conclusion

To conclude, our study found that PBF, as implemented in the Afghanistan context, was not the best use of funds to strengthen the delivery of MCH services. It is likely that the incentive amounts for delivery services were very high that led to consume a large portion of the fund without increasing sufficient demand for the services. In contrast, incentive amounts were too low for ANC and PNC services that did not provide ground for improved motivation. Besides, there was neither financial resources nor autonomy at the health facility level to address service performance constraints, and data verification was not economically efficient. Further research into the efficiency and cost-effectiveness of PBF schemes with different designs in different settings is important to ensure that PBF improves performance and inform how best to strategically purchase health benefit packages in LMICS in order to make progress towards universal health coverage.

Conflict of Interest

The authors declare that they have no conflict of interests.

Reference

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CHAPTER FIVE: DISCUSSION AND CONCLUSION

In the following chapter, the key findings of the research performed for this thesis are summarised and discussed. Next, the thesis policy and research implications are highlighted, and the limitations of the study are recognised. Lastly, a conclusion with methodological recommendations is presented.

5.1 DISCUSSION

5.1.1 Summary of Findings

We investigated factors that impacted the performance of PBC in Afghanistan. The study results indicate that PBC has been successfully implemented in the country. The evidence shows that three groups of factors impacted the process of designing and implementing the PBC, namely contextual, contractual and institutional factors. Some contextual factors such as political support, involvement of non-state providers, and community engagement assisted the implementation of PBC. However, factors such as the geographical complexities, political interference by provincial leaders and the lack of security were detrimental. Contractual factors, like the effectiveness of input and output management, facilitated the provision of health services. Institutional factors, including quality human resources and pharmaceutical management, were notable elements that contributed to the successful results of PBC.

We further explored factors influencing the process of PBF adoption, design and implementation in Afghanistan. The findings indicate that global trends towards PBF as well as political considerations, in addition to local necessities for financial resources in order to improve maternal and child health in Afghanistan contributed to the adoption of PBF in Afghanistan. However, the inadequate PBF programme design led to certain challenges. Although the PBF programme concentrated on supply-side financing, the practical situation revealed the necessity for both supply-side and demand-financing interventions to strengthen the referral system. Besides, when deciding on the adoption of PBF, the MoPH relied on their past experience (path dependency) of the successful implementation of PBC, without assessing whether sufficient capacity existed in the health system to manage the PBF programme. Thus, due to a flawed design and insufficient management capacity, the programme encountered a number of implementation challenges such as delays in performance payments at different levels, challenges in implementing HMIS data verification, disputes among health facility staff in term of the distribution of incentives, and a

shortage of key inputs such as drugs and supplies in PBF health facilities. Furthermore, the PBF programme's centralized management structure overlooked the MoPH provincial capacity in managing the programme. The PHOs and NSPs were publicly showing their interest in PBF while privately they assumed it as a burden without gaining an advantage. The programme also missed an important opportunity to engage CHWs in the performance payment scheme to increase referral cases of target services from the community to PBF health facilities. The WB maintained control over the PBF programme procurement and financial management at the cost of neglecting the role of the country as the owner of the PBF programme.

Our systematic review of economic evaluations of RBF programmes found that a growing number of studies have examined the costs and outcomes of RBF programmes in a variety of settings. However, most of these studies were conducted in high-income countries (Emmert et al. 2012; Meacock, Kristensen, and Sutton 2014; Turcotte-Tremblay et al. 2016). Furthermore, previous reviews mainly relied on partial economic evaluations. We also found out that no economic evaluation of PBF has been done in FCAS where a growing number of RBF programmes have been implemented. All studies focused on PBF programmes. Our systematic review of the cost-effectiveness of RBF programmes aimed at synthesising economic evaluation studies of RBF programmes implemented in LMICs. The previous reviews suggested that weak methodological designs limited the conclusiveness of findings from economic evaluations of RBF programmes. Though our review found some strengths in the methodologies adopted in the studies, there were some methodologies limitations observed too. For example, three studies did not use a cost-effectiveness threshold, and two studies applied the WHO suggested cost-effectiveness threshold, which is debatable (Paul et al. 2020). Therefore, our findings do not allow us to reach to a conclusive decision whether results-based financing is the most effective option of the use of funds to improve health and strengthen health systems. To optimise RBF in terms of its value for money, an analysis of its cost-effectiveness with vigorous evaluation design, particularly in low-income countries and FCASs where a growing number of RBF programmes have been implemented is recommended.

Our study of the cost-effectiveness analysis of the PBF programme in Afghanistan including the costs of implementing PBF and the unit cost of incentivised services found that the PBF programme in Afghanistan was not a cost-effective use of

resources for a variety of reasons. While part of the problem was a flawed programme design, on the effect side, the PBF primarily concentrated on the provision of incentives to healthcare professionals, with insufficient attention to ensuring critical health system inputs were in place, including human resources, necessary pharmaceuticals and equipment. Though the PBF impact evaluation (Ministry of Public Health & KIT Royal Tropical Institute 2015) reported some improvement in input management of PBF health facilities, our findings elsewhere (Salehi, Blanchet, et al. 2020) confirms the shortage of key inputs in PBF health facilities. On the cost side, the level of incentive was too high for delivery services and too low for other services, with implications for programme inefficiency and its ability to motivate healthcare workers. Additionally, although the verification of HMIS data was a critical component of the PBF programme, its associated costs were excessive, accounting for 23 per cent of the overall PBF budget. We concluded that PBF programme was not a cost-effective option for Afghanistan.

5.1.2 The Thesis Synthesis

Our findings show that the outcomes of the PBC and PBF programmes in Afghanistan were very different despite their implementation in the same setting. In relation to PBC, the context established suitable levels of support for the adoption of PBC both nationally and internationally. The strategy of following a PBC approach and transferring the delivery of healthcare services from the state to NSPs was implemented at a critical juncture after the establishment of a democratic regime within the country subsequent to an extended period of internal conflict, violence and war (Hansen et al. 2008). The Afghan government was not sufficiently capable of expanding primary healthcare services to rural areas. The quality of care was poor, while healthcare indicators were considered to be the lowest globally (Waldman and Newbrander 2014; Bartlett et al. 2005), resulting in support for the delivery of BPHS services to citizens through the NSPs on the basis of PBC. The level of political support that the new policy was shown was unparalleled. Moreover, the EC, USAID and WB provided considerable technical assistance to the MoPH and NSPs with activities on an ongoing basis.

In contrast, similar conditions did not emerge in Afghanistan at the time of adopting and implementing the PBF programme. While the motivation underlying the decision

to implement PBF was based on the global trend and local needs towards PBF as a potential solution to improve maternal and child health, the level of support shown to PBF, especially by development partners was minimal during the process of designing and implementing the programme. Although donors (except the WB), UN agencies, NSPs, and PHOs were not opposed to PBF, they were not particularly enthusiastic to cooperate. This stemmed from the fact that the WB and MoPH failed to build consensus among key actors to adopt PBF as an essential tool to strengthen MCH services. Our findings are partially similar to those reported in Uganda (Ssengooba, McPake, and Palmer 2012), which claimed that insufficient comprehension of the contextual factors when designing the PBF for Uganda, underestimation of the required technical and institutional capacity to implement the PBF programme, and overlooking the role of some key actors inevitably led to the failure of the programme.

Secondly, our findings indicate that in terms of both PBC and PBF, the World Bank had influence on the respective agendas. However, with regard to the PBC, the decision by numerous donors to fund PBC programme subsequently strengthened the position of the MoPH with regard to negotiating the programme terms with partners and maintaining a central role in the management and coordination of the programme throughout the implementation process. In contrast, the PBF programme did not appeal to a sufficient number of partners. The sole donor of the PBF programme was the WB, who consequently maintained a significant level of involvement in directing the agenda, shaping the PBF programme, and overseeing its implementation. Consequently, the PBF design was not adapted to the local context in the design phase and it was lacking responsiveness to the context during the implementation phase. The findings of the present study are similar to those of other researchers, which affirm the role of donors in numerous cases with regard to setting agendas (Crawford 2003) as well influencing the decision-making processes with regard to health financing policies in LMICs (Paul et al. 2018; Isidore et al. 2017). The overriding influence of donors could lead to frustration and mistrust between donors and recipient countries, as witnessed in the context of the PBF programme in Tanzania (Chimhutu et al. 2015).

Thirdly, our findings show that PBF programme was not the best use of fund in Afghanistan. The PBF programme failed to address the essential resource

requirement of the BPHS health facilities in terms of inputs such as human resources (particularly female staff) and pharmaceuticals. In fact, the health facilities did not have the autonomy to procure resources locally (Salehi et al. 2020). In Zambia, health workers had significant autonomy in addressing the shortage of essential inputs in health facilities (Zeng, Shepard, et al. 2018). Besides, the level of incentive payment for the delivery of maternal services was set inefficiently without considering the value of services in terms of their contribution to health outcomes. As an example, the incentive payment for delivery with SBA was set at US\$ 37 per case which made 72 per cent of the overall cost of the PBF incentives, and 51 per cent of the PBF total financial cost. Obviously, too high an incentive consumes resources unnecessarily. Likewise, the cost of data verification was relatively high, consuming almost one-quarter of the PBF total budget. This cost could be reduced through more efficient modalities such as a risk-based model in which health facilities are assessed based on the expected risk of misrepresenting data (Ma-Nitu et al. 2018) or full integration of data verification into the national system (Borghini, et al. 2015).

Lastly, after being implemented, PBC developed into a national programme that has made a significant contribution to the health systems development in the country. Conversely, PBF was launched as a supplementary intervention under the umbrella of PBC and has never been considered as a nationwide programme, nor has it been integrated into the national systems. This viewpoint, specifically from the perspective of government employees and those implementing the BPHS reduced the feeling of ownership associated with the PBF programme. This could be explained by the insufficient participation of key actors during the process of designing and implementing the programme. Kiendrebeogo and Meessen (Kiendrébéogo and Meessen 2019) suggest that all actors should assume joint ownership of a new programme as each could possess knowledge that is essential. The feeling of ownership should be engendered nationally in order that all relevant actors can value and conform to the programme.

5.1.3 Policy Implications

This thesis has several policy implications: Firstly, there are numerous factors influencing the adoption, design and implementation of RBF programmes. Contextual factors such as the potential impact of worldwide trends regarding RBF and the socio-economic and political conditions have influence in shaping RBF programmes. Therefore, it is highly important to ensure adaptability and responsiveness of the RBF programme design to the local context, and the availability of the local capacity to manage the implementation of RBF (Paul et al. 2018).

Secondly, actors have significant influence in shaping RBF programmes. Thus, the country where RBF is implemented make sure (i) to advocate for political support from political individuals and institutions for the RBF programme and ensure local actors are engaged in formulating and adapting design to the local context (Ridde and Yaméogo 2018); (ii) to engage frontline healthcare workers, especially in the design process of RBF. On the basis of the Street-Level Bureaucrats model developed by Michael Lipsky (Buse et al. 2007), as frontline public workers (so-called street bureaucrats) are responsible for implementing public policies, they are capable of reshaping the policies based on their own interests and principles; hence, it is critical that their ideas are incorporated into the policies to facilitate effective implementation. For example, the involvement of community health workers in the design and implementation of PBF in Afghanistan could have improved the overall performance of the PBF programme; and (iii) to balance the influence of donors. Donors bring money that generally affords them a dominant position within policymaking processes and implementation. Nevertheless, money is not the only vehicle through which decisions can be influenced. Holding a critical position and possessing technical expertise are the two other key factors that enable actors to assume a powerful position (Fischer and Strandberg-Larsen 2016). Hence, the country could augment its ability to amalgamate its key role with technical expertise to strengthen its level of influence, and ensure programme designs are adapted to the local context and the necessary pre-conditions are in place for effective programme implementation (Fischer and Strandberg-Larsen 2016).

Thirdly, in order to ensure future support and sustainability of RBF programmes, local buy-in situation is essential. This can be achieved only if RBF programmes are owned by local technical and political interest groups and institutions from the very beginning (Bruno et al. 2017). Donors should allow and help to build national capacity and

ownership (Shroff, Bigdeli, and Meessen 2017).

Fourthly, the country where the RBF is implemented should ensure that the RBF programme is cost-effective and financially sustainable. This requires attention not only to sound design of RBF programmes and the right choice of interventions but also to integrate RBF into the current processes and procedures and strengthen health systems including improving the management capacity of the government. (Bruno et al. 2017). To help make an RBF programme cost-effective, incentives need to be set at the right level to reflect workload and the value of services in terms of their contribution to health outcomes. Besides, the programmes should have sufficient flexibility in using the programme resources to address service performance constraints. The cost of data verification should be kept as low as possible by implementing some cost-effective mechanisms such as data verification conducted by government (Vergeer et al. 2016) or data verification of health facilities by a risk-based model in which health facilities are assessed according to the expected risk of misrepresenting data (Ma-Nitu et al. 2018).

Lastly "to be effective, public health advocates need to become better at politics, learning how to create political incentives for leaders and how to deal with political risk" (Reich 2002, p. 142).

5.1.4 Thesis Limitations and Future Research

There are certain limitations to this thesis. Firstly, both PBC and PBF interventions were not only applied in the context of the BPHS but additionally in the Essential Package of Hospital Services (EPHS) in Afghanistan. The current thesis studied the PBC and PBF programmes in the context of only the BPHS. Expansion of the same method to secondary healthcare (EPHS) was beyond the scope of this thesis. Future research could be directed towards the assessment of the EPHS. Secondly, this thesis performed separate investigations on the PBC and PBF programmes, although PBF was implemented in the context of PBC. We did not examine the relationship between PBC and PBF and its implications on the outcome of PBC and PBF programmes. This is an important area for future studies. Thirdly, we only carried out a cost-effectiveness analysis of the PBF programme in Afghanistan and were not able to assess the cost-effectiveness of PBC due to the absence of a comparison group as PBC is a national programme since 2003. In addition, future studies should

compare the cost-effectiveness of PBF relative to improved input management of health facilities, improved monitoring and supportive supervision, capacity building of health care workers, and interventions to promote health worker trust and intrinsic motivation. Evidence shows that RBF programmes could have unintended consequences. Future studies could consider the integration of unintended effects (both positive and negative) within economic evaluation. Finally, we acknowledge that the PhD candidate was previously a high-ranking official at the MoPH at the time of implementing the PBC and PBF programmes within Afghanistan and his personal opinion might have introduced bias. On the other hand, his role in this study was highly beneficial. His in-depth understanding from the local context, familiarity with the local languages, and having smooth access to senior level actors benefited this study.

5.2 CONCLUSION

This thesis investigated RBF programmes related to the BPHS in Afghanistan from the lens of cost-effectiveness as well as political economy. The findings show the role and interaction of political economy factors in shaping RBF programmes and a lack of cost-effectiveness of the PBF programme. The thesis provides support for the assertion that not only value for money, but also political economy factors are critical in the adoption, design and implementation of RBF programmes. This is in fact a methodological addition in the form of conducting a political economy analysis next to an economic evaluation to explain not only political factors but also the costs and underlying economic values of an RBF programme.

RBF enforces different arrangements for the distribution of resources and provides opportunities or threats for actors through changing their functions and modifying institutional processes. Subsequently, a new economic and political situation comes into existence. Therefore, policymakers require careful consideration when adopting and implementing RBF programmes.

Researchers should increasingly focus on the political economy aspect of RBF programmes in conjunction with economic evaluations, particularly in the context of FCSs to ensure that the technical outcomes of economic evaluations are suitably received in the context of highly political situations. Failing to consider the political economy aspect of the RBF programmes could lead to methodological bias, subsequently to misrepresentation of the success or failure of RBF programmes. If RBF

programmes are designed around a full understanding of political economy and value for money, RBF can potentially be a powerful tool to achieve better outcomes.

