

**DO CONDITIONAL CASH TRANSFERS HELP TO IMPROVE THE ACCESS OF MATERNAL HEALTH
CARE SERVICES IN PROVINCE KHYBER PAKHTUNKHWA (KP), PAKISTAN?**

A Dissertation

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Doctor of Philosophy

by

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August, 2018

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ABSTRACT

Do Conditional Cash Transfers Help To Improve The Access Of Maternal Health Care Services In Province Khyber Pakhtunkhwa (KP), Pakistan?

A Dissertation Presented to the Faculty of the Heller School for Social Policy and Management and the Graduate Faculty of Brandeis University
Waltham, Massachusetts

by Dr. Naeem Hassan Saleem. MBBS. DTCD. MPH. MSc. MA.

Introduction: Pakistan is the sixth most populous country in South Asia and has one of the highest maternal mortality rates (MMR) in the region (Hogan, Foreman et al. 2010). MMR declined slowly, and remained far below the set target required to achieve the United Nations Millennium Development Goals (MDGs) (Malik and Kayani 2014). Poor access to health services, especially among the rural population, has been a contributing factor to the slow progress on maternal health (Bhutta 2000, Safdar, Inam et al. 2002). The uptake of maternal health services remains a major barrier due to a high financial cost (de Costa, Jehan et al. 2012). In December 2013, in order to increase access to public health facilities for pregnant women the provincial government of Khyber Pakhtunkhwa (KP) implemented a Conditional Cash Transfer (CCT) program for pregnant women.

Intervention: The objective of the CCT program was to improve the utilization pattern, and subsequently increase institutional deliveries (ID) at public health facilities, as well as to provide skilled birth attendance (SBA). Under this program, each woman who is examined regularly at a public health facility from conception to delivery and post-delivery care received an amount of money in six installments, either through an electronic deposit on a mobile phone or through a bank check. A similar incentive was offered to all pregnant women that delivered

at home with the assistance of skilled birth attendance (SBA). Initially, under the CCT program, ten districts in the Province KP were phased in by 2014 on a pilot basis and, finally, expanded to twenty-three districts in May 2015.

Methods: The present study evaluated the potential impact of the CCT program on access to public institutional deliveries, as well as home deliveries that are attended by SBA. The study used an access framework as the main model to contextualize the relationship between the CCT program and improved access to and utilization of health care services (Ensor and Cooper 2004). The study used a quasi-experimental design, and two cross sections of the Pakistan Social and Living Measurement Survey (PSLM) data that were conducted in 2013 as a baseline and in 2015. The treatment group included pregnant women in ten CCT districts within the Province of KP. Pregnant women from districts in the same province where the CCT program was not implemented served as a control group. A difference-in-differences (DD) model was used to compare “before” and “after” outcome differences among treated and control groups.

Results: Adjusted DD regression findings show that mothers who live in the CCT districts are having significantly higher odds of home deliveries attended by SBA (AOR. 1.54, 95% CI: 1.19-2.00, p; 0.001) than those mothers who do not live in a CCT district. Sub-analyses indicated that women from the treatment group, who are uneducated, young, and who live in a rural setting, in a location far from the hospital, in comparison with their peers from the control group, have higher odds of delivering at home with the assistance of SBA. Findings indicate that there is no significant difference for skilled birth attendance provided in the public institutions between cash transfer districts and non-cash transfer districts. However, there is

credible evidence that there are higher odds of using SBA among women who deliver at home in cash transfer districts in the Province KP as compared to other districts.

Conclusion: The results suggest that the cash transfer program in the Province KP has been able to improve skilled attendance in home settings only, and has failed to improve the access of women to deliver in public settings. Further research is needed to determine whether this preferred place of delivery has an impact on maternal mortality. Policy makers from Province KP and the National government, as well as researchers, can use findings from this study to revisit the implementation process of CCT within the province. This study recommends that cash transfers are made before delivery in order to increase access and to cover the travel cost. The current research has examined the potential outcomes from a policy implementation perspective, which may help to scale up the program in other provinces of Pakistan.

Key words: Cash transfer; Maternal and Child Health; Skilled Birth Attendance; Pakistan.

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ABBREVIATIONS

ANC	Ante Natal Care
BHU	Basic Health Unit
CCT	Conditional Cash Transfer
CBA	Child Bearing Ages
DSF	Demand Side Financing
DHIS	District Health Information System
ID	Institutional Delivery
IMR	Infant Mortality Rate
KP	Khyber Pakhtunkhwa
LHV	Lady Health Visitor
LHW	Lady Health Worker
PSUs	Primary sampling units
PSLM	Pakistan Social and Living Measurement Survey
PNC	Post Natal Care
RHC	Rural Health Center
SBA	Skilled Birth Attendance
TBA	Traditional Birth Attendant

DEFINITIONS

Maternal mortality¹ : is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Maternal mortality ratio is the ratio of the number of maternal deaths during a given time period per 100,000 live births during the same time-period.