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SUPPLEMENTARY MATERIALS AND ANNEXES

Supplementary materials of the introduction section

Annexe 1. Antenatal care services in BPHS

Antenatal Care Services by Type of Facility						
Interventions and Services Provided	Health Facility Level					
	HP	HSC	BHC	MHT	CHC	DH
Information, education, and communication (IEC)	Yes	Yes	Yes	Yes	Yes	Yes
Diagnosis of pregnancy	Yes	Yes	Yes	Yes	Yes	Yes
Antenatal visits—weight, height measurement	No	Yes	Yes	Yes	Yes	Yes
Tetanus immunisation	Outreach	Yes	Yes	Yes	Yes	Yes
Iron and folic acid supplementation to pregnant women	Yes	Yes	Yes	Yes	Yes	Yes
Multi-micronutrient supplementation	Yes	Yes	Yes	Yes	Yes	Yes
Blood pressure measurement	No	Yes	Yes	Yes	Yes	Yes
Treatment of intestinal worms	Yes	Yes	Yes	Yes	Yes	Yes
Treatment of malaria	Yes	Yes	Yes	Yes	Yes	Yes
Screening for and management of sexually transmitted diseases	No	Yes	Yes	Yes	Yes	Yes
Treatment of hypertensive disorders of pregnancy	No	Yes, refer	Yes, refer	Yes	Yes	Yes
Treatment of pre-eclampsia/eclampsia	No	Yes, refer	Yes, refer	Yes	Yes, refer	Yes
Treatment of incomplete miscarriage/abortion	No	Yes	Yes	Yes	Yes	Yes
Treatment of ectopic pregnancy	No	Stabilize, refer	Stabilize, refer	Stabilize, refer	Stabilize, refer	Yes
Infection control, safe injection practices, and proper waste disposal	Yes	Yes	Yes	Yes	Yes	Yes

Source: Ministry of Public Health of Afghanistan, BPHS 2010

Annexe 2. Delivery care in BPHS

Delivery Care Services by Type of Facility						
Interventions and Services Provided	Health Facility Level					
	HP	HSC	BHC	MHT	CHC	DH
Information, education, and communication	Yes	Yes	Yes	Yes	Yes	Yes
Monitor progression of labour	No	Yes	Yes	Yes	Yes	Yes
Assist normal delivery	No	Yes	Yes	Yes	Yes	Yes
Vaginal delivery requiring additional procedures/equipment	No	Yes, refer	Yes, refer	Yes, refer	Yes	Yes
Parenteral administration of oxytocin	No	Yes	Yes	Yes	Yes	Yes
Parenteral administration of anticonvulsants	No	Yes, refer	Yes, refer	Yes, refer	Yes, refer	Yes
Bimanual compression of the uterus	No	Yes	Yes	Yes	Yes	Yes
Suturing tears and provision of intravenous fluids	No	Yes	Yes	Yes	Yes	Yes
Safe blood transfusion	No	No	No	No	Yes	Yes
Manual removal of placenta	No	Yes	Yes	Yes	Yes	Yes
Curettage	No	No	No	No	Yes	Yes
Hysterectomy	No	No	No	No	No	Yes
Management of prolapsed cord	No	No	No	Yes	Yes	Yes
Vacuum extraction (assisted vaginal delivery)	No	Yes	Yes	No	Yes	Yes
Caesarean section	No	No	No	No	No	Yes
Parenteral administration of antibiotics (first dose)	No	Yes	Yes	Yes	Yes	Yes

Source: Ministry of Public Health of Afghanistan, BPHS 2010

Annexe 3. Postnatal care in BPHS

Postpartum Care Services by Type of Facility						
Interventions and Services Provided	Health Facility Level					
	HP	HSC	BHC	MHT	CHC	DH
Information, education, and communication	Yes	Yes	Yes	Yes	Yes	Yes
Vitamin A supplementation to mother	Yes	Yes	Yes	Yes	Yes	Yes
Treatment of anaemia	Refer	Yes	Yes	Yes	Yes	Yes
Treatment of puerperal infection	Refer	Yes	Yes	Yes	Yes	Yes
Antibiotics	Yes	Yes	Yes	Yes	Yes	Yes
Breast examination (if privacy is not an issue)	Refer	Yes	Yes	Yes	Yes	Yes
Counselling on birth spacing and exclusive breastfeeding	Yes	Yes	Yes	Yes	Yes	Yes
Provide birth spacing methods	Condom or injectable progesterone	Condom/Oral or injectable progesterone	Condom/Oral or injectable progesterone	Condom/Oral or injectable progesterone	Condom/Oral or injectable progesterone	Condom/Oral or injectable progesterone
Case definition and referral of infertility cases to provincial hospital	Yes	Yes	Yes	Yes	Yes	Yes

Source: Ministry of Public Health of Afghanistan, BPHS 2010

Annexe 4. Care of newborn in BPHS

Care of the Newborn Services by Type of Facility						
Interventions and Services Provided	Health Facility Level					
	HP	HSC	BHC	MHT	CHC	DH
Information, education, and communication	Yes	Yes	Yes	Yes	Yes	Yes
Stimulate, clean airway; clean, clamp, and cut cord; establish early breastfeeding	Yes	Yes	Yes	Emergency	Yes	Yes
Prevention of ophthalmic of the newborn	No	Yes	Yes	Yes	Yes	Yes
Resuscitation of the newborn	No	Yes	Yes	Yes	Yes	Yes
Newborn immunizations	No	Yes	Yes	Yes	Yes	Yes
Kangaroo care	No	Yes	Yes	Yes	Yes	Yes
Incubator	No	No	No	No	Yes	Yes
Manage neonatal infections	Pre referral treatment, refer	Pre referral treatment, refer	Pre referral treatment, refer	Pre referral treatment, refer	Yes	Yes
Manage neonatal sepsis	Pre referral treatment, refer	Pre referral treatment, refer	Pre referral treatment, refer	Pre referral treatment, refer	Yes	Yes
Manage neonatal jaundice	Counselling	Counselling	Counselling	Counselling	Counselling	Yes
Manage neonatal tetanus	Refer	Refer	Refer	Refer	Refer	Yes

Source: Ministry of Public Health of Afghanistan, BPHS 2010

Annexe 5. Supplementary material of paper 4

Cost-Effectiveness Analysis for Performance-Based Financing for the Basic Package of Health Services in Afghanistan

Supplementary Appendix (SA)

Further Background to Model Parameterisation

Antenatal care (ANC)

The MoPH defines the ANC as the proportion of women who attend at least one ANC visit with a skilled provider of their most recent delivery (Ministry of Public Health of Islamic Republic of Afghanistan 2011).

The role of ANC in reducing maternal complications is insignificant given the ANC is unable to identify cases that will develop major complications such as postpartum haemorrhage, obstructed labour, sepsis, and complications of labour. However, ANC has effects on pre-eclampsia/eclampsia and prevention of anaemia. (McDonagh 1996; Carroli, Rooney, and Villar 2001; Rooney 1992; Oyerinde 2013). In mid-pregnancy, the haemoglobin concentration slightly falls that affects both mother and fetus (Rooney 1992). Pregnant women are advised iron supplements in their antenatal visits to prevent the fall in haemoglobin concentration.

According to ADHS 2015, 59 per cent of women receive at least one antenatal care from a skilled provider. However, only 18 per cent of women have the recommended four round of ANC visits. Almost 79 per cent of women measure their blood pressure, 42 per cent of women receive iron supplements, and 56 per cent receive information regarding pregnancy complications as part of antenatal care (Central Statistics Organization 2015).

The impact evaluation of PBF provides utilisation data on ANC by comparing the PBF intervention group with the comparison group at baseline (2010) and endline (2015).

Skilled Birth Attendance (SBA)

The MoPH defines the SBA as care provided by a professional health care worker to a mother during delivery (Ministry of Public Health of Islamic Republic of Afghanistan 2011). A skilled birth attendant is “a midwife, physician, obstetrician, nurse or other health care professional who provides essential and emergency health care services to women and their newborn during pregnancy, childbirth and the postpartum period” (Jhpiego 2015). Evidence shows that SBA has a substantial effect not only on proper

management of normal labour/delivery but also on reducing maternal and newborn morbidities and mortality. SBA can prevent four crucial complications of pregnancy and delivery-related complications that are haemorrhage, obstructed labour, eclampsia, and puerperal sepsis (Graham, Bell, and Bullough 2001; Campbell and Graham 2006). ADHS 2015 reports that 48 per cent of births occur in a health facility in Afghanistan (Central Statistics Organization 2015). The impact evaluation of PBF provides information on the utilisation of SBA services in both intervention and comparison groups at baseline and endline points.

Postnatal Care (PNC)

The MoPH defines PNCs as the percentage of women who receive at least one PNC from a trained provider within 42 days of delivery (Ministry of Public Health of Islamic Republic of Afghanistan 2011). A PNC includes early identification and appropriate referral of complications, prevention of maternal to child transmission of HIV, family planning, and promotion of healthy behaviours for mother and newborn.

A literature review conducted in 1996 reported that 66 per cent of global maternal mortality happened in the postpartum period. The first 24 hours after the delivery was crucial, given 45 per cent of deaths occurred in this time. Similarly, 65 per cent and 80 per cent of postpartum deaths happened in one week and two week times, respectively (Strover et al. 2016).

According to ADHS 2015, 40 per cent of mothers receive the recommended postnatal health check within two days of delivery in Afghanistan. The impact evaluation of PBF provides information on the utilisation of PNC in PBF intervention and comparison groups at baseline and endline points.

Pregnancy, Delivery and Birth Complications

Afghanistan Mortality Survey 2010 presents data on the causes of pregnancy-related deaths (Ministry of Public Health, Central Statistics Office, ICF Macro 2011). Postpartum haemorrhage is the leading cause of deaths in Afghanistan (*55.9 per cent*) followed by preeclampsia/eclampsia (*19.8 per cent*), prolonged obstructed labour (*10.7 per cent*), and sepsis (*5 per cent*). The other cases of maternal death are due to pre-existing conditions and diseases aggravated by pregnancy and delivery (Ministry of Public Health, Central Statistics Office, ICF Macro 2011). Table S2 shows the causes of maternal death in Afghanistan.

Table S1. Causes of maternal death in Afghanistan

Cause	Percentage
Haemorrhage	55.9%
Pre-eclampsia/Eclampsia	19.8%
Prolonged or obstructed labour	10.6%
Sepsis/infection	5.0%
Other direct causes	3.6%
Indirect causes	5.1%

Source: AMS 2010 (Ministry of Public Health, Central Statistics Office, ICF Macro 2011)

Postpartum Haemorrhage (PPH)

World Health Organisation defines postpartum haemorrhage (PPH) as “a blood loss of 500 ml or more within 24 hours after birth”. In low-income countries, PPH is the leading cause of maternal death, and it is the primary cause of maternal deaths in almost one-fourth of cases at the global level (Gulmezoglu, Souza, and Mathai 2012). Timely management and use of prophylactic uterotonics in the third stage of labour can prevent the majority of mortalities from PPH (Ngwenya 2016).

According to a systematic review, the PPH prevalence rate is 6 per cent of all deliveries globally. However, there is a wide variation of PPH rates between regions, from 2.55 in Asia to 10.45 in Africa. South Eastern Asia (4.88) has the highest rate among the Asian countries, followed by South-Central Asia (4.35), Eastern-Asia (3.96), and Western Asia (1.05) (Carroli et al. 2008). A study conducted recently in a tertiary referral hospital in Zimbabwe shows that the incidence rate of PPH was 1.6 per cent. The essential risk factor for PPH was pregnancy-induced hypertension and prolonged labour. Almost 94 per cent of the cases survived, and almost 6 per cent of case died (Ngwenya 2016).

In Afghanistan, PPH is the leading cause of pregnancy-related deaths (55.9 per cent) (Ministry of Public Health, Central Statistics Office, ICF Macro 2011). Given that almost half of the births occur at home, any maternal survival strategy that can reduce PPH is essential (Sanghvi et al. 2010). The PPH incidence rate is estimated at 11.4

per cent with the probability of morbidity of 0.8 per cent and the case fatality rate of 5.2 per cent (Carvalho, Salehi, and Goldie 2012).

Obstructed Labour (OL)

Despite the uterine contraction, if the fetus can not progress into the birth canal, it is called obstructed labour (OL). OL will result in several complications such as trauma to the bladder or rectum, rupture of uterus with massive haemorrhage, obstetric fistula, shock and even death. The estimated incidence of OL at the global level varies between 3 to 6 per cent. Likewise, the estimated incidence of OL per 100 live births at the Eastern Mediterranean Region (EMR) is from 3 to 6 per cent per 100 live births (Dolea and AbouZahr 2003). This is in line with the estimation presented by the cost-effectiveness analysis of maternal health interventions in Afghanistan. This study reports the obstructed labour with an incidence rate of 6.0 per cent, probability of morbidity of 2.1 per cent and a case fatality rate of 2.1 per cent (Carvalho, Salehi, and Goldie 2012).

Hypertensive Disorders

Hypertensive disorders of pregnancy include chronic hypertension, gestational hypertension, and pre-eclampsia (Hutcheon, Lisonkova, and Joseph 2011). A systematic review estimated the global incidence rate of the hypertensive disorder as 4.6 per cent (95% uncertainty range 2.7 – 8.2) for pre-eclampsia and 1.4 per cent (95% uncertainty range 1.0 – 2.0) for eclampsia with a wide variation across the regions (Abalos et al. 2013). In pre-eclampsia, maternal complications, include eclampsia, stroke, abruptio placenta, liver haemorrhage, respiratory distress and oedema, renal failure, and death. In eclampsia, maternal complications contain death, aspiration pneumonia, pulmonary oedema, abruptio placenta, renal failure, cardiopulmonary arrest, and stroke. Hypertensive disorders occur when there is a lack of access to appropriate antenatal care, hospital care, skilled staff, and resources such as equipment and laboratory (Ghulmiyyah and Sibai 2012). According to Abalos et al., the incidence rate of eclampsia in Afghanistan is 1 per cent (Abalos et al. 2013). At the region level, the incidence rate of pre-eclampsia is reported 3 per cent and eclampsia 0.5 per cent.

The study of cost-effectiveness analysis of maternal strategies in Afghanistan presents an incidence rate of 2.8 per cent, probability of morbidity of 0.1 per cent and a case fatality rate of 5.8 per cent (Carvalho, Salehi, and Goldie 2012).

Abortion

Abortion is an act of ceasing pregnancy at any time before labour. According to WHO, 210 million pregnancies are happening each year globally. Almost 80 million and 33 million pregnancies are either unintended or due to improper use of contraceptive methods. Consequently, some of the pregnancies are lead to induced abortion and others result in unwanted births (World Health Organization 2012a). If an abortion takes place in a health facility with appropriate management of abortion, the risk of morbidity and mortality is limited. However, most of the abortions in countries where abortion is legally not allowed to occur in an unsafe condition. According to WHO, abortion is defined “as a procedure for terminating an unintended pregnancy carried out either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards, or both” (World Health Organization 2012b).

Abortion is considered an illegal act in Afghanistan; therefore, no information is available on the real picture of abortion. Abortion induced cases might not be reported or reported as spontaneous abortion or stillbirth cases. According to Sedgh et al., the incidence rate of abortion induced cases in south-central Asia is 10.5 (Sedgh et al. 2012). The study of cost-effectiveness analysis of maternal strategies in Afghanistan reports an incidence rate of 3.9 per cent for unsafe abortion with a probability of morbidity of 12.0 per cent and case fatality rate of 2.7 per cent (Carvalho, Salehi, and Goldie 2012).

Maternal and Neonatal Sepsis

According to WHO, “Sepsis is a life-threatening condition defined as organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion, or post-partum period. Sepsis in newborn babies is called neonatal sepsis.” (World Health Organization 2017). Infection can occur at any time between labour and the 42nd day postpartum. The patient suffers from two or more symptoms such as pelvic pain, fever, vaginal discharge and smell, and a delay in the reduction of uterus size (Dolea and Stein 2003).

Globally, 11 per cent of maternal deaths are attributable to infections, yet there is limited information on the incidence rate of maternal sepsis in low-income countries (Bonet et al. 2017). One study reported an estimated incidence rate of 4.3 per cent per 100 live births for the Eastern Mediterranean region. Every day 7700 newborns die due to complications during childbirth and in the postnatal phase (Chou et al. 2015).

The cost-effectiveness analysis study of maternal health strategies in Afghanistan reports an estimated incidence rate of 5.0 per cent, probability of morbidity of 40.0 per cent, and case fatality rate of 5.5 per cent for Afghanistan in terms of maternal sepsis (Carvalho, Salehi, and Goldie 2012). We obtained data on the incidence of maternal sepsis from (Carvalho, Salehi, and Goldie 2012) and neonatal sepsis (2 per cent) from (Fleischmann-Struzek et al. 2018).

Fistula

If medical care is not provided, an obstructed or prolonged labour due to compression on women's bladder, urethra, rectum, and vaginal wall between the fetal head and maternal pubis and obstruction of blood supply to the tissues of vagina, bladder, and or rectum result in necrosis of the compressed tissues and opening of a hole in the birth canal. This situation will lead to uncontrolled leakage of urine from the bladder through the vagina that is called vesico-vaginal fistula and leakage of stool from the vagina called rectovaginal fistula (United Nations Population Fund 2012).

Data is limited to the global prevalence of obstetric fistula. WHO reports an estimated number of 50,000 to 100,000 fistula cases each year worldwide (World Health Organization 2018). A review of data from 11 developing countries shows prevalence rates from 0.1 in Burkina Faso to 2.0 in Uganda (Tunçalp et al. 2015).

A study interviewed 3040 ever-married women of reproductive age in six provinces (out of 34) in Afghanistan reports 4 cases of vesico-vaginal fistula per 1000 (0.4 per cent) women in the reproductive age (Mohmand, Sharifi, and Bahram 2011). Another study in Afghanistan assessed 109 fistula cases operated in a hospital retrospectively reported that 9.2 per cent of cases had a recto-vaginal fistula and 90.8 per cent had a vesicovaginal fistula (Hail 2011). The study of cost-effectiveness analysis of maternal strategies in Afghanistan presents an incidence rate of 0.021 (Carvalho, Salehi, and Goldie 2012).

Anaemia

According to WHO, "anaemia is a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiologic needs" (World Health Organization 2015). An assessment of anaemia and pregnancy-related maternal mortality shows that the relative mortality risks associated with moderate (haemoglobin 40–80 g/L) and severe anaemia (haemoglobin <47 g/L) are 1.35 and 3.51, respectively (Brabin, Hakimi, and Pelletier 2001). A systematic review of anaemia burden from 1990 to 2010 shows that the global prevalence rate of anaemia was 39.9 per cent that accounted for 8.8 per cent of total disability from all conditions

(Kassebaum et al. 2014). Another study reported a similar rate of the global prevalence of anaemia associated with pregnancy at 38.2 per cent (World Health Organization 2015).

The study of cost-effectiveness analysis of maternal strategies in Afghanistan reports an incidence rate of 0.09 (0.085-0.094) for severe anaemia (Carvalho, Salehi, and Goldie 2012). The probability of case fatality rate of severe anaemia (0.023) was derived from (Bailey et al. 2017).

Low Birth Weight (LBW)

WHO defines LBW as the “weight at birth of less than 2.5 kg” (World Health Organization n.d.). It is due to small size for gestational age or Low birth weight pre-term birth (before 37 completed weeks of gestation) (Edmond and Bahl 2006). LBW is a major public health challenge and one of the leading causes of neonatal mortality. Generally, 20 per cent births a year are low LBW worldwide (World Health Organization n.d.). In the case of LBW, ANC can evaluate risk factors related to pregnancy, identify at-risk pregnancy and provide counselling and management (Ohlsson and Shah 2008).

We obtained the incidence rate (17 per cent) and case fatality rate of (11.8 per cent) of LBW from Afghanistan Mortality Survey (Ministry of Public Health, Central Statistics Organization, ICF Macro, Indian Institute of Health Management Research 2010).

Asphyxia

Birth asphyxia is one of the leading causes of neonatal mortality in low and middle-income countries within the first week of life, and it is defined as the “inability of the newborn to initiate and sustain adequate respiration after delivery” (Ezechukwu and Ugochukwu 2005). Every year around four million newborns die due to birth asphyxia. The role of skilled birth attendance at birth is significant in reducing and managing birth asphyxia cases (Aslam et al. 2014).

According to the Afghanistan Mortality Survey 2010, the probability of neonatal death due to asphyxia is 0.031.

Maternal and Neonatal Mortality

According to the MoPH and Inter UN Agency Estimation, the pregnancy-related mortality ratio in Afghanistan is 396 per 100,000 live births (Ministry of Public Health 2018).

Neonatal mortality is defined as the probability of dying within the first month of life. According to the Afghanistan Demographic Health Survey 2015, neonatal mortality is 22 per 1000 live births (Central Statistics Organization 2015).

Further information on the study site

To improve maternal and child health indicators, Afghanistan started implementing a PBF intervention between 2010 and 2015. PBF intervention was aligned with the BPHS and implemented in 11 provinces out of 34. PBF intervention was aligned with the BPHS and provided through NSPs in nine provinces and direct implementation of MoPH in two provinces.

The objectives of the PBF intervention were to increase key utilisation of maternal and child health services, improve the quality of health care services, and ensure that patients and communities are increasingly involved and satisfied with the publicly financed health services they receive. The performance payments to healthcare workers were based on the HMIS data. Health workers were provided incentives based on extra production of outputs (targeted services) above the baseline set for each facility at the beginning of the programme. Monitoring and verification of the HMIS data occur on a three-monthly basis on a random selection of health facilities in both intervention and control groups. Both the quantity and the quality of services were monitored by using the national monitoring checklist (NMC). To ensure the programme was focusing on both quantity and quality of services, the payments were discounted by the quality of care as measured by a quarterly score on the NMC. For example, if the health facility received 1000 US\$ per quarter based on quantity of services and it scored 80 percent on the NMC then it would receive an actual payment of 800 US\$ (80%) for that quarter.

The evaluation was designed based on two household surveys conducted as a baseline in 2010 and an endline in 2015 in the catchment area of a sample of intervention and control health facilities. The design of the evaluation of PBF intervention was a cluster randomised trial with two groups of control and intervention. Given the differences between the types of facilities, all facilities within each province were stratified by type of facility and then matched based on the utilisation rate. Within each matched pair, health facilities were randomly assigned to control and intervention groups. Totally, 463 health facilities were assigned to both groups. The only difference between the two groups was that the intervention group received performance-based incentives beside of their salaries while the control group receives only their routine salaries. The evaluation was based on three-stage

sampling. In the first stage, within each province, the required number of matched health facilities was randomly selected. In the second stage, the required number of villages was randomly sampled from the list of all villages in the catchment area of the selected health facilities. In the third stage, using the household listing conducted prior to survey, the required number of households in the selected villages were sampled using simple random sampling. The PBF impact evaluation showed that some progress was made concerning the targeted indicators; however, the results were not statistically significant. In terms of the impact of the PBF programme on care quality, the intervention group performed better in comparison with the control group on 14 indicators, seven of which were found to be of statistical significant (Ministry of Public Health & KIT Royal Tropical Institute 2015).

Table S2. Checklist for estimating the unit cost of PBF services in Afghanistan

Reference Case Checklist Items	Options
STUDY DESIGN AND SCOPE	
Principle 1 - The purpose of the study, the population, and the intervention and/or service/output being costed should be clearly defined.	
<i>Purpose</i>	
Purpose type:	Cost-effectiveness analysis of performance-based financing (PBF) for the Basic Package of Health Services (BPHS) in Afghanistan. A Cluster-Randomized Trial
Relevance for health practice and/or policy decisions:	A critical concern is whether the overall costs of PBF have a more significant impact than other direct forms of funding health services. This study contributes to the broad evidence base informing LMICs on whether PBF can extend and improve the performance of health benefit packages in a cost-effective way.
Aim of the cost analysis:	This study aim was to examine the cost-effectiveness of PBF in Afghanistan ex-post, based on a pragmatic randomised control trial.
Intended user(s) of the cost estimate:	Policymakers
<i>Intervention</i>	
Main activities involved:	The PBF programme intended to increase key utilisation of maternal and child health services; improve the quality of health care services; and ensure that patients and communities are increasingly involved and satisfied with the publicly financed health services they receive.
Target population:	BPHS health facilities
Coverage level:	Two provinces out of 11.

Delivery mechanism (e.g., health system level, facility type, ownership, etc.):	Basic Package of Health Services health facilities.
Epidemiological context (i.e., incidence/prevalence of disease)	According to Afghanistan Demographic Health Survey 2015, 59% of women receive at least one antenatal care from a skilled provider, only 48% of births occur in a health facility in Afghanistan, and only 40% of mothers receive the recommended postnatal health check within two days of delivery in Afghanistan.
Intervention	Health workers were provided incentives based on extra production of outputs (targeted services) above the baseline set for each facility at the beginning of the programme. The only difference between intervention group and control group was that the intervention group received performance-based incentives beside of their salaries while the control group receives only their routine salaries.
Principle 2 - The perspective (extent of the resource use captured) of the cost estimation should be stated and justified relevant to purpose.	
Study perspective (e.g., provider, health system, societal, household):	This study is implemented from payer's perspective. The costs incurred on patients, such as transportation costs and opportunity costs of patients due to loss of productivity and opportunity costs of caretakers were not included due to unavailability of data.
Principle 3 - The type of cost being estimated should be clearly defined, in terms of economic vs financial, real world vs guideline, and incremental vs full cost, and whether the cost is 'net of future cost', should be justified relevant to purpose.	
Defining the cost	
Economic vs. financial cost	Both economic and financial costs of PBF programme was estimated
'Real world' vs guideline cost	'Real world' cost was estimated
Full vs incremental cost	We compared the PBF 'treatment' to the standard of care 'control' for the population of Afghanistan, assessing cost-effectiveness using incremental cost per disability-adjusted life years (DALYs) averted.
Net of future cost	NA
Principle 4 - The 'units' in the unit costs for strategies, services and interventions should be defined, relevant for the costing purpose, and generalizable.	
List the unit costs used	Antenatal care unit cost Delivery by skilled birth attendant cost Postnatal care cost
Describe any adjustments made to reflect the quality of service output	No adjustment was required as the cost of service in both control and treatment groups were with the same quality
Principle 5 - The time horizon should be of sufficient length to capture all costs relevant to the purpose, and consideration should be given to disaggregating costs into separate time periods where appropriate.	
Time period	
Period type (start-up vs implementation):	We used a time horizon of one year from the start of pregnancy for a hypothetical cohort of women attending BPHS services in Afghanistan

Time period:	Between 2010 and 2015.
SERVICE AND RESOURCE USE MEASUREMENT	
Principle 6 - The scope of the inputs to include in the cost estimation should be defined and justified relevant to purpose.	
Defining the scope	
Above service delivery costs included	Yes
Costs of supporting change included	NA
Research costs included	NA
Unrelated costs included	No
If incremental costs, assumptions made for existing capacity	NA
Any exclusions other to scope	NA
Principle 7 - The methods for estimating the quantity of inputs should be described, including data sources and criteria for allocating resources.	
Describe the measurement of each input as either top-down or bottom-up	Unit costs were estimated using a micro-costing method including the costs of salaries, drugs, equipment, and building.
Describe method to allocate human resources inputs	Interviews with staff were undertaken to determine the proportion of staff time spent on each service and the proportional use of equipment for each service.
Describe methods to allocate above site/overhead inputs	BPHS health facilities did not include overhead inputs.
Describe the methods for excluding research costs	NA
Describe the methods for measuring other resources	The percentage of floor space used for each service was measured. The average costs of drugs and supplies used were calculated using the list of prescribed medicine for each service and the pharmacy register book at each of the health facilities.
Principle 8 - The sampling strategy used should be determined by the precision demanded by the costing purpose and designed to minimize bias.	
Site/client selection process/criteria	
Describe geographic sampling (if applicable)	NA
Describe site sampling (if applicable)	A primary data collection was conducted from a random sample of the BPHS health facilities to measure the costs of PBF services at the facility level. The sample size was estimated based on the mean (2.58) and standard deviation (1.74) of cost per personnel in 463 PBF BPHS health facilities with an assumption that this allows error to be 40% of standard deviation in the health facility population. Provided that it was planned to apply

	a sensitivity analysis around those parameters, the estimated number of health facilities was enough to generate sound estimates of parameters for the health facilities.
Describe patient sampling (if applicable)	NA
Describe methods to calculate sample size	<p>The formula below presents the sample size calculation:</p> $\text{Sample size} = \frac{Z^2 * \sigma^2}{d^2}$ <p>Where: $d = 0.4 * \sigma$</p> <p>$z = 1.96$ for two-side test</p> <p>σ = standard deviation of the continues outcome</p>
Principle 9 - The selection of the data source(s) and methods for estimating service use should be described, and potential biases reported in the study limitations.	
Identify the data source used to measure the units	The key data were sourced from a sample of health facilities. Other data were derived from literature.
Where relevant describe the sampling frame, method and size:	NA
Describe any method used to fill missing data	NA
Principle 10 - Consideration should be given to the timing of data collection to minimize recall bias and, where relevant, the impact of seasonality and other differences over time.	
The timing of data collection should be specified in the following ways:	
Timing of data collection (resource and service use)	2014
Prospective or retrospective	Retrospective
Longitudinal vs cross-sectional data	Cross-sectional data
Recall period, where relevant	A month
VALUATION AND PRICING	
Principle 11 - The sources for price data should be listed by input, and clear delineation should be made between local and international price data sources, and tradeable, non-tradeable goods.	
Report the sources of price data by input	Ministry of Public Health
Report inputs where local and international prices were used	Local
Principle 12 - Capital costs should be appropriately annuitized or depreciated to reflect the expected life of capital inputs.	