Antenatal² : Is a time occurring or present before birth; during pregnancy. Antenatal care means relating to the medical care of women when they are expecting a baby. In PSLM survey the question is asked from, ever married women aged 15 – 49 years who had given birth in the last three years and who had attended at least one pre-natal consultation during the last pregnancy, expressed as a percentage of all ever married women aged 15 – 49 years who had given birth in the last three years.

“Skilled attendance”³ is defined as “the process by which a woman is given adequate care during three phases; labor, delivery and the postpartum” Skilled attendance has two major component the trained personnel component and enabling environment ⁴

Skilled birth attendant: includes Doctor, Nurse, Midwife, and LHV.

Institutional Delivery includes any delivery conducted at Government run health facility which may include primary, secondary, or tertiary level health facility.

¹ Source: <http://www.maternalmortalitydata.org/Definitions.html>

² Source: (2011) American Heritage® Dictionary of the English Language, Fifth Edition. Retrieved April 18 2015 from <http://www.thefreedictionary.com/antenatal>

³ Source: Safe Motherhood Inter-Agency Group, 2000.

Introduction

Section A

The current research, attempts to evaluate the Demand Side Financing (DSF) scheme, which provides cash transfers to pregnant women, regardless of their socioeconomic status, for seeking healthcare in the public setting or skilled birth attendance within the province of Khyber Pakhtunkhwa (KP) in Pakistan.

I- Background

The concern for the health of pregnant women gained importance in September 2000 when all 191 member states of the United Nations (UN) signed a declaration to improve maternal health in their respective countries. The Millennium Development Goals (MDGs) derived from this declaration have specific targets, which each country agreed to achieve by 2015 (WHO 2017). Under MDG's Goal Five, maternal health became a priority in the geographical areas of high maternal deaths. As the MDGs concluded three years ago in 2015, the United Nations continued its effort in seventeen areas over the next fifteen years under the Sustainable Development Goals (SDGs). The importance of maternal health remains a priority under the SDGs as well. This determination has led to the decline in the Maternal Mortality Ratio (deaths per 100,000 live births) from 320 to 210 worldwide, in the period from 2000 to

2013 (Kassebaum, N J 2014.; UN, 2015; WHO, 2017). However, the effort to reduce maternal deaths in different regions and in developing countries has been mixed. For example, in 2008 alone, more than fifty percent of maternal deaths were reported in six countries comprising India, Pakistan, Afghanistan, Nigeria, Ethiopia, and Democratic Republic of Congo (Hogan et al., 2010).

As indicated above, Pakistan adds to high maternal deaths and has one of the highest maternal mortality rates (MMR) in the region (Hogan et al., 2010). Every year, thirty thousand women die due to various complications during the birth process, i.e. a woman has one in eighty chance of expiring during her reproductive life (Khan, Bhutta et al. 2009). MMR is declining slowly, and is far below the set target of five and a half percent required to achieve the Millennium Development Goals (MDGs) (Malik and Kayani 2014). Efforts to lower the high MMR have been unproductive (Jafarey 2002). This is primarily due to low uptake of prenatal care by pregnant women and low utilization of postnatal services after the birth (Hou, 2013). Poor access to the health service system, especially among the rural population has been a contributing factor (Bhutta Z A., 2000; Safdar et al., 2002). A recent mixed-methods study, assessing 171 health facilities for the enrollment of maternal health care within Pakistan, revealed that the enrollment was 51.6 percent in the nine sampled districts of the largest province, Punjab (Majrooh, Hasnain et al. 2014).

This low enrollment has various reasons, among them the lack of financial resources is the most important. Mumtaz (2013) in her qualitative study has identified consumption patterns among the women from three social groups (Mumtaz, Levay et al. 2013). Findings indicate that among the three socioeconomic groups studied, the lowest social group did not

use private maternal health services at all, and opted for public services in case of complication due only to severe financial constraints. There is a clear difference of utilization patterns between the poorest women and women in the first quintile (Agha, 2014). Uptake of maternal health services due to a high financial cost remains a major barrier (de Costa et al., 2012). Consequently, women cannot pay the cost of health facilities and cannot afford the cost of the transportation, resulting in a preference to deliver the baby at home. Literature also indicates that the cost of healthcare among the poor Pakistani has other consequences for poor families. It has resulted in withdrawal of children from school, putting children to work, low food consumption, and even sale of assets (Heltberg and Lund 2009).

Access to health services can be improved by extending services networks, reducing barriers to existing services and by increasing demand for existing services (Palmer, Mueller et al. 2004). International literature suggests the importance of addressing both demand and supply barriers simultaneously in order to gain better results (Koblinsky 2003). Based on this evidence, on the supply side, Pakistan has increased and upgraded its public sector health service network considerably; during the last few years, it has come to be comprised of 1,201 hospitals, 5,518 Basic Health Units (Bonu, Bhushan et al.), 683 Rural Health Centers (RHCs) and 5,502 dispensaries (Finance 2014-15). On the demand side, various options like voucher and conditional cash transfer (CCT) have been experimented with.

II- Intervention

During 2013, in the northern province of Pakistan the provincial government provided conditional cash transfer to pregnant women to improve the utilization pattern and

subsequently increase institutional deliveries (ID) and deliveries conducted by Skilled Birth Attendants (SBAs) with the aim to lower high maternal mortality within the Province KP. Under this program, each woman who is examined regularly at the public health facilities or by a skilled birth attendant, from conception to delivery and post-delivery care, will receive the amount of Rs. 2,700 (US\$ 27) in six instalments. Payments are made either through an electronic cash transfer to their mobile phone or through bank check to the pregnant women after receiving the healthcare services. The present program does not target specific population, and is open to all pregnant women, regardless of their parity or socioeconomic background, who deliver at a public health facility, and does not include deliveries conducted in private settings. The intervention was initiated in the ten districts and subsequently phased out to thirteen districts by 2015.

III- Rationale of Study

There is a paucity of policy research and only few studies in Pakistan have examined the effect of removing the financial barriers and their impact on utilization patterns of maternal health services (S. Agha, 2011b). The earlier studies were limited to a small scale geographic area in a controlled private setting. Furthermore, these studies had several methodological issues potentially biasing their findings (Lalji 2010). The importance of the present study can be underscored as it evaluates a large-scale province-wide program in the public sector.

Therefore, this dissertation, among other things, will examine the potential outcomes from a policy implementation perspective, which can help to scale up the program in other parts of Pakistan. The present research findings provide an evidence to understand the results of health

policy under question, forming the basis for better utilization of scarce resources. The uniqueness of the present study, which uses nation-wide survey data, will form the basis of future collaborative work among various functionaries of the health care delivery system. The present study helps to answer the critical policy question about the far-reaching results of investment in the form of a conditional cash transfer (CCT). This is determined by whether or not the CCT is capable of improving maternal healthcare utilization and skilled birth attendance in Pakistan.

IV- Analysis Plan

The study intends to respond to empirical questions that are important for policy makers to better implement a cash transfer program to lower the maternal mortality in general and to improve access of maternal health services by pregnant women in particular in the Province KP, Pakistan. A difference-in-differences (DD) analysis is conducted to answer the research question by using data of Pakistan Social and Living Measurement Survey (PSLM) for the two cross-section years of 2013 and 2015. The analysis addresses this question: "What are the differences between districts with Conditional Cash Transfer (CCT) and districts without a CCT program during the year 2014 within the Province KP, Pakistan for public Institutional Deliveries and deliveries conducted by Skilled Birth Attendants (SBAs) for women of reproductive age (15-49 years)?"

Section B

An Outline of Dissertation

In addition to the empirical examination, the present research has conducted vast literature review of the conditional cash transfer programs around the world. Findings are provided in chapter 1. The present research also has an exploratory chapter, Chapter 2, focused on the broader health system factors that explain and support the findings along with results of public planning document review, as well as information acquired during field visits about the CCT program. Chapter 3 discusses the empirical model designed to answer the research question, using Pakistan Social and Living Measurement (PSLM) survey data from years 2013 and 2015, by applying the difference-in-differences (DD) model. In addition, the theoretical framework used in the present research to explain existing access factors and its application will be demonstrated. Chapter 4 provides the sample characteristics of Province KP and also compares it with other three provinces of Pakistan to provide an insight of distinct features of the Province KP. It discusses the emerging hypothesis from the utilization patterns by women of child bearing ages within the cash transfer and non-cash transfer districts. In the end of the chapter provides the regression results of difference-in-differences models. Final Chapter 5 deliberates the results, limitations, and policy implications in length along with areas of further investigation.

Chapter I Literature Review

1.0 Introduction

Present chapter is divided into two sections. Section one comprises of literature review of cash transfer studies in maternal health area which is relatively a new area in the history of cash transfers.

Section two provides a broad literature-based exploration encompassing the various features of the conditional cash transfer programs. Purpose of the review is to gain the understanding of the best practices. This is followed by findings from a number of reviews of various cash transfer programs around the globe. In the end section provides an in-depth analysis of individual studies conducted in various parts of the world.

Section I

1.1- Conditional Cash Transfer Programs in Mother and Child Health area

Following review focuses on cash transfer in maternal and child health area. Primary purpose of the review is to find out various targeting mechanisms adopted by programs, anomalies in implementation and their impact on health utilization of maternal services. First, programs in South Asia are discussed followed by programs in South America.