Describe the depreciation approach	The cost of equipment was annualised and estimated.
Describe any discount rate used for capital goods	To estimate the cost of health facility buildings, a corresponding rental cost of the building was considered.
Report the expected life years of capital goods, and data sources	5 years based on the Ministry of Finance practice
Principle 13 - Where relevant an appropriate discount rate, inflation and exchange rates should be used, and clearly stated.	
Describe any discount rate used for future costs	3%
Describe the reported currency year	US Dollars
Describe any conversions made	1 USD = 54 Afghani
Report the inflation type and rate used	Percentage, GDP deflator/ CPI, Source
Principle 14 - The use and source of shadow prices for goods and for the opportunity cost of time should be reported.	
Methods for valuing the following should be reported:	
Report methods for valuing volunteer time	NA
Report adjustments for input prices (donated or subsidized goods)	NA
ANALYSING AND PRESENTING RESULTS	
Principle 15 - Variation in the cost of the intervention by site size/ organisation, sub-populations, or by other drivers of heterogeneity should be explored and reported.	
Describe any sub-groups or populations analyzed	AN
Describe any statistical methods used to establish differences in unit costs by sub-group	NA
Describe any determinants of cost (model specification)	Free text
Describe any multivariate statistical methods used to analyze cost functions	No used
Principle 16 - The uncertainty associated with cost estimates should be appropriately characterized.	
Describe sensitivity analyses conducted	A wide range (0 – ±30%) one-way sensitivity test, two-way sensitivity analysis as well as a probabilistic sensitivity analysis were applied

List possible sources of bias	We did not observe a major source of bias in this study.
Principle 17 - Cost estimates should be communicated clearly and transparently to enable decision-maker(s) to interpret and use the results.	
Limitations	
Limitations in the design, analysis, and results	The study has some limitations. On the effect side, there may have been a spillover effect from the treatment group into the control group due to the location of the control group and treatment group in the same province, and the movement of staff and the population across facilities. Control health facilities were likely aware of PBF and tried to compete with treatment health facilities on performance. We also had to source some data regarding maternal and neonatal related complications from outside the study. These parameter limitations were addressed by applying a wide-range sensitivity analysis.
Aspects of the cost estimates that would limit generalizability of results to other constituencies	Free text
Conflicts of Interest	
All pecuniary and non-pecuniary interests of the study contributors	No conflict of interest
All sources of funding that supported conduct of the costing	No conflict of interest
Non-monetary sources of support for conduct of the costing	No conflict of interest
Open access	
Dataset available	Yes

Supplementary Table 1. An example of allocation of performance incentives to health facility staff per quarter

Staff	Number of staff	Incentive allocation factor	Total performance payment
MD Doctor	1	20%	\$400
Midwife	1	30%	\$600
Community Health Supervisor	1	15%	\$300
Vaccinator	2	10%	\$400
Guard	2	7.5%	\$300
Total	7	100%	\$2,000

Supplementary Table 2. Incentive payment per service

Indicator	Initial Unit Cost	Revised Unit Cost
Visit of antenatal care	1.5 \$US	2.8 \$US
Skilled birth attendance	12 \$US	37 \$US
Visit of postnatal care	1.5 \$US	2.8 \$US
Pentavalent3 vaccination	3 \$US	3 \$US

Supplementary Table 3. PBF project administration financial cost breakdown

Cost sub-centre	2010	2011	2012	2013	2014	2015	Total
Office equipment	1,055	4,004	2,390	339	607	1,147	9,541
Tax	1,967	9,563	10,395	11,024	8,571	9,962	51,482
Monitoring	5,178	11,993	12,196	13,058	9,679	12,962	65,067
Communication	0	1,595	1,270	1,467	1,370	2,448	8,150
Other costs*	17,489	11,656	8,886	8,854	7,595	8,570	63,050
Total (US\$)	27,698	40,822	37,149	36,755	29,836	37,104	197,290

*Office equipment, workshop, trainings, external audit payments

Supplementary Table 4. PBF programme annual cost per capita (US\$)

	2010	2011	2012	2013	2014	2015	Mean	CI 95% Lower bound	CI 95% Upper bound
Cost per capita (US\$)	0.02	0.3	0.5	0.6	0.5	0.5	0.4	0.2	0.6

CI= Confidence interval

Supplementary Table 5. One-way sensitivity of key parameters

Parameter	Base-case value	Sensitivity analysis range	Base-case ICER (\$US)	ICER at low value	ICER at high value
ANC cost	\$ 4.72	±30%	1,241.3	1,030.2	1,452.9
SBA cost	\$ 48.48	±30%	\$1,241.3	57.4	1,625.7
PNC cost	\$ 5.38	±30%	1,241.3	1,003.7	1,549.3
Management of maternal haemorrhage cost	\$ 0.11	±30%	1,241.3	1,241.1	1,241.7
Management of obstructed labour cost	\$ 69.33	±30%	1,241.3	1,241.1	1,242.6
Management of maternal sepsis cost	\$ 37.46	±30%	1,241.3	1,241.1	1,241.7
Management of hypertensive disorders cost	\$ 57.31	±30%	1,241.3	1,241.3	1,241.8
Management of abortion cost	\$ 45.98	±30%	1,241.3	1,139.3	1,343.8
Safe abortion cost	\$ 31.96	±30%	1,241.3	1,108.8	1,154.3
Management of unsafe abortion cost	\$ 60.00	±30%	1,241.3	1,236.9	1,246.2
Management of low birth cost	\$ 8.91	±30%	1,241.3	1,235.8	1,249.2
Management of neonatal sepsis cost	\$ 21.31	±30%	1,241.3	1,240.5	1,241.6
Management of birth asphyxia cost	\$ 6.34	±30%	1,241.3	1,241.1	1,241.2
ANC rate	0.60	±30%	1,241.3	1,192.6	1,276.7
SBA rate	0.52	±30%	1,241.3	1,088.5	1,465.5
PNC rate	0.55	±30%	1,241.3	1,197.0	1,286.5
Haemorrhage incidence	0.11	±30%	1,241.3	1,240.4	1,242.2
Hypertensive disorder incidence	0.03	±30%	1,241.3	1,227.7	1,246.3
Abortion incidence	0.09	±30%	1,241.3	1,234.2	1,248.6
Unsafe abortion incidence	0.04	±30%	1,241.3	1,142.5	1,359.1
Obstructed labour incidence	0.06	±30%	1,241.3	1,228.2	1,303.1
Severe anaemia incidence	0.09	±30%	1,241.3	1,241.3	1,241.3
Maternal sepsis incidence	0.05	±30%	1,241.3	1,240.2	1,242.4
Fistula incidence	0.02	±30%	1,241.3	1,226.1	1,257.1
infertility incidence	0.09	±30%	1,241.3	1,239.3	1,243.3

Low birth weight incidence	0.17	±30%	1,241.3	1,145.9	1,422.2
Neonatal sepsis incidence	0.02	±30%	1,241.3	1,239.3	1,244.4
Birth asphyxia incidence	0.03	±30%	1,241.3	1,217.2	1,262.3
Severe anaemia duration	0.50	±30%	1,241.3	1,241.3	1,241.3
Fistula duration	41.90	±30%	1,241.3	1,241.3	1,241.3
Infertility duration	17.00	±30%	1,241.3	1,241.3	1,241.3
Low birth weight duration	0.06	±30%	1,241.3	1,241.3	1,241.3
Neonatal sepsis duration	0.04	±30%	1,241.3	1,241.3	1,241.3
Birth asphyxia duration	0.19	±30%	1,241.3	1,241.3	1,241.3
Severe anaemia disability weight	0.16	±30%	1,241.3	1,241.3	1,241.3
Fistula disability weight	0.43	±30%	1,241.3	1,241.3	1,241.3
Infertility disability weight	0.01	±30%	1,241.3	1,241.3	1,241.3
Low birth weight disability weight	0.11	±30%	1,241.3	1,241.3	1,241.3
Neonatal Sepsis weight	0.62	±30%	1,241.3	1,241.3	1,241.3
Birth asphyxia disability weight	0.37	±30%	1,241.3	1,241.3	1,241.3
Discount rate	0.03	0 - 0.1	1,241.3	1,186.2	1,377.6

ANC=antenatal care, SBA= skilled birth attendance, PNC= postnatal care

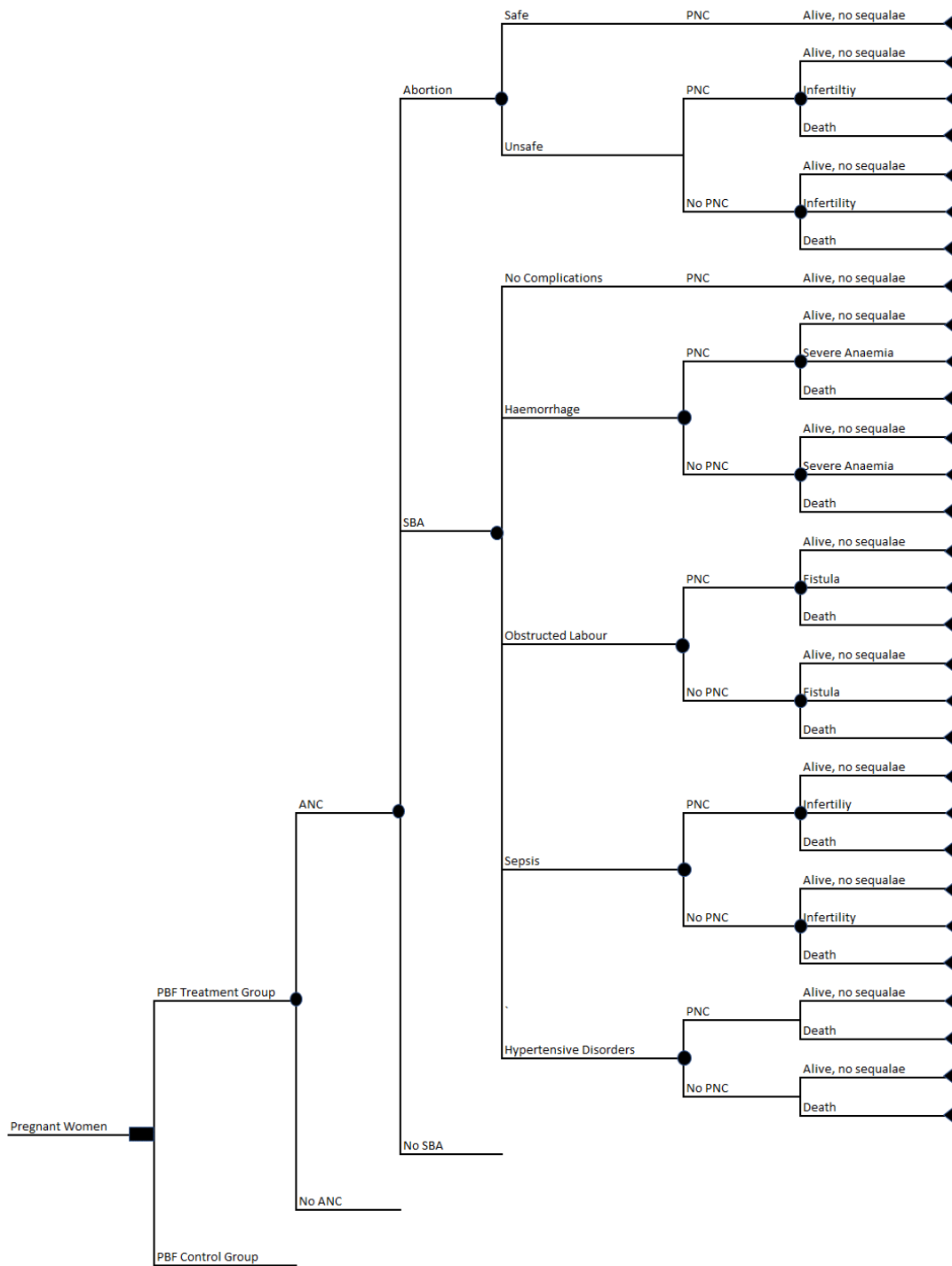
Supplementary Table 5. Two-way sensitivity analysis showing ICER as results of combinations of different levels of incremental costs (US\$) and incremental DALYs

	\$21-00	\$23-00	\$25-00	\$27-00	\$29-00	\$31-00	\$33-00	\$33-91	\$35-00	\$37-00	\$39-00	\$41-00	\$43-00	\$45-00	\$47-00	\$49-00	\$51-00
0-010	2,100	2,300	2,500	2,700	2,900	3,100	3,300	3,391	3,500	3,700	3,900	4,100	4,300	4,500	4,700	4,900	5,100
0-011	1,909	2,091	2,273	2,455	2,636	2,818	3,000	3,083	3,182	3,364	3,545	3,727	3,909	4,091	4,273	4,455	4,636
0-012	1,750	1,917	2,083	2,250	2,417	2,583	2,750	2,826	2,917	3,083	3,250	3,417	3,583	3,750	3,917	4,083	4,250
0-013	1,615	1,769	1,923	2,077	2,231	2,385	2,538	2,608	2,692	2,846	3,000	3,154	3,308	3,462	3,615	3,769	3,923
0-014	1,500	1,643	1,786	1,929	2,071	2,214	2,357	2,422	2,500	2,643	2,786	2,929	3,071	3,214	3,357	3,500	3,643
0-015	1,400	1,533	1,667	1,800	1,933	2,067	2,200	2,261	2,333	2,467	2,600	2,733	2,867	3,000	3,133	3,267	3,400
0-016	1,313	1,438	1,563	1,688	1,813	1,938	2,063	2,119	2,188	2,313	2,438	2,563	2,688	2,813	2,938	3,063	3,188
0-017	1,235	1,353	1,471	1,588	1,706	1,824	1,941	1,995	2,059	2,176	2,294	2,412	2,529	2,647	2,765	2,882	3,000
0-018	1,167	1,278	1,389	1,500	1,611	1,722	1,833	1,884	1,944	2,056	2,167	2,278	2,389	2,500	2,611	2,722	2,833
0-019	1,105	1,211	1,316	1,421	1,526	1,632	1,737	1,785	1,842	1,947	2,053	2,158	2,263	2,368	2,474	2,579	2,684
0-020	1,050	1,150	1,250	1,350	1,450	1,550	1,650	1,695	1,750	1,850	1,950	2,050	2,150	2,250	2,350	2,450	2,550
0-021	1,000	1,095	1,190	1,286	1,381	1,476	1,571	1,615	1,667	1,762	1,857	1,952	2,048	2,143	2,238	2,333	2,429
0-022	955	1,045	1,136	1,227	1,318	1,409	1,500	1,541	1,591	1,682	1,773	1,864	1,955	2,045	2,136	2,227	2,318
0-023	913	1,000	1,087	1,174	1,261	1,348	1,435	1,474	1,522	1,609	1,696	1,783	1,870	1,957	2,043	2,130	2,217
0-024	875	958	1,042	1,125	1,208	1,292	1,375	1,413	1,458	1,542	1,625	1,708	1,792	1,875	1,958	2,042	2,125
0-025	840	920	1,000	1,080	1,160	1,240	1,320	1,356	1,400	1,480	1,560	1,640	1,720	1,800	1,880	1,960	2,040
0-026	808	885	962	1,038	1,115	1,192	1,269	1,304	1,346	1,423	1,500	1,577	1,654	1,731	1,808	1,885	1,962
0-027	769	842	915	989	1,062	1,135	1,208	1,242	1,282	1,355	1,428	1,501	1,574	1,648	1,721	1,794	1,867
0-028	750	821	893	964	1,036	1,107	1,179	1,211	1,250	1,321	1,393	1,464	1,536	1,607	1,679	1,750	1,821
0-029	724	793	862	931	1,000	1,069	1,138	1,169	1,207	1,276	1,345	1,414	1,483	1,552	1,621	1,690	1,759
0-030	700	767	833	900	967	1,033	1,100	1,130	1,167	1,233	1,300	1,367	1,433	1,500	1,567	1,633	1,700
0-031	677	742	806	871	935	1,000	1,065	1,094	1,129	1,194	1,258	1,323	1,387	1,452	1,516	1,581	1,645
0-032	656	719	781	844	906	969	1,031	1,060	1,094	1,156	1,219	1,281	1,344	1,406	1,469	1,531	1,594
0-033	636	697	758	818	879	939	1,000	1,028	1,061	1,121	1,182	1,242	1,303	1,364	1,424	1,485	1,545
0-034	618	676	735	794	853	912	971	997	1,029	1,088	1,147	1,206	1,265	1,324	1,382	1,441	1,500
0-035	600	657	714	771	829	886	943	969	1,000	1,057	1,114	1,171	1,229	1,286	1,343	1,400	1,457

0-036	583	639	694	750	806	861	917	942	972	1,028	1,083	1,139	1,194	1,250	1,306	1,361	1,417
0-037	568	622	676	730	784	838	892	916	946	1,000	1,054	1,108	1,162	1,216	1,270	1,324	1,378
0-038	553	605	658	711	763	816	868	892	921	974	1,026	1,079	1,132	1,184	1,237	1,289	1,342
0-039	538	590	641	692	744	795	846	869	897	949	1,000	1,051	1,103	1,154	1,205	1,256	1,308
0-040	525	575	625	675	725	775	825	848	875	925	975	1,025	1,075	1,125	1,175	1,225	1,275
0-041	512	561	610	659	707	756	805	827	854	902	951	1,000	1,049	1,098	1,146	1,195	1,244
0-042	500	548	595	643	690	738	786	807	833	881	929	976	1,024	1,071	1,119	1,167	1,214
0-043	488	535	581	628	674	721	767	789	814	860	907	953	1,000	1,047	1,093	1,140	1,186
0-044	477	523	568	614	659	705	750	771	795	841	886	932	977	1,023	1,068	1,114	1,159
0-045	467	511	556	600	644	689	733	754	778	822	867	911	956	1,000	1,044	1,089	1,133
0-046	457	500	543	587	630	674	717	737	761	804	848	891	935	978	1,022	1,065	1,109
0-047	447	489	532	574	617	660	702	721	745	787	830	872	915	957	1,000	1,043	1,085
0-048	438	479	521	563	604	646	688	706	729	771	813	854	896	938	979	1,021	1,063
0-049	429	469	510	551	592	633	673	692	714	755	796	837	878	918	959	1,000	1,041
0-050	420	460	500	540	580	620	660	678	700	740	780	820	860	900	940	980	1,020

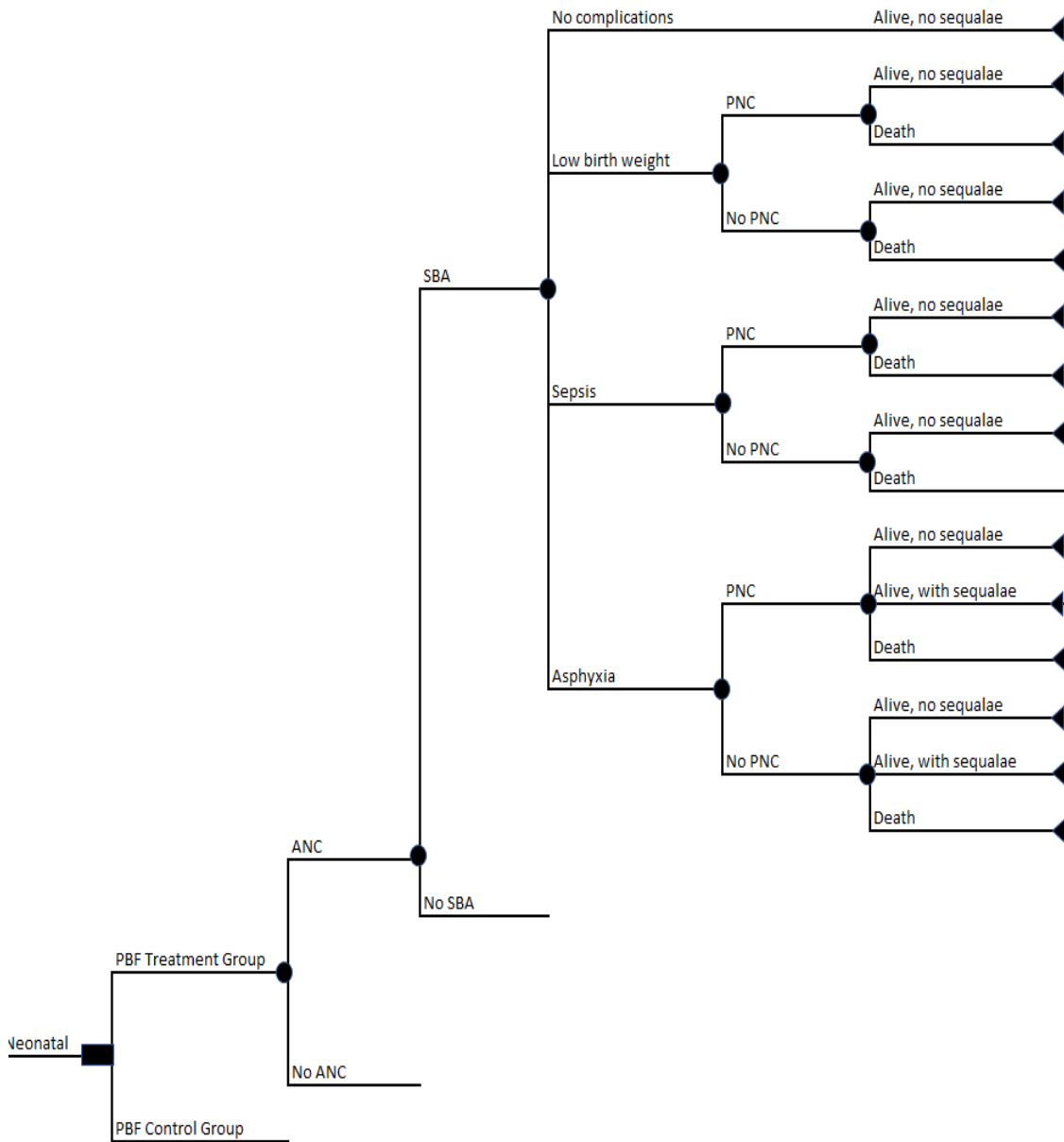
Incremental Costs (US\$)

Supplementary Figure 1. Maternal Decision Analytical Model



ANC= antenatal care, SBA= skilled birth attendance, PNC= postnatal care

Supplementary Figure 2. Maternal Decision Analytical Model



ANC= antenatal care, SBA= skilled birth attendance, PNC= postnatal care

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Annexe 6. Ethics Committee Approval

London School of Hygiene & Tropical Medicine
Keppel Street, London WC1E 7HT
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Observational / Interventions Research Ethics Committee

Mr Ahmad Shah Salehi
Research Degree Student
GHD / PHP
LSHTM

12 August 2014

Dear Mr. Salehi,

Study Title: An economic evaluation of results-based financing intervention within the basic package of health services in Afghanistan

LSHTM Ethics Ref: 8438

Thank you for your letter of 8 August 2014, responding to the Observational Committee's request for further information on the above research and submitting revised documentation. The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

Approval is dependent on local ethical approval having been received, where relevant.

Approved documents

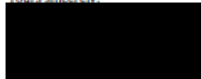
The final list of documents reviewed and approved by the Committee is as follows:

Document Type	File Name	Date	Version
Advertisements	Interview guide.docx	26/06/2014	1
Protocol / Proposal	Ahmad PhD research Protocol 27 June.docx	27/06/2014	1
Information Sheet	Informed Consent form_modified_clean_08 August 2014.docx	08/08/2014	1

After ethical review

Any subsequent changes to the application must be submitted to the Committee via an Amendment form on the ethics online applications website. The Principal Investigator is reminded that all studies are also required to notify the ethics committee of any serious adverse events which occur during the project via an Adverse Event form on the ethics online applications website. At the end of the study, please notify the committee via an End of Study form on the ethics online applications website. Ethics online applications website link: <http://leo.lshtm.ac.uk>

Yours sincerely,



Professor John DH Porter
Chair

ethics@lshtm.ac.uk
<http://www.lshtm.ac.uk/ethics/>

Improving health worldwide



Islamic Republic of Afghanistan
Ministry of Public Health
Afghanistan National Public Health Institute
Institutional Review Board

Date: 15/Dec./2013

جمهوری اسلامی افغانستان
وزارت صحت عامه
انستیتوت ملی صحت عامه افغانستان

د افغانستان اسلامي جمهوریت
د علمي روغتیا وزارت
د افغانستان ملي روغتیا او صحت انستیتوت



No. 356413

To: Dr. Ahmed Shah Salehi
Health Economics and Financing Directorate

Subject: Approval for proposal entitled, "Qualitative Assessment of the Result Based Financing Project".

Dear Sir,

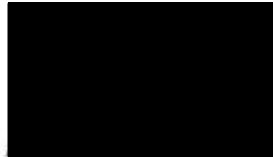
Institutional Review Board, Ministry of Public Health has examined and reviewed your proposal entitled, "Qualitative Assessment of the Result Based Financing Project".

We are pleased to note satisfactory response therefore, your study is approved. However, we reserve the rights to monitor and audit your study and any violation of ethical norms during the course of study shall lead to withdrawal of given approval.

The duration of approval for a study to begin the research project is valid for six months and the exact date of research project implementation (start and end) should be informed to IRB secretary.

You are bound to share the result of your study with MoPH prior any dissemination plan.

Sincerely,



Bashir Noormal MD,
Director General
Afghanistan National Public Health Institute (ANPHI) &
Chairman, Institutional Review Board (IRB)
Ministry of Public Health



To: Dr. Ahmad Shah Salehi,
PhD Candidate LSHTM

Subject: Approval for proposal entitled, "Contracting Non-State Providers (NSPs) for Universal Health Coverage in Afghanistan: A Case Study of Contextual, and Institutional Factors Influencing Performance of Contracted NSPs".

Dear Salehi,

Institutional Review Board, Ministry of Public Health has examined and reviewed your proposal entitled, "Contracting Non-State Providers (NSPs) for Universal Health Coverage in Afghanistan: A Case Study of Contextual, and Institutional Factors Influencing Performance of Contracted NSPs".

We are pleased to note satisfactory response therefore, your study is approved. However, we reserve the rights to monitor and audit your study and any violation of ethical norms during the course of study shall lead to withdrawal of given approval.

The duration of approval for a study to begin the research project is valid for six months and the exact date of research project implementation (start and end) should be informed to IRB secretary.

You are bound to share the result of your study with MoPH prior any dissemination plan.

Sincerely,



Bashir Noormal MD, MPH
Director General
Afghanistan National Public Health Institute (ANPHI) &
Chairman, Institutional Review Board (IRB)
Ministry of Public Health

RESEARCH

Open Access



Factors influencing performance by contracted non-state providers implementing a basic package of health services in Afghanistan

Ahmad Shah Salehi^{1*}, Abdul Tawab Kawa Saljuqi², Nadia Akseer³, Krishna Rao⁴ and Kathryn Coe⁵

Abstract

Background: In 2002 Afghanistan's Ministry of Public Health (MoPH) and its development partners initiated a new paradigm for the health sector by electing to Contract-Out (CO) the Basic Package of Health Services (BPHS) to non-state providers (NSPs). This model is generally regarded as successful, but literature is scarce that examines the motivations underlying implementation and factors influencing program success. This paper uses relevant theories and qualitative data to describe how and why contracting out delivery of primary health care services to NSPs has been effective.

The main aim of this study was to assess the contextual, institutional, and contractual factors that influenced the performance of NSPs delivering the BPHS in Afghanistan.

Methods: The qualitative study design involved individual in-depth interviews and focus group discussions conducted in six provinces of Afghanistan, as well as a desk review. The framework for assessing key factors of the contracting mechanism proposed by Liu et al. was utilized in the design, data collection and data analysis.

Results: While some contextual factors facilitated the CO (e.g. MoPH leadership, NSP innovation and community participation), harsh geography, political interference and insecurity in some provinces had negative effects. Contractual factors, such as effective input and output management, guided health service delivery. Institutional factors were important; management capacity of contracted NSPs affects their ability to deliver outcomes. Effective human resources and pharmaceutical management were notable elements that contributed to the successful delivery of the BPHS. The contextual, contractual and institutional factors interacted with each other.

Conclusion: Three sets of factors influenced the implementation of the BPHS: contextual, contractual and institutional. The MoPH should consider all of these factors when contracting out the BPHS and other functions to NSPs. Other fragile states and countries emerging from a period of conflict could learn from Afghanistan's example in contracting out primary health care services, keeping in mind that generic or universal contracting policies might not work in all geographical areas within a country or between countries.

Keywords: Contracting out, Non-state providers, Afghanistan

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Full list of author information is available at the end of the article

Background

Afghanistan has experienced profound difficulties over the past decades, especially since the 1978 invasion by the former Soviet Union which led to political instability, pervasive conflict and, at times, outright war. In 1992, the Mujahedeen (groups of religiously-driven warriors) took power, initiating a new period of civil war and inter-Mujahedeen conflicts. From 1996 until November 2001, the Taliban emerged as the ruling group in the country with a limited interest in the development of health systems [1].

In December 2001, a new democratic government was established in Afghanistan with international support. The new government inherited extreme disorder in the health sector. No policies were in place to guide the delivery of services and there was a notable lack of coordination among the many actors working on health. The health sector was characterized by the absence of infrastructure, lack of capacity in the public sector, the shortage of health human resources, and inconsistency in the quality of services being delivered [2]. Health outcomes were poor as a result of the disarray: the maternal mortality rate in Afghanistan at that time was one of the highest in the world (1600/100,000 live births) and the under-five mortality rate was one of the worst in the region (257/1000 live births) [2]. Given these challenges, the development of a functioning health care system, which included a program that prioritized maternal and child health, was deemed by the new government to be critically important.

Six months after the new government took power, in May 2002, the Ministry of Public Health (MoPH) established a Basic Package of Health Services (BPHS) with technical support from donors and international organizations. The BPHS was designed to ensure equitable access to a core set of health services in remote and underserved populations. In recognition of the extent of its problems, the Afghan health sector adopted a new paradigm for operations. While health care services were regarded previously as a state responsibility, in 2002 the MoPH and its development partners decided to contract-out (CO) delivery of vital health care services to non-state providers (NSPs) [3]. This paradigm shift was critically important given that, after decades of war, the newly-established government did not have sufficient capacity to deliver health care to the most underserved in the population.

To rapidly scale up country-wide delivery of the BPHS, the MoPH needed NSPs [4]. NSPs (both formal and informal) already provided a wide range of health care services and had extensive geographic reach. Formal NSPs such as non-governmental organizations (NGOs) had extensive local networks, roots and experience providing health services in districts not controlled by the central government. NGOs—most of which had headquarters in Peshawar, Pakistan—had trained and supported Afghan

health providers in many provinces and had gained the trust of communities. These NGOs were well-placed to assume more responsibility for delivering health care services [5].

The MoPH launched BPHS implementation in 2003 with financial support from the United States Agency for International Development (USAID), the World Bank (WB), the European Union (EU) and others in the international community. 31 of 34 provinces were contracted with NSPs and were supported by different donors. As a result, different contracting mechanisms were established to implement the standardized and unified BPHS across the country. The MoPH served as the steward and owner of the program.

More than a decade later, the program's impact was evident in increased health services coverage (defined in terms of having a health facility within walking distance), from 9% in 2002 to 67% in 2015. The country has also made impressive improvements in health systems performance indicators including maternal and child health [6–8].

Proponents of contracting out in Afghanistan have regarded it as effective in rapidly scaling up health services throughout the country [5, 9–13] but critics have expressed concerns about sustainability and cost effectiveness [14–17]. The factors that have promoted the success of contracting out to NSPs in Afghanistan are not yet well understood. Identifying these factors would provide important lessons for Afghanistan and, more generally, for comparative studies of health systems in fragile states.

Contracting of health services to NSPs is an increasingly prevalent trend in developing countries [18]. Loevinsohn and Harding conducted a comprehensive review of 10 CO mechanisms in low-resource settings. They found that the systems for contracting out needed to be adjusted to address specific needs in each country's unique context [19, 20]. Moreover, the authors argue, optimal service delivery outcomes are likely to result under the following conditions: when the NSP maintains autonomy from the state; when a focus is placed on outcomes, outputs and cost-effectiveness; and when rigorous evaluation of the contracted-out projects is planned for and conducted on a regular basis.

A few studies have been conducted in Afghanistan on contracting of NSPs. One review discussed contractual factors, such as how partners are selected and what payment mechanisms are used [20]. Though this review focused on the level of quality of care provided by NSPs, and identified some factors associated with variations in quality, it did not explore contextual or institutional factors related to the contracting structure. The present study aims to address this gap in the literature on health system development in Afghanistan with an in-depth evaluation of the factors underlying the successes and continuing challenges facing a health system in transition from post-conflict

development to long-term sustainability. The main aim of this study was to identify the contextual, institutional, and contractual factors that influenced CO of NSPs and their performance during the period 2003 to 2013.

Methods

Conceptual framework

Our evaluation of Afghanistan’s CO mechanism for BPHS used a conceptual framework developed by Liu et al. as a foundation and a guide for designing the study, developing data collection tools, and analyzing data [21]. Using the Liu et al. framework provided guidance on methodology. Further, it enables comparisons of the situation in Afghanistan with that of other contracting schemes in other contexts that have also been assessed using the same framework. While the specifics of the geographical and historical situation in Afghanistan are unique, adopting a tested and proven framework contributes to the validity of the findings and makes the findings comparable with other situations.