An evaluation of a national conditional cash transfer to promote institutional deliveries (IDs) and skilled birth attendance (SBA) in India has revealed a significant surge in pre-natal care and institutional deliveries (Lim, Dandona et al. 2010). *Janani Suraksha Yojana (JSY)*⁵ is the cash transfer program with the largest number of recipients of any program implemented in the maternal and child health area. The program provides cash for two substitutes, either to deliver in public health facilities or to have skilled attendance at the time of delivery. The program has used various targeting techniques from geographic targeting to income targeting. For this purpose, Indian states were divided into high-focused areas and low-focused areas, based upon facility coverage. In low facility coverage or high-focused areas, all women were eligible without any attention to their socioeconomic background and were provided higher incentive in comparison to low-focused areas. In high facility coverage areas women were provided with cash for the first two pregnancies. Along with this, low caste women, tribal women at the margins of society, and young women were among the most benefited by the program. Payments received from the program were most likely associated with increased facility-based delivery and antenatal care. Difference-in-differences estimates indicate 49.2% (CI: 43.2-55.1) increase in facility-based delivery among beneficiaries of the program, as well as 39.3% (CI: 33.7-45.0) increase in skilled attendance. This smaller increase in skilled attendance, compared to facility-based delivery, might be due to incentives used to cover travel costs. The assessment also indicates a decrease in neonatal and perinatal deaths in high focused areas. This difference between high-focused areas might be due to the fact that in such areas the program targeted the women below the poverty level. An additional effective component of

⁵ *Janani Suraksha Yojana* means safe motherhood

the program is the Community Health Workers (CHWs). CHWs find pregnant women in the community, mobilize them to the hospital for delivery, and are remunerated for this effort by the program. The program assessment, like the current study, has utilized district-level household survey, and has applied difference-in-differences econometric techniques. However, the regional differences for qualifying incentive payment among beneficiaries of the scheme are not consistent with the present analysis.

Lahariya (2009) has identified good points for the success of *Janani Suraksha Yojana* (JSY); these include payments before the delivery, regional variation in incentives in low and high-performing areas (Lahariya 2009). JSY removed the age limit in low-performing areas, given that most deaths and complications occur in teens, and among those with a high parity. However, Lahariya stresses that better results are achievable by early identification of high risk pregnancies, appropriate referral mechanisms, timely availability of transportation for the referred patients, and subsequent assurance of quality of care with the strengthening of supply side of the health care delivery. These findings are further endorsed by the qualitative study of JSY (Sharma, 2009).

Sidney (2012) conducted a small scale cross-sectional study in central India. Her findings indicate that knowledge of the cash transfer program plays a key role in utilization of health services. Firstly, multinomial regression indicated that women with no knowledge of the program were more likely to deliver at home. Facility-based delivery was common among women with prior knowledge of the program. Secondly, most of the beneficiary mothers received the incentive within two weeks of the discharge from the health facility (Sidney, 2012).

Finally, Devadasan (2008) has highlighted many implementation gaps in JSY (Devadasan, 2008). These gaps included a drift from the original objective of promoting institutional delivery to the start of an incentive for home delivery. The difference in the amount of the incentive provided to institutional and home delivery is nominal; thus, lots of women prefer home delivery. Other issues identified included delay in payments, increased documentation, political influence, partial incentive, and lack of knowledge among women, etc.

Nepal's Safe Delivery Initiative Program (SDIP) integrated two options of facility and home-based delivery in its design. Incentive was provided to mothers if they delivered in the public health facility, and to providers if they assisted delivery at the institution or at home. The program started in twenty-five under-developed districts and provided cash transfers to women with one or two children and to those with obstetric complications. Two features were considered for the eligibility; these included women with up to two living offspring and those with obstetrics complications regardless of their parity. Qualitative assessment indicated that there were problems in districts where there was a dual option in giving incentives to the providers for skilled attendance (Powell-Jackson, 2009). Other districts with all incentivized home deliveries, showed fewer problems in implementation, due to clarity of policy. Other implementation anomalies included poor uptake of the program due to low level of knowledge among women beneficiaries, disbursement delays, lack of funds, wide gap between policy and practice, lack of monitoring leading to false claims and skimming by the implementers. A study indicates that cash transfer programs require a lot of administrative capacity and clarity of objectives. Later, the poor uptake of SDIP program was rectified through staff training sessions, followed by a large-scale information campaign for the public, and appropriate financial

arrangements (Borghi, 2006). Some features highlighted in the evaluations are consistent with the present intervention for example, the present program under focus relies upon non-programmatic staff of the health service system for monitoring.

The voucher scheme in Bangladesh started in 2006 in order to increase skilled facility-based or home-based deliveries (Schmidt, 2010). This scheme targeted the poor population after an initial assessment by the local village committee, which considered family income and land holding. The incentive was provided to first pregnancy mothers or second pregnancy mothers with a considerable gap between the two pregnancies. After an initially slow uptake of the scheme by the population, there was an increased uptake and rise in facility-based deliveries. As the facilities also shared the incentive there was fear of a rise in surgical deliveries as well. Beneficiaries were given a choice of providers in order to promote competition and quality health services; however, no fruitful results were achieved (Schmidt, 2010). A higher probability of institutional deliveries in the intervention area was documented by another independent evaluation under the voucher scheme (Nguyen, 2012).

Islam (2014) studied the skilled birth attendance in rural Bangladesh in post intervention trial. According to him, women who took antenatal care from SBA were more likely to deliver in institutional settings. Other factors associated with SBA were mothers' occupation and their parity as well (Islam, Islam et al. 2014).

Mexico's famous *Oportunidades* program also has a component addressing maternal and child health. This program provides options for obtaining care either in Social Security institutes or in the Ministry of Health to eligible poor rural women (Urquieta, Angeles et al. 2009). The program targeted poor households in rural Mexico. Women from registered

households get the opportunity of free delivery if they attend five antenatal clinics. Non-registered households have to pay for the delivery either in the public or private settings. *Oportunidades* also has a health promotion component, which provides an opportunity to establish a relationship with the health care provider. There was a decrease in the proportion of deliveries in both intervention and control arms of the study; however, the decline was steeper in control areas than in the intervention areas. The probability of using skilled attendance was increased by 2.8 percentage points in treatment areas. Such small increase was attributed to the short time period of analysis.

El Salvador's cash transfer program *Comunidades Solidarias Rurales* (CSR) geographically target poor women (De Brauw and Peterman 2011). This program started in the fifteen poorest municipalities and later expanded its network. The author used regression discontinuity to arrive at the conclusion that both skilled attendance and facility delivery increased in the treatment group of the study. On the contrary, they did not find any impact on prenatal and postnatal care among women of the treatment group.

Section II

Cash transfer programs were developed in the mid-nineties to counter the financial crisis in Latin American countries. Due to their successful results, they were implemented in Africa and some Asian countries, e.g., India and Nepal, where they are part of an increasing social policy with emphasis on supporting poor families (Powell-Jackson, Morrison et al. 2009). In present section a broad literature-based exploration encompassing the various features of the conditional cash transfer programs is provided.

1.2- Rationale of Cash Transfer Programs

The rationale of the conditional cash transfer (CCT) program is to provide cash assistance to households in order to obtain predetermined objectives. For economic reasons, they are the venue to redistribute when investment by poor households in a specific area is suboptimal (Fiszbein, 2009). For political economy reasons, they are justifiable when they lead to good practices, i.e. seeking assistance from a skilled person as compared to traditional assistance from an un-skilled person. Such programs may be multi-sectoral or may specifically address health services only. Their objectives may include: child's health care to counter stunting through improved nutrition, child school enrollment to improve literacy levels in the country, and mother's health care to lower maternal deaths. All such objectives purpose to deal with inter-generational poverty and provide an opening to enjoy a better quality of life. Their innovative approach provides an opportunity for the marginalized population to make an investment in human capital leading to break off the poverty trap.

1.3- Features of Cash Transfer Programs

Many countries, especially Latin American countries, have adopted CCT programs in the last few decades. Other countries like Turkey, Indonesia, Cambodia, Bangladesh, Pakistan, Malawi, Morocco, and South Africa are also implementing them. Cash transfer programs in Mexico and Brazil are large and serve a population of millions, whereas some cash transfer programs serve only a few as in Kenya and Nicaragua. The success of these programs depends upon a careful design that considers identification of deserving population, called targeting, as well as condition, payment level and evaluation (Fiszbein, 2009). The general theme of

targeting is identification of the right population through right targeting methods, and through setting up eligibility criterion. For this purpose, high administrative capacity and consistent interaction with the families by social workers is beneficial, as seen in Chile's *Solidario* program. Findings indicate that there is a significant take up of social services provided by a social worker by the households previously disconnected from the social system (Galasso 2006). Results can further be improved through a narrow demographic targeting; this implies targeting mothers of poor households of minorities and ethnic groups. However, the model adopted by *Solidario* may not be suitable for countries with poor governance, especially low income countries. Choosing the right condition for the beneficiaries is also important, as in the case of Mexico's *Platicas*, which has resulted in improved health outcomes by encouraging nutritious diet (Hoddinott and Skoufias 2004). The conditions of the cash transfer and how they are monitored is an important area of research. There is less evidence at present on the success of the programs with strict or lenient monitoring. Macours (2009) has indicated that programs that do not monitor conditions have had better outcomes, i.e., they have changed consumption habits to a more nutritious diet, resulting in a positive impact on early childhood development (Macours and Vakis 2009). Payment level depends upon the budget of the program, but it is a complicated process due to the heterogeneity of the recipients of the benefits. Different programs use innovative approaches for this purpose. Cash transfer in Brazil, for example, has coined giving poor households benefits per child only, and poorest household benefits per child plus baseline benefits (Lindert, 2007).