As the Liu et al. framework suggests, this study sought to develop an overview of the contextual, institutional and contractual arrangements that have influenced NSP performance (see Fig. 1) [19, 21]. The study identifies various factors. The study also reviews program performance measures, including “contractual factors”, “contextual factors” (or the external environment) and “institutional

factors” (such as hiring and retention of staff, and interactions between providers and purchaser). It sought to capture both intended and unintended effects.

As suggested by Liu et al., the research team conducting this evaluation was not directly involved in the delivery of services in the provinces where the research was carried out. The research team was external to the provinces of interest, and comprised the primary investigator (PI), three co-investigators (COI), six field investigators (FI) and one research coordinator.

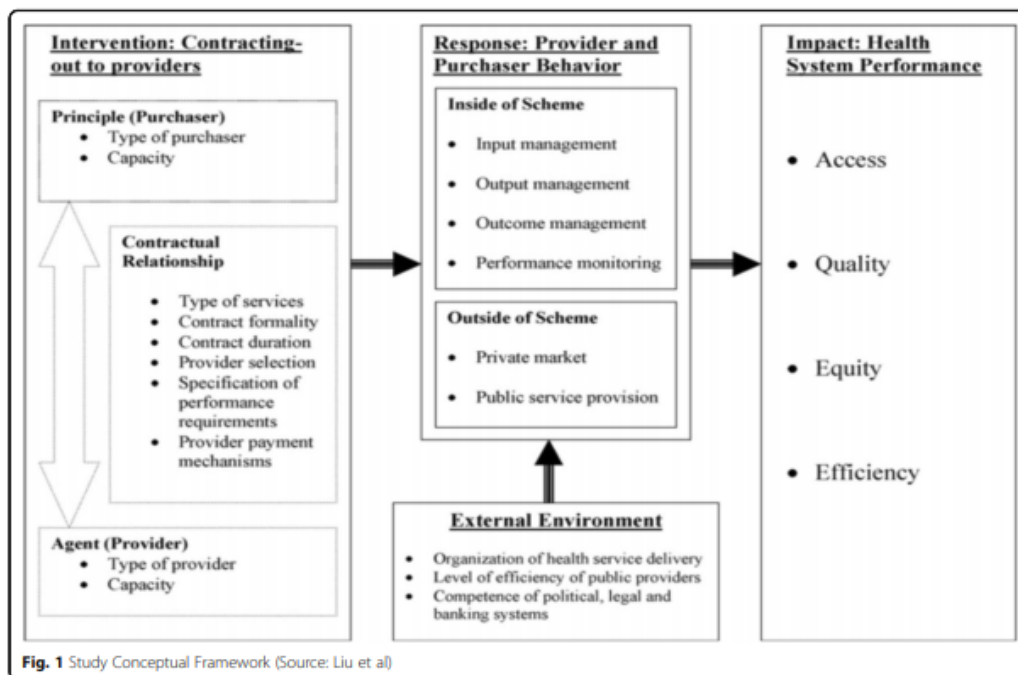
In order to represent the varying contexts in Afghanistan, the research was conducted in six provinces: Balkh, Bamyan, Herat, Kabul, Kandahar, and Nangarhar. Aspects of the context included the level of security, geographical features, ethnic variations (i.e. including both Pashtun and Tajik majority provinces), the donors involved (i.e. The World Bank, USAID and EU), and implementing NSP organization.

Data sources

Three main data collection methods were used: desk review, individual interviews and focus group discussions.

Desk review

Our literature review explored a range of documents pertaining to the research objectives, including addressing



critical issues and major policy arguments related to the role of NSPs in Afghanistan. The desk review incorporated academic papers, gray literature, reports, and official policy documents.

Qualitative data collection methods: KI interviews and FGDs

Liu et al. note that qualitative data provides rich insights on factors influencing program effectiveness. In line with this comment, this study involved two qualitative data collection methods: in-depth interviews with key national and provincial stakeholders and focus group discussions with local-level stakeholders. We used a purposeful sampling technique to ensure diversity among our respondents [22]. The sampling plan was stratified according to different categories of stakeholders: representatives of the MoPH at both the central and provincial levels, donors, UN agencies, NGOs, health care workers, and health professional associations. The variety allowed the team to explore perceptions and ideas from a diverse group, identifying similarities and divergences across the respondent categories.

The stakeholder and focus group interview guides were developed by the core research team (PI and COIs). The guides were translated into both the Dari and Pashto languages and then cross-translated, piloted, and corrected in order to finalize the study instrument. All interviews and discussions were conducted in either the Dari or Pashto language based on participant preference. Transcriptions were generally made on the same day (or as soon as possible) by the field investigators (FIs), who used both their field notes and recordings to ensure accurate transcription of interviews.

The FIs carried out 36 in-depth interviews and 6 FGDs across all categories of study participants. By design, we focused on health workers' experiences with the contracting out mechanism; no patients or beneficiaries were included in the study. Table 1 lists all types of interviewees and their affiliations. The interviewees for in-depth interviews were selected using purposeful sampling that considered institutional affiliation (i.e. government or NSP), geographical distribution (representing all the provinces where the study was conducted), and function in the system (policy maker, manager or field level worker). Interviews were conducted at the respondents' workplaces or other locations where the participants felt comfortable.

The participants for the FGDs were also selected through a purposeful sampling process that sought to keep the composition of the FGDs constant across provinces. The members of each FGD were recruited based on predefined criteria and in collaboration with local health authorities. Characteristics of FGD participants are summarized in Table 2. The FGDs were conducted in neutral settings where the participants could freely express themselves.

The FIs who collected the data were recruited and trained in March and April 2016 by the PI and COIs. The field work, led by the PI and coordinated by the research coordinator, was conducted in June and August 2016. Only the research team had access to the data collected and all interviews and FGDs were assigned codes to preserve anonymity when citing quotations.

Data analysis

Interview transcriptions and field and diary notes were included in the data analysis. We used content analysis to consider the key issues, elements and outcomes [23]. Topics and concepts were identified, highlighted and placed in categories of association. Themes and statements were coded according to the conceptual framework. Representative quotes were selected and allocated to the relevant classifications. Common viewpoints were described, and particularly important responses were elucidated. Finally, each category was studied and discussed by the research team to develop interpretations of the data that addressed the aims and objectives of the study.

Findings from the interviews and FGDs were triangulated with other data sources in four ways. First, the research team assessed the consistency of the findings generated using the different data collection methods. Second, we examined the consistency of different data from the same method. For instance, we compared multiple sources' perspectives about the procurement of medical supplies, a topic we discussed with donors, MoPH policy makers and NSPs. Third, multiple analysts reviewed all findings. Fourth, we used various perspectives and theoretical frameworks when interpreting the data. In all cases we made sure that the personal opinions of the research team members were not reported as part of the results.

Combining multiple observers, theories, methods, and data sources helped to avoid problems created by collecting data using only a single method or from only one source. The breadth of perspectives included in the analysis allowed us to comprehensively assess the program and isolate the impact of CO. This was frequently difficult, given the prevalence and severity of problems such as those posed by the environment in parts of Afghanistan [21].

Results

The results of the study are presented in line with the study's main objective: to understand the key contextual, contractual and institutional factors that have influenced contracted NSPs' performance in delivering the BPHS in Afghanistan. These factors are presented in brief in Table 3. Each factor is discussed in detail in the following sections.

The Liu et al. framework proposes that creating an impact on the health status of a population through contracting out depends on the interplay among three types

Table 1 Sampling frame for in depth key informant interviews (KIs)

Institution	Person(s) to be Interviewed	Number (n)	Reason for Selection
Central Ministry of Public Health (MoPH)	Deputy Minister of Policy and Planning	1	One of four people at MoPH who initiated the contract-out mechanism and continues to oversee the provision of health services by NSPs
	General Director, Policy and Planning	1	Has essential information on contextual, contractual and institutional standards and variations
	Head of Health Management Information System (HMIS)	1	HMIS manages self-reported data from the NSPs on a monthly basis; the department has been involved since the start of the BPHS
	Head of Monitoring & Evaluation (M&E)	1	The department works with the third-party evaluator to develop and oversee the BSC
	Head of Grant and Contract Management Unit (GCMU)	1	GCMU was created specifically for the purpose of facilitating the contracting process; manages procurement, contract management and compliance evaluation of the NSPs for implementation of BPHS
	Provincial Liaison Director	1	Responsible for coordinating provincial-level activities; can provide detail on provinces
Provincial MoPH	Provincial Health Directors	6 (one per province, six provinces)	Provide key information about the context, type of contract and institutional factors for the respective provinces
Third Party Evaluator (Johns Hopkins University and Indian Institute for Health Management and Research)	Evaluator	1	Assessed the performance of BPHS across the country from 2004 to 2013, applying BSC and conducting household surveys
Donors (USAID, WB, EU)	Health team leaders	3 (3 main donors)	Represent the interests and opinions of the three main donors supporting the CO program
Non-state providers (NSPs)	NSP Managers, Kabul (national and international NGOs)	6 (one per province, six provinces)	Understand the type of contract in their province; provide key information about contractual arrangements, context and institutional factors
	Provincial NSP managers	6 (one per province, six provinces)	Province-specific input to contextualize information and get field-level knowledge about each contracted NSP
	Heads of health facilities	12 (two per province, six provinces)	Views of frontline health workers on CO and the contractual, institutional and contextual variations

Table 2 Sampling frame for focus group discussions

Institution	Participant	Number (n)	Reason for Selection
MoPH	Preventive Health Care (PHC) Officer	1	Is aware of all the contractual and service delivery programs in the province
	HMIS Officer	1	Responsible for collection of data from all health facilities at the provincial level and relaying it to central HMIS in Kabul; collects all indicators of BPHS on a monthly basis
	Reproductive Health Officer	1	Provides technical perspective on components of BPHS related to maternal and child health services
	Expanded Program of Immunization (EPI) Officer	1	EPI is the largest health program in the country; officers are experienced and familiar with NSP service provision
NSPs	Deputy Project Manager	1	Oversees monitoring and evaluation of all programs under contract
	Finance Manager	1	Manages inputs and financial mechanisms of NSPs; understands provider payment mechanisms
	Community Supervisor	1	Provides views from community and frontline health workers

Table 3 Factors Assessed in this Study

Category of Factor	Contractual	Institutional
Contextual		
• Sociocultural environment	• Contractor selection	<i>External</i>
• Political environment	• Contract duration	• Performance monitoring
• Legal and policy environment	• Contractual requirements	
• Geography	• Types, formality and duration of services to be provided	<i>Internal</i>
	• Payment mechanism	• Inputs, outputs and outcomes

of factors: contractual, contextual and institutional [21]. When these three sets of factors interact effectively, the health system produces better outcomes, namely: quality, access and coverage of health services. These, in turn, combine to produce the final goals: improved and equitable health status of the population. For example, favorable contextual factors pave the way for a better contractual mechanism to function, which in turn smooths potential pitfalls faced by the institutions involved. The interactions among the three types of factors are therefore as centrally important as identifying and categorizing the factors. These interactions are depicted in Fig. 2.

In the following sections we describe how each factor contributes to improving the performance of the CO mechanism for NSPs contracting-out. We then discuss how their interaction produces impact.

Contextual factors

Contextual factors include any conditions that create either a conducive or unfavorable environment for an effective program of contracting-out. In Afghanistan, the socio-cultural and geographic factors were long-standing conditions. On the other hand, the political changes that followed the fall of the Taliban created a new legal and

policy foundation for contracting out. Table 4 summarizes the contextual factors that emerged from the study data.

Sociocultural norms

Sociocultural norms at provincial level were identified by all categories of participants, from policy makers at the MoPH to donors to provincial- and field-level health workers, as a key factor influencing the delivery of health services [MoPH-02][DPR-01][HW-07][PPHD-07]. For example, in some provinces it is culturally unacceptable for a male health worker to examine a female patient. Coupled with a relative lack of women with higher education, leading to a shortage of local female health workers, this situation compromises health care access for women. In other provinces, different sociocultural rules about female modesty and gender apply. In these provinces, socio-cultural norms allow women to be examined by male health workers and as a result, women have better access to health care regardless of educational level. For instance, in Bamyan women actively participate in the health care system, which is functioning. Women provide some health services, and female and male health workers working together is the norm. In other parts of the country, such as Nooristan, this would not be considered culturally acceptable, requiring a different health system structure [MoPH-02].

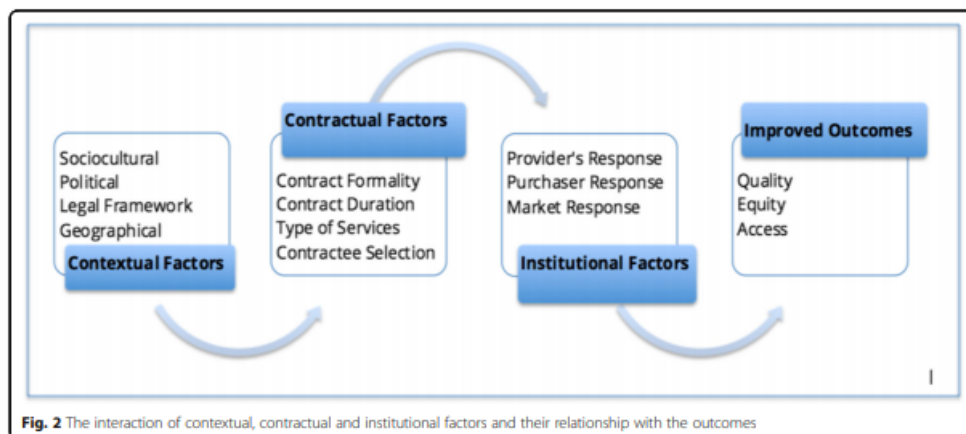


Fig. 2 The interaction of contextual, contractual and institutional factors and their relationship with the outcomes

Table 4 Summary of contextual factor findings

Contextual factor	Features (positive (+) or negative (-) impact) affecting contracting-out
Sociocultural environment	<ul style="list-style-type: none"> • Ethnic and religious traditions and cultures (+/-) • Traditional gender constructs (-) • Social capital and culture of community participation (+)
Political, policy and legal environment	<ul style="list-style-type: none"> • Capacity and structure of provincial health departments (+/-) • Influence of political leadership on hiring of staff and implementation of services (-) • Conflict and insecurity (-) • MoPH and central government's enabling legal and policy environment (+)
Geography	<ul style="list-style-type: none"> • Accessibility of health services to population (+/-) • Willingness of health professionals to serve in remote/insecure areas (+/-) • Ease of access for supplies (+/-) • Ease of access for monitoring (+/-)

Political and security factors

Successful leaders are marked by their ability to maintain close relationships with local people and agencies [24]. The level of, capacity at, and structure of, the provincial health department was mentioned by participants as a key element affecting the delivery of health services in general, and contracted-out services in particular. Participants' views were similar at the central and provincial levels. For instance, policy makers in Kabul felt that a provincial health director could facilitate better provision of health services by NSPs by making resources available and promoting the success of health service delivery efforts [MoPH-02]. The capacity and structure of the provincial health department is linked to other provincial leaders such as political figures, influential local residents and the provincial governor. However, all participants described unwanted political interference in decisions related to the delivery of health services, such as choosing where to deliver services, pushing for the hiring and firing of certain health workers or contracting with specific companies for logistical support. One respondent stated:

Sometimes the politicians interfere [with the implementation of the health services]. They recommend to the NGO an irrational establishment of a health center. [As a result] underutilized clinics are created due to political reasons. The CHC [Comprehensive Health Center] is established but population around it is not sufficient [to reach the targeted number of clients]. [DPR-01]

Political interference has proven a key challenge to contracting out programs, as NSPs have to work with local officials, warlords, members of Parliament and other influential members of the community on a regular basis. [MGR-03].