Cash transfer programs have been on the forefront of development and have used innovative mechanisms for reaching the population they serve. Such mechanisms help identify

the beneficiaries; these range from geographical targeting to proxy mean testing. In proxy mean testing the individual and household information is used in a formal algorithm to proxy income or welfare. In geographical targeting the poor quintile areas are identified from the survey results. Casteneda (2005) has revealed that proxy mean test has been an effective means of registering people in Colombia, Chile and Mexico (Casteneda and Lindert 2005). In Ecuador proxy mean test incorrectly identified only five percent of the households and properly identified the remaining 95 percent of the registration. Self-selection during the registration process also influences the participation. Under reporting of income during registration is not infrequent as such behavior is tied with the incentive. Those in urban areas and with more education and income are less likely to participate by self-selection. Other factors which may influence the participation are low coverage due to low budget earmarked for the cash transfers, areas where services are not available and far flung areas where travel cost to reach health facility is very high. Stigma also has an important influence on individuals seeking to benefit from the cash transfers. Individuals may not register for the incentive for fear of being stigmatized. On the other hand, stigma can have the opposite influence, as they may be stigmatized for not being enrolled in the program and not benefiting it (Adato, 2011).

There is a strong culture of evaluation in the discipline of cash transfers, which has resulted in subsequent improvement in the implementation of the programs globally. Such impact evaluation studies compare the “treatment group”, the one which has received intervention in the shape of cash transfer, and the “control group”, the one which did not receive intervention in the form of cash transfer. The groups are made in such a way that they are comparable with each other. Evaluation studies also consider estimating the

counterfactual. For this purpose, the most popular method is randomization, which randomly assigns the subjects to control and treatment groups. Other popular methodologies used are Regression Discontinuity (RDD), Instrumental Variables (IV) and non-experimental techniques like double differencing and propensity score matching (PSM). The evaluations of *Programa de Asignación Familiar* (PRAF) in Honduras and the *Red de Protección Social* (RPS) program in Nicaragua, which are small scale programs have used random assignment methods (see Annexure1). Randomizing the timing of expansion of the program was exploited in the evaluation design of the famous *Oportunidades* and the *Bono de Desarrollo Humano* (BDH) program in Ecuador. Regression Discontinuity (RDD) was adopted in the evaluation in Chile, Jamaica, and Turkey. Finally, differences-in-differences, combined with matching, was used in the evaluation of *Familias en Acción* program in Colombia.

1.4- Review Studies of Cash Transfer Programs

The cash transfer programs furnish an evidence of their impact on: improvement in health services utilization, improved nutritional status among children and better health outcomes (Lagarde, Haines et al. 2009).

Lagarde (2009) used electronic social science and medical databases comprising Cochrane (Central), MEDLINE and EMBASE, and reviewed 28 articles for a full text assessment from more than 24,000 references (Lagarde, 2009). In their analysis, the authors included the studies comprising randomized control trial, controlled before-after study and interrupted time series (ITS). The main outcome of interest was impact of cash transfers provided to households on the health care utilization and health outcome. Health care utilization was measured as

number of visits to the health facilities by beneficiaries and health outcome as immunization coverage. The studies used districts or facilities as unit of allocation in which health services were provided to the participants by governmental, private and by non-Governmental organizations in low-middle income setting. The comparison of cash transfer intervention in these studies was assessed in both the treatment and control arm, i.e., comparison between CCT and non-CCT beneficiaries for the services provided. The final studies meeting criteria set by the authors were those from Mexico, Brazil, Colombia, Nicaragua, Honduras, and Malawi. Their findings indicate that CCT programs increase the use of preventive services or checkups by children and mothers during the pregnancy period (Lagarde, Haines et al. 2007). However, these studies had limitations ranging from use of facility-based data to multiple outcome analysis, resulting in interpretation problems. Some of these studies were unable to outline the clear pathways that operated to yield the health outcome. For example, the improvement in the anthropometric measurement of children of participating families was either due to increased purchasing capacity of the family in the presence of cash transfer or due to health education sessions leading to high caloric intake by the children of beneficiary families.

Rawlings (2005) conducted a review for the World Bank, which encompassed programs from six countries, namely Mexico, Colombia, Honduras, Jamaica, Nicaragua, and Turkey (Rawlings 2005). Her review was based upon evaluation reports conducted by various institutions that adopted experimental and quasi-experimental design for this purpose. In her review, the early programs, which she named first generation, concentrated primarily on the operational performance of the program. This included the reach of programs to underserved areas and needy households, as well as the difference it made for the intended outcome. First

generation programs counted on a random allocation of beneficiaries by geographic areas rather than a more extended allocation by households. This arrangement limited their evaluation, which compared geographic areas due to lack of control groups at the household level. An evaluation of the *Progresa* program in Mexico was conducted on the basis of localities which entered the program at the beginning and three years after the start of the program. Similarly, in Honduras, municipalities with the cash transfer program and without the cash transfer program were compared to evaluate the program. First generation programs implemented in Colombia, Mexico, and Nicaragua provide evidence of increasing healthcare utilization and improvement of enrolment rates. For example, difference-in-differences estimate, after controlling household and community-level characteristics, indicate an increase of 1.07 percentage points among boys and 1.45 percentage point increase among girls for primary school enrolment under Mexico *Progresa* program. In Nicaragua the enrolment went up by 22 percentage points in the treatment area as compared to control areas. Among children of beneficiaries families of Mexico's *Progresa* program findings of difference-in-differences estimate indicate that illness has decreased by 4.7 percentage points.

Successive, second generation programs which started in Jamaica, Turkey and urban areas of Mexico relied more on quasi-experimental designs. These programs benefited from the evaluation results of first generation programs; thus, they had less implementation issues and started with a clear plan. They had a short pilot phase and rapidly expanded nationwide. Due to their nationwide implementation, potential contamination of comparison groups creates a problem. Inclusion of households above the cutoff point of criteria for comparison purposes may soil the result if the cutoff point changes. Authors suggested that the political

support required for a successful impact evaluation remains a key challenge, besides coordinating such evaluations with the implementation schedule of the programs.

A systemic review conducted by Gopalan (2014) of studies retrieved from forty-one electronic databases including PubMed, Embase, and CINAHL followed a pre-designed review protocol (Gopalan, Mutasa et al. 2014). Out of this extensive search, only sixty-four papers met the criteria set by the authors. Twenty-eight studies fulfilled the inclusion criteria; out of these, 15 were of experimental and 13 were of quasi-experimental designs, and were carried out in Asia, Africa, and Latin America. These studies conducted their analysis on poor households, municipalities with poor income households, and women of low income households. Out of these, eight studies indicated a negative direction of intended outcome. However, other studies had shown promising results after the initiation of cash transfer programs within the given community. The review has indicated that an eighteen percent increase in antenatal care in Honduras and 39 percent increase in skilled birth attendance (SBA) in India, 46 percent in Bangladesh and 17 percent in Nepal has been documented by long run public health programs offering demand side financing to pregnant women (Gopalan, Mutasa et al. 2014). All studies included in the review indicate improvement of behavioral outcomes of beneficiaries of the cash transfer program. They provided a mixed picture for those behaviors which involved consistency and adherence even under the cash transfer program, for example, using bed nets and going to more than four antenatal checkups. The studies included do not provide an insight into the various contextual factors which may be operating at some level for the success or failure of the cash transfer programs.

The most recognized evaluation research in the conditional cash transfer area was conducted by Paul Gertler. He examined the famous Mexican anti-poverty program 'PROGRESA' (Gertler 2000). The conditions included in this program were: acceptance of preventive services by every family member, utilization of health services by the pregnant mothers for prenatal consultations, health education, nutritional supplements, and lactating mothers joining nutrition. In his large randomized control trial study conducted in fifty thousand beneficiary villages, 506 villages were assigned into control (185 villages) and treatment groups (302 villages). A pre-intervention baseline survey was followed by four six-monthly follow up surveys. Random assignment of geographic localities into treatment and control groups, and usage of panel data forms the rigorous basis of this evolution design. By using a difference-in-differences model, researchers found that utilization of public health clinics and nutrition monitoring visits increased in beneficiary villages as compared to the control villages. The adult inhabitants of beneficiary villages felt healthier and subsequently paid less visits to public hospitals for recent ailments as compared to the control group. *Progresas* 's adults beneficiaries had significant increase in their ability to walk longer distances without being fatigued, and had no difficulty in pursuing their daily chores as compared to their counterparts coming from non-participating villages. Even adults above fifty had fewer incapacitated days as compared to the above fifty adults from non-participating villages. Later evaluation of *Progresas* indicates that the participants of the program received 12.2 percent more prenatal procedures in comparison with non-participants of the program (Barber and Gertler 2009). Critiques of *Progresas* argue that the results were not disaggregated by age groups, and were difficult to interpret as it was not a universal program (Morris, Flores et al.).

Despite this, due to a large-scale success of the program, which now covers 2.6 million families, its budget has increased to US \$800 million, and similar models are being replicated in other neighboring countries, e.g., Colombia, Nicaragua, Honduras, and Argentina. Current research also uses treatment and control districts to see the impact of the cash transfer upon health care utilization among pregnant women by using difference-in-differences methodology. The results of the current research fill a gap of knowledge needed for policy makers to arrive at informed decisions within Pakistan.