Provision of services by NSPs was also considered a challenge to government authority. Several provincial government officials interviewed reported that the CO mechanism has undermined the role of the government in service provision, consequently calling into question the legitimacy of the government. Government officials expressed concern

that the population only perceives that the services are provided by NSPs and does not understand the government's role in providing health care services [PPHD-06] [PPHD-04].

Respondents in all categories unanimously stressed that security is an essential factor in creating an enabling environment for the effective provision of health services by NSPs. Respondents from Nangarhar and Kandahar expressed the most concern about security. Insecurity is debilitating to the delivery of health care. Several interviewees described the impact of worsening security in some provinces after 2007. Increasing insecurity in these areas affected both the delivery of services and reduced the ability of the MoPH to conduct monitoring and supervision [MoPH-02]. Those NSPs with long-established relationships with local communities have generally managed to continue delivering services even in areas controlled by anti-government groups, although many incidents were mentioned when clinics had to close, or were even attacked, during a local conflict. A respondent from one of the least secure areas summarized the problem:

War, and the local situation, have huge impact on [health services]. If somewhere there is war and the situation is not normal then an NGO can't find qualified staff and can't provide [health services]. [PPHD-06]

Geography

Geographical features also have a significant impact on the reach and effectiveness of health services. Each province of Afghanistan has distinct geographical characteristics that affect the distribution of health facilities and provision of health services. It is particularly difficult to guarantee regular supplies of medicines and medical equipment in hard-to-reach areas in mountainous regions. The difficult geography is compounded by challenges created by the climate. NSPs have to plan ahead to maintain services during often long periods of road closures in winter.

Many NSPs, therefore, prefer to provide services in regions that are easier to access. NSPs with contracts to deliver health services in regions with harsh geography need to develop innovative strategies, in particular to incentivize recruitment and retention of health professionals willing to work in difficult conditions. Several participants from NSPs mentioned instances when they had to offer more benefits to get staff to accept positions in hard-to-reach areas. This was particularly the case for female doctors, whose packages might include also hiring the doctor's husband, providing hardship payments and offering special vacation opportunities [PMGR-03]. One participant described that:

NGOs' salary rates are according to geographical grading. It's different in different provinces. The hard-to-reach areas and conflict-affected areas have more salary. [HW-303]

Contextual factors lay the foundation on which institutional responses are built and in terms of which the contractual factors are defined.

Contractual factors

The category of contractual factors includes various aspects of the contracting mechanism: types of services covered, contract formality, contract duration, contractor selection, specifications of requirements, processes of contract implementation, output and outcome indicators and finally the contract payment mechanism.

Types of services

Respondents were generally able to describe the main types of services contracted out by the government to NSPs (including BPHS and the Essential Package of Hospital Services (EPHS)) and those provided directly such as provincial hospital services. One focus group agreed:

[The] Basic Package of Health Services provided in [our] province includes all the BPHS components, such as maternal and neonatal health services, immunization and child health services, public nutrition, control of communicable diseases services, mental health and disability health services, and pharmaceutical services. There is also EPHS, which provides secondary health services through the regional hospital in [a neighboring] province. The EPHS is a contracting-in mechanism in [our] province. [FGD-02]

Some respondents also mentioned contracting of capacity building programs and research projects.

Contract formality

MoPH policy makers expressed generally favorable perspectives on the contracts in the CO mechanism. Several respondents mentioned that the selection process established for CO and the creation of the Grants and Contracts Management Unit (GCMU) have become examples that other national sectors seek to follow [MoPH-02] [PPHD-02]. From the outset, the BPHS program has emphasized formality in its contracts. They require NSPs to abide by all governmental laws (after undergoing a rigorous selection process). These strictures enabled the NSPs and the government alike to trust each other, and fostered reliability of the services.

Contract duration

Both NSP managers and MoPH officials interviewed noted that contract durations differed by donor, and that contracts were commonly extended beyond the original contractual agreement. While the initial contract durations ranged from 18 to 36 months (with an average of 26 months), extensions lengthened them. One MoPH official explained:

[The durations] are different, normally between two and three years. But these [contracts] were extended. Even if it is for three years, it is subject to the evaluation by the [third party] organizations. Performance review is a condition for the extension. There were extensions up to five years. The PCH [partnership contracts for health], for instance, started in 2009 and in the second year it was evaluated and extended to the third, and finally it was extended to five years. The small project [non-BPHS] did not last more than six or seven months. [MOPH-02]

Respondents had mixed reactions towards the extensions. Some argued that the extensions of contracts had a positive effect on service delivery by preventing disruptions that would occur with another long tendering process. This view was supported by NSPs, who stressed that the longer an NSP worked in a given location, the stronger their relationship with the community [PMGR-02]. However, others presented a different viewpoint. This view was widely expressed by provincial MoPH authorities, who reported that following an extension the NSPs tended to relax, undertaking fewer quality improvement efforts or innovations [PPHD-05]. Another concern raised about contract extensions was that they reduce competition, undermining its benefits.

Contractor selection and parties to the contracts

Funding for the contracts comes from multiple donors with the MoPH now serving as the purchaser; in the earlier stages of the CO program, donors interacted

directly with NSPs believing that the government lacked the requisite capacity for financial management and procurement. Indeed, some donors temporarily used their own mechanisms for procurement of NSPs until the government's procurement capacity was ready to manage a large program like the BPHS [PPHD-01]. Once the MoPH had developed the capacity to handle procurement for large scale programs, a unified system was developed with the leadership of the MoPH. This transition occurred gradually, beginning with the 2003 transfer to GCMU of contract management for all the World Bank funded provinces. In 2010 USAID delegated its contract management to the MoPH, as did the EU in 2013 [5].

The study reviewed the contract specifications from the MoPH. According to these documents, the process for contracting out to NSPs is well-designed and clear. The process is governed by the MoPH with active participation from relevant stakeholders, including provincial health directors. A selection committee (GCMU officers, provincial health director, UN agency representative and MoF representative) reviews and awards contracts, while the administrative aspects are managed by GCMU.

While the process seemed clear on paper, interviewees expressed concerns. Some respondents suggested that there was little real competition. Some felt that the participation of provincial health directors was merely symbolic; moreover, MoPH officials at both central and provincial levels expressed concern that a small number of Provincial Public Health Directors (PPHDs) were unable to be impartial.

Specification of contract requirements

BPHS and EPHS documents specify the services to be provided by NSPs. They detail the requirements for all processes, inputs and monitoring, as well as targets for outputs and outcomes. Among our respondents, MoPH managers, donors and central NSP managers had more precise knowledge of these details than health workers and provincial managers.

Implementation of contracted services

The process for implementing health services is specified by the BPHS implementation guidelines. Each contract includes a log frame and approved and agreed-on indicators that help guide implementation and monitoring and evaluation of the performance of NSPs. Thus there is a common understanding between the government purchaser (MoPH) and the NSP contractors about what types of services are to be provided and how they should be implemented [MoPH-03].

In this study, all groups of respondents demonstrated high levels of awareness of performance specifications and most discussed performance indicators. The responses from NSP employees in particular showed that these indicators play a meaningful role in ensuring that

services are delivered per the plans and expectations of the contracts [PMGR-01],[PMGR-02],[PMGR-03],[PMGR-04],[PMGR-05],[PMGR-06].

Output and outcome indicators

Each contract includes specific and clear target output and outcome indicators. These contribute to transparency and clarity on how to measure activities and facilitate quantification of the services provided by NSPs. Output indicators may include number of health workers trained, number of health education sessions conducted or number of institutional deliveries. Output targets are based on the population of a basic health center (BHC) or clinic catchment area. Provincial targets are set using provincial population data. Outcome indicators are captured and measured separately by third party evaluators using the Balanced Score Card (BSC). The BSC has six domains [25]. (Additional file 1 provides information on BSC performance over time for each of the six provinces examined in this study).

Outputs are the primary focus for USAID-funded contracts, which reimburse NSPs for services delivered. This payment system facilitates evaluation, as data are reported. The World Bank -contracts and the current System Enhancement for Health Actions in Transition (SEHAT) program, on the other hand, are based on lump-sum contracts and emphasize outcome indicators. One Ministry official explained:

The three donors have had different performance indicators. For USAID, input process and output and outcome indicators were used. We had a datasheet that contained both output and outcome indicators. The World Bank had more focus on outcome indicators and did not emphasize process or inputs. EU was in between, with a tendency towards outcomes. [MOPH-02]

Contract payment mechanism

As noted, two mechanisms have been used to pay contracted NSPs: lump-sum payment and cost-reimbursable payment. The World Bank funded projects were contracts with a lump-sum payment mechanism, as one respondent described:

The contract was lump-sum, with some flexibility in movement across the budget lines. The staff is provided with salary and money for some other items, such as running cost, maintenance and emergency medicine. [PMGR-04]

The cost-reimbursable payment mechanism, on the other hand, is the main model under USAID. In

USAID-supported provinces, payments were made based on reported outputs.

The EU contracts fell between the two distinct models. They were cost-reimbursable, but with a greater focus on performance outcomes rather than inputs and outputs.

NSPs managers we interviewed expressed preferences for the lump-sum mechanism, which they see as offering more flexibility and less rigorous reporting and monitoring [PMGR-02, FGD-01]. However, this mechanism risks making evaluation using reported data more difficult. Respondents from the government, therefore, generally preferred a reimbursable mechanism, which entails more scrutiny and closer supervision of the NSPs [MOPH-02, PPHD-05].

The choice of payment mechanism can affect performance. With lump-sum payments, NSPs have more freedom in terms of their implementation processes. They have latitude to initiate innovative approaches to attain the contractually agreed upon outcomes. However, it also creates more opportunities to diverge from the contract.

With the launch of the SEHAT program (2013), however, all payment mechanisms are lump-sum. However, "lump-sum" may mean different things to different partners. One respondent highlighted this conundrum:

Everyone talks about lump-sum mechanism but still there is not enough clarity about it. NGOs have their own definition where they want more freedom and flexibility, while MoPH has its own definition trying to make NGOs more accountable. Both parties should come together and decide what they mean. [MoPH-02]

Frontline health workers understood "payment mechanism" in reference to their salaries, regardless of the contract model used to support the payroll. One provincial worker described:

The payment mechanism for the employees is working in such a way that first the reports from the health facilities are collected by the NGO. Then, the reports are analyzed and the financial report is prepared and finally, the employee payment is deposited into their bank accounts on a monthly basis. In the past, this payment mechanism was different. The staff payments were processed in the form of a cash transfer.

The payment systems for employees have evolved. In the first few years, NSPs determined salaries based on their budgets. In 2005, a national salary scale was established by the MoPH that standardized payments across the provinces and organizations. Most health workers interviewed thought that a Results-Based Financing (RBF) approach would be more appealing than a fixed salary,

because they would get both a basic standard salary and extra payment based on performance [HW-05].

The contractual factors establish parameters for how contractors respond to contextual factors, and set limits within which the institutional factors operate.

Institutional factors

We classified institutional factors in two categories: *internal* responses (created by either the purchaser or the contractor) and *external* responses [21]. *Internal* responses are further divided into three sub-categories: 1) managing inputs, 2) managing outputs and outcomes, 3) performance monitoring. *External* response sub-categories are: 1) provider market and 2) public service.

Internal institutional factors

Managing inputs, outputs and outcomes

These factors address NSPs' various approaches to using the inputs they receive under the contract to implement health services. Human resources management, our respondents reported, is a pivotal and highly challenging aspect of contract management for NSPs [MoPH-02, MoPH-03, PMGR-01, PMGR-02]. While national regulations and contract specifications exist to regulate hiring (and firing) of staff employed under the contract, some flexibility exists and further exceptions can be made. This enables NSPs to avoid lengthy government human resource management procedures, resulting in more efficient provision of quality health services. The contracts oblige NSPs to provide a list of key staff to the MoPH in advance; field officers and health workers must be recruited as soon as possible once the project starts. NSPs are responsible for filling vacancies and planning coverage for staff vacations [PMGR-01].

Health workers' commitment to the project has been a persistent challenge. Despite the fact that the number of health workers trained has increased exponentially in all categories (doctors, nurses, midwives and others) since 2003, the country continues to face a shortage of health human resources. NSPs are authorized under their contracts to offer relatively high salaries based on the National Salary Policy; however, the rate of staff turnover was high in some provinces. As mentioned, finding women to fill key field positions proved particularly challenging for NSPs [FGD-01].

NSPs described effective and innovative responses to human resource management issues. One effective strategy was to hire staff from neighboring countries to be deployed in Afghanistan. On other occasions, NSPs consulted with the MoPH to create attractive payment packages for serving in difficult to reach areas [PMGR-04, HW-10].

Equipment and medical supplies are also critical inputs. However, these were less frequently discussed in our interviews. The importance of on-time and regular

supply was noted, as was the key challenge with equipment: maintenance. Although biomedical engineers and companies with post-purchase services are present in Kabul, they generally unavailable outside the capital city. Instruments that break down are not repaired in a timely way, leaving health care providers without important tools. As mentioned in the geography factors, health centers located in hard-to-reach terrains also face seasonal challenges, as NSPs must receive sufficient medical and pharmaceutical supplies to last through the winter [HW-201] [MGR-01].

Pharmaceuticals are vital inputs to health services. The availability of medicines in a health facility is one key indicator of functionality; stock-outs limit effectiveness of health services and undermine patient satisfaction. Respondents reported that the purchase of medicines is a critical issue in the provision of inputs for NSPs. Two mechanisms were used for purchasing medicines. One is the centralized purchasing system recommended under USAID grants. In USAID-funded provinces, medicines were procured from internationally accredited companies by Management Sciences for Health (MSH) or another organization, and distributed to provinces in response to requests from NSPs. This model emphasizes ensuring quality of medicines. The alternative model is a decentralized mechanism that provides NSPs with funds to purchase medicines directly from certified pharmaceutical companies according to criteria provided by the MoPH. This model provides more flexibility for NSPs and reduces the risk of stock-outs [MoPH-02].

Since all provinces were brought under the SEHAT project, all medicines purchases are now decentralized. One respondent, however, felt that the most efficacious mechanism still needs to be determined. While the various donors had different preferences regarding purchasing, representatives of NSPs indicated that they prefer the decentralized system because it allows them to procure pharmaceuticals from the local market on a regular basis [PMGR-09].

Infrastructure is another input that affects the effective provision of services. Because the construction of new health centers is expensive, it is generally not included in NSPs' proposals. This situation originates from two flaws in the contracts' legal framework. First and foremost, NSPs seek to minimize costs to reduce the total budget of their proposals to make them more attractive bids. Second, the procurement policies of both the government and donors discourage infrastructure development. However, in 2003, the USAID provided funding to construct a large number of health facilities across the country. Where government facilities are not available to serve as health centers, some NSPs rent local houses or other buildings and convert them into health facilities. This, according to some respondents, is the most common practice for swift start up.

Performance monitoring

Our interviews found that most stakeholders have a positive impression of performance monitoring for contracting-out health services. A national HMIS system and third-party evaluations are included in the contracts to track input, output and outcome measures, as well as to assess overall impact.

The HMIS is based on a set of indicators gathered at the health facility level by frontline health workers, such as the number of deliveries that occurred in the health centers or were assisted by skilled birth attendants and the number of children vaccinated through routine immunizations. However, since the HMIS data are based on self-reports from providers, their quality and accuracy were called into question by some respondents. The new system for HMIS data verification, which involves a third party, received positive feedback from some respondents, who indicated that it is helping to improve the reliability of HMIS data [DPR-02, FGD-01].

A second concern with HMIS data is its usefulness for decision making. Some respondents mentioned that HMIS data are indeed informing decision making at different levels, from the individual health facility to the ministerial level. One policy area in which HMIS data is considered to be highly valuable is in the rationalization of distribution of health facilities. HMIS data provide information to help assess whether, considering both the investment costs and the needs of communities, proposed locations or functionality levels of new health centers are rational.

Respondents reported that NSPs have also created systems to utilize collected data in improving the delivery of health services at different levels. Data collected from clinics are analyzed and presented back to health facility managers on monthly and quarterly basis. Any indicators that have not been achieved are highlighted and corrective measures discussed. For instance, if the number of deliveries in a facility is low, the NSP conducts a follow-up assessment to understand why. This informs decision making on how to address problems so corrective measures can be integrated in the plans for the next cycle.

In summary, the MoPH in collaboration with donors and its development partners has established a comprehensive, intensive and responsive HMIS to measure and provide timely feedback on the contracted NSPs' performance on indicators. Some concerns remain about the quality of the data and the efficiency of monitoring and evaluation (M&E) processes. However, on the whole the system covers all aspects of the project and is well integrated, thus constituting the backbone of CO for health services.

External (provider market) responses to the scheme

The CO approach to health service delivery has affected three provider types: not-for-profit NSPs, for-profit NSPs and the government. Because health services have been

contracted out only to not-for-profit organizations thus far, the first category is discussed in more detail than the other two.

Not-for-profit NSPs

Most of the interviewees agreed that CO has improved competition and quality among NSPs delivering health services in Afghanistan. Previously, each NSP had its own donors and catchment areas, and they paid little attention to competing with each other. The advent of the CO process revolutionized the provider market and drastically changed the context. NSPs now had the opportunity to apply for BPHS contracts for specific locations and periods of time, while the funding from all donors was aggregated in one basket fund and channeled through one bidding mechanism.

One positive outcome of the shift to CO has been the provision of growth opportunities to new and local NSPs. Local NSPs are increasingly winning bids, as one respondent described:

For example, in the beginning [before the start of outsourcing health services], there were few organizations in the health sector [with the capacity] to manage health facilities, but now by contracting out there are many local NGOs who could properly manage around 90 health facilities at a time. [PMGR-06]

Our study revealed two perspectives on the roles of NSPs in Afghanistan. One perspective expressed by NSP managers and some MoPH officials focused on the positive outcomes and impact of health services delivered. In contrast, however, some MoPH provincial staff expressed antagonism towards NSPs, referring to cases when NSPs did not fulfill their requirements effectively or efficiently [PPHD-05].

Thus while some see the increase in the number of NSPs as a positive outcome, others remain skeptical and concerned about having too many NSPs in the market. The debate is currently of paramount significance, as local public health departments have begun arguing that the government should contract with the public health directorates at the sub-national level, instead of NSPs, for service delivery. At the same time, debate is occurring at the cabinet level regarding the merits of the CO process and the option to switch to a contract-in mechanism [FGD-01]. One interviewee expressed reservations about the motivations of some involved in the debate:

I have a concern about PPHDs. Although PPHDs are the owners of the projects, they have a negative competition with NGOs [and] they are dissatisfied all the time and show jealousy towards NSPs because they [PPHDs] could not implement such projects. [PMGR-09]

Other respondents expressed their opinion that provincial-level teams should focus on their roles as regulatory and enforcement bodies, providing leadership and monitoring for BPHS programs rather than implementation.

For-profit NSPs

BPHS has so far never been contracted out to a for-profit company or organization, although there is no regulation against it. The for-profit private sector market has been affected nevertheless by CO of NSPs. Some respondents suggested that for-profit companies have been restricted to providing secondary and tertiary health services in urban settings because they cannot compete with government-supported primary health centers in rural areas:

In my province, the for-profit organizations could not grow because most of the services are provided by health centers supported by the government and as a result, there is no place for them. [PPHD-5]

As a result, for-profit health centers remain weak in provision of primary health services. Other respondents felt, however, that the private sector has grown stronger where NSPs failed to provide quality health services. In these areas, patients seek services from the for-profit private sector when they are not well cared for or not satisfied at primary health centers [PPHD-06].

Government's response

The impact of the CO program on the Afghan government's capacity and service delivery arrangements were evaluated positively by respondents. Interviewees highlighted two aspects. First, they stated that the program has helped the MoPH prove itself to be a public agency capable of managing large projects at the national level. Second, respondents pointed to improvements made in government capacity to conduct procurement and financial management [FGD-01]. These capacities will enable the government to continue implementing services into the future, as one respondent described:

Contracting-out mechanism had its positive impact at the level of MoPH: its capacity improved in contract management. This system encourages the government to improve its capacity to implement [something] such [as] this project. [PMGR-04]

Some respondents also described how CO has boosted the economy by providing capacity-building opportunities to health workers, creating jobs, supporting local pharmaceutical and medical supply markets, and encouraging competition among providers. Whether the government can and should itself become a competitor,

providing health services is still under evaluation. It could be a good option in the long run, but for now the MoPH is successfully supporting NSPs to provide health services [MoPH-03].

Discussion

The present study offers a theoretically sound and in-depth qualitative exploration of the contextual, contractual and institutional factors that affect the implementation of contracting out health services to NSPs. These factors form the key elements of a framework used frequently for evaluating contracting of health services [21]. The framework suggests that interactions among the many factors in the framework can result in better health care delivery, which in turn improves health impact. This study also did not look at health impact directly; however, it projects that the collective impact of these and possibly other factors have had positive impacts on health in the regions of Afghanistan receiving CO services. Maternal mortality and child mortality rates improved considerably from 2003 to 2013. The Afghanistan Mortality Survey (AMS), conducted in 2010, also showed improvements in the overall health of the population compared to the data from a survey in 2002 [8, 26].

Our findings on how contextual factors affect the contract out process are aligned with others' findings. Mills proposed that the social, economic and political environment can facilitate or restrict a successful CO program [27]. For example, if the legal system, banking system and government procedures are weak, contracting will be difficult [27]. Another study proposed that the state and private sectors can play an important role in creating a conducive environment for smooth implementation of contracted-out services [27]. Our study followed Liu et al. by categorizing contextual factors into political, geographical, and economic and sociocultural factors in the external environment [21]. We expanded the external environment to also include climate and security concerns; we recommend that other researchers applying the Liu et al. framework in a post-conflict and/or fragile state also expand their focus to include these or other relevant contextual determinants.

The health care delivery program in Afghanistan was designed to promote equity, focusing on reaching poor people and individuals living in remote areas with health services. However, we found that insecurity (including risk and fear of violence, being killed or kidnapped, and the presence of armed conflict in general) was one of the main factors adversely affecting the CO health services. Similar trends are reported elsewhere. For example, a study of post-conflict health reform in Uganda enumerated insecurity and lack of institutional capacity as predominant factors affecting the process of building up the health system [28]. Newbrander, Waldman and Sheperd-Banigan emphasized security as a critical determinant for a successful contract-out program [29]. These authors also point out

that conflict areas may require different types of health services from peaceful areas. Our study supports this: the full package of health services has been provided in more secure provinces in Afghanistan, while insecure areas may only receive emergency services.

In Afghanistan, NSPs were needed to support the urgent delivery of health services that the government was not in a position to provide. The legal framework in Afghanistan, paired with support from the government, enabled the initiation and implementation of contracting NSPs [30], although resistance and tension at the outset of the CO scheme were reported. Newbrander et al. reported that some NSPs were concerned about maintaining their independence [30]; another tension comes from the concern that there is a dichotomy between state-building and delivery of services through NSPs [30].

Institutional factors, such as management of human resources, also influence the success of CO. Newbrander et al. described human resource management as a central aspect of contracting out [3, 5, 9]. They suggested that to improve human resources requires establishing collaborations with training institutions and transitioning towards certification/accreditation programs [10]. The shortage of health workers in all categories was reported as a key challenge in our study; however, contracted NSPs have coordinated with the MoPH to identify innovative solutions. Some proved more successful than others—finding female health workers willing to serve in hardship posts remains a significant challenge, as is the supply of pharmaceuticals. The shortage of female health workers has also been described by the MoPH and others [3, 5, 9, 31].

NSPs and the MoPH have also collaborated to address challenges with other institutional factors such as procurement mechanisms. Stock-outs and low-quality medicines at facilities reduce patient satisfaction and can lead to declines in outpatient visits. Purchasing from local markets through a decentralized mechanism improves the availability of medicines but may undermine quality.

Study participants extensively discussed the institutional approaches to performance monitoring, noting that a significant amount of energy and resources are invested in measuring progress of contracted programs. M&E of the performance of NSPs contributes to accountability and the effective provision of services. The government emphasizes close monitoring of inputs, outputs and outcomes of health services contracted out to NSPs; NSPs have complied with these requirements. At central and provincial levels, the MoPH utilizes various monitoring mechanisms through its M&E department, the HMIS program and GCMU administrative procedures. Independent evaluations conducted by external organizations and based on BSCs are another hallmark of the CO program. NSPs have developed their own M&E systems to comply with their contractual requirements [11]. Edward et al. emphasized the pivotal role of

BSCs in improving transparency, governance and NSP performance benchmarking [32]. The important contributions of the HMIS in monitoring NSPs' performance have also been emphasized by numerous authors over the past decade [3, 5, 9, 31].

Outside the CO scheme, the health care provider market has been affected by contracting out health services to NSPs. CO created new opportunities and competition on quality and cost of services among the not-for-profit NSPs bidding to provide BPHS and EPHS services. International NSPs have increasingly been underbid by local NSPs, whose administrative and overhead costs are lower. The impact on for-profit health care providers seems mixed. Contracting-out reduced the market share of for-profit organizations providing primary health services, but private clinics and hospitals reportedly remain effective in providing specialized medical services. Contracting out has, as yet, changed little for the government as a health care provider. Except in three provinces, the government is not competing with NSPs to provide primary care.

Liu et al. proposed that contracting out has an impact on contestability in the provider market, improving the environment for competition among providers [21]. Our findings concur with this in the case of the not-for-profit NSPs providing primary health care. For-profit organizations, on the other hand, focus on secondary and tertiary health services [21, 33]. We suggest further research be undertaken to understand how to better involve the private for-profit sector in the provision of primary health services.

Key recommendations to policy makers for addressing all three sets of factors are presented in Table 5.

Limitations

Liu et al. note that systematically understanding the interaction of factors requires comparators [8]; this was beyond the scope of this individual country level analysis. Other limitations related to three aspects of the research process. The study design focused on collecting and analyzing qualitative data to generate an in-depth picture of the contracted health care delivery system in Afghanistan.

Table 5 Recommendations derived from study findings

Recommendations on Institutional Factors	
Contract Specification	Hire a third-party to conduct evaluation of the intended outcomes
Contract Formality	<ul style="list-style-type: none"> • Include clear selection criteria • Establish a unit/mechanism to ensure that the criteria are enforced
Payment Mechanism	Install a unified and homogenous payment mechanism at the outset
Recommendations on Contextual Factors	
Political Context	<ul style="list-style-type: none"> • Foster political will for initiating and enforcing contracting out – this is the single most important contextual factor • Ensure that political support and an appropriate legal framework exists • Develop mechanisms to limit inappropriate interference by local government leaders
Geographical Context	Establish a contracting out system that acknowledges, respects and addresses geographical variations and relevant adaptations
Security Context	<p>For a country in a conflict or post-conflict situation:</p> <ul style="list-style-type: none"> • Ensure that NSPs fully understand the risks of service provision in insecure areas and the difficulties likely to arise • Establish direct and clear communication with all partners and stakeholders on all sides of the conflict
Recommendations on Institutional Factors	
Internal Response: Input, output and outcome management	<ul style="list-style-type: none"> • Explore innovative approaches to recruitment of female health workers to address access issues • Improve pharmaceutical procurement management and monitoring to avoid stock-out and low-quality medicines • Focus on making observable change in the health of communities. Enhance patient satisfaction by monitoring behavior of health workers and managers
Internal Response: Performance monitoring	<ul style="list-style-type: none"> • Use multiple triangulation methods to assure quality of data • Establish a single department and system responsible for all performance monitoring • Align monitoring and evaluation mechanisms among NSPs, government and donors
External Response: Provider market	<ul style="list-style-type: none"> • Develop and implement policies that prevent a few large organizations from monopolizing health care delivery • Encourage economies of scale by coordinating multiple contracts to any individual NSP • Identify strategies to engage the for-profit sector in the provision of health services
Overall	<ul style="list-style-type: none"> • Consider multiple factors when contracting out to NSPs • Recognize that a universal BPHS policy might not be appropriate across the country; province-specific criteria could strengthen implementation

However, the findings could also have been triangulated with quantitative data, in particular to understand the CO program's outcomes.

Execution was limited by insecurity, the geographic size of the catchment areas and difficulties posed by transportation. Further, given time and resource limitations, the qualitative research design used purposive sampling of provinces and participants in order to capture a breadth of experiences in terms of payment mechanisms, contracting processes and KIs' roles. However, we cannot make claims about how common or widespread any of the perspectives were. During data collection, we faced particular challenges when interviewing PPHDs. In some cases, they lacked institutional memory about contracting out, while others were not reachable. In an exceptional case, one director of health was interviewed while hospitalized and recovering from a roadside explosion.

Finally, our main objective in this study was to present a description of the factors influencing a specific intervention. However, analyzing interactions among the factors proved beyond of the scope of this study. Future studies are recommended to delve further into this.

Our relatively narrow case study on the BPHS allowed us an in-depth view of the factors that affect NSPs' performance. We omitted discussion of the contracting-out of EPHS or other programmatic, training and research services. We sought to highlight this gap by mentioning them in the background section, and recognize that they present areas for additional research.

Conclusion

Contracting-out to NSPs to provide the BPHS has been a successful strategy in Afghanistan that is influenced by many factors. We recommend that the MoPH considers various factors beyond the BPHS specifications when developing contracts to deploy NSPs. In particular, a universal BPHS policy may not work equally well in all provinces. Province-specific criteria for selecting and contracting NSPs could strengthen BPHS implementation. In addition, awarding multiple contracts to a single NSP may lead to a monopoly, resulting in inefficiency. We recommend that the MoPH explores engaging with the private for-profit and government sectors for BPHS service provision in order to engage a wider range of stakeholders, with their own innovative and creative approaches, to reach all Afghan citizens with accessible quality primary health care services.

Additional file

Additional file 1: Health systems performance by province. (DOCX 759 kb)

Abbreviations

AHSPR: Alliance for Health Systems Policy and Research; AMS: Afghanistan Mortality Survey; BHC: Basic Health Center; BPHS: Basic Package of Health Services; BSC: Balanced Scorecard; CHC: Comprehensive Health Center; CHW: Community Health Worker; CI: Contract In; CO: Contract Out; COI: Co-Investigator; EPHS: Essential Package of Hospital Services; EPI: Expanded program of immunization; ERC: Ethical Review Committee; EU: European Union; FGD: Focus Group Discussion; FI: Field Investigator; GCMU: Grant and Contract Management Unit; GLICS: Global Innovations Consultancy Services; HMIS: Health Management Information System; IHMR: Indian Institute for Health Management Research; IRB: Institutional Review Board; JHU: Johns Hopkins University; KI: Key Informant Interview; M&E: Monitoring and Evaluation; MoPH: Ministry of Public Health; MSH: Management Sciences for Health; NGO: Non-Governmental Organization; NSP: Non-State Provider; PBI: Performance-Based Initiative; PI: Primary Investigator; PPHD: Provincial Public Health Director; RBF: Results-Based Financing; RC: Research Coordinator; SEHAT: System Enhancement for Health Actions in Transition; USAID: United States Agency for International Development; WB: The World Bank; WHO: World Health Organization

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Availability of data and materials

Please contact authors to request data.

Declarations

The study was reviewed and approved by two institutions. It was approved by World Health Organization (WHO) Ethical Review Committee (ERC) on December 19, 2015 and by the Afghanistan Institutional Review Board (IRB) on February 29, 2016.

Authors' contributions

All authors participated in the conceptualization and writing of the manuscript. AS and ATKS conducted the interviews and data analysis and wrote the first draft. KC provided writing and analytic support. NA and KR reviewed and edited the manuscript. All authors read and approved the final manuscript.

Consent for publication

Not applicable

Competing interest

The authors declare that they have no competing interests.

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