Tania Barham (2005) also conducted her analysis on *Progresa* to see the causality of conditional cash transfer programs on infant mortality rate (Barham 2005). She exercised non-experimental methods that exploited the phasing-in period of *Progresa* over that time in rural Mexico. She constructed a panel data for her analysis; data were collected from the 2,399 municipalities over a period of a decade from vital statistics. Rural municipalities that were to become part of the program during the phasing-in period were taken as control. Her fixed effect model controls for the changes in the supply side of healthcare. Findings indicate a reduction of approximately two deaths per thousand live births among the participants of the program with 11 percent reduction among the treated. The program effect was even greater in areas with Spanish speaking population and with households having access to piped water.

Rasella and colleagues probed the mortality in children younger than five years old by using the data of Brazil's conditional cash transfer program at municipality level {(Rasella, Aquino et al. 2013) (Fernald 2013)}. *Bolsa Familia Programmme* (BFP) is the biggest conditional cash transfer program in the world. BFP reaches thirteen million families; it has more than US \$ 11 billion budget, and has shown improvements in child and maternal health. BFP targets low

income families with income as low as thirty five dollars per person per month. This condition is not fixed if the family has pregnant women, lactating mothers, or children younger than 17 years. In order to receive the cash transfer, families have to fulfill health and nutrition related conditions. Children of the families must receive immunization, and are monitored through growth checkups. Pregnant women in the beneficiary family must receive prenatal and postnatal checkups.

The study adopts mixed ecological design and uses the five years longitudinal dataset. Given that the unit of analysis is municipality, analysis is conducted on 5,565 municipalities by using a conditional negative binomial regression model. Analysis has shown that municipalities with the lowest mortality rates for kids younger than five years of age were those municipalities with the highest proportion of population benefiting from the program. Findings of the study indicate increased immunization coverage and increased prenatal visits. The findings were the result of a continuum of care, starting from the improvement in prenatal care, high coverage of immunization, improved nutrition, and fewer hospital admissions.

Fernald (2013) showed the independent effect of cash transfer on the health and on the development of children (Fernald 2013). However, the study warned that such cash transfer might lead to consumption of high calories, leading to obesity and non-communicable disease, as families had more disposable income at their hand after enrolling.

In her recent study, Bowser (2016) has extended her analysis beyond a single country and a single financing scheme (Bowser, Gupta et al. 2016). The study analyzed the four supply and demand side schemes, including voucher, conditional cash transfers, community-based health insurance, and pay-for-performance. By using panel data from 147 countries set over

the time period 1995-2010, a fixed effect model determined the impact of these four financing mechanisms on maternal mortality, infant and under-five-years mortality. Findings indicate that CCTs have lowered the infant and under-five mortality in twenty-six countries falling under the low-income category. The study also indicates that there is no significant effect of CCTs, vouchers, or pay for performance on maternal mortality, after examining across all countries and all regions. However, Bowser's analysis has used country level data that may not be representative. In addition, demand side financing programs are limited to specific areas of the country and to specific population only. The present research seeks to fill the gap of data representation by comparing districts with and without the conditional cash transfer program in a large province setting.

The present literature search provides the basis for comparative analysis with the implementation experience around the world. It helps to ascertain the gaps within the implementation of CCT in the Province KP, Pakistan, as well as to understand the object of the program under analysis. For example, the CCT program in the Province KP provides cash transfers to all pregnant women regardless of their socioeconomic background, which might lower the efficiency in the long run (De Janvry and Sadoulet 2006). Selection of poor households to minimize efficiency leakage is highly desirable. However, at present, the cash transfer program data are insufficient, which does not allow research to find a utilization pattern among various socioeconomic groups of the CCT beneficiaries. In spite of that, the present research extends its scope by using the available data of the cash transfer program and Pakistan Social and Living Standards Measurement Survey (PSLM), and by adopting a robust methodology of difference-in-differences in order to find out the answer to broad research

question addressing the differences in the utilization of maternal health care among districts with and without CCT.

Chapter II Health Care System in Pakistan

2.0 Introduction

This chapter includes findings from a semi-structured desk review of the healthcare system in Pakistan, from the perspective of access to health care services by pregnant women to inform the present analysis. The chapter also provides a brief overview of the cash transfer project in the Province Khyber Pakhtunkhwa (KP).

2.0.1- Health Service System Inquiries

Following broad thematic areas guided the desk review in order to increase the understanding of the present research:

- 1 What is the existing structure of health care systems in Pakistan & the Province KP?
- 2 How does the health care system function in terms of organization, healthcare financing, and human resources?
- 3 What are the challenges faced by the healthcare delivery system in Pakistan and the Province KP?
- 4 What cultural factors influence the access to the healthcare service by women in Pakistan?
- 5 What is the status of the cash transfer program in Province KP, Pakistan? And how is it being implemented?
- 6 Who are potential beneficiaries of the cash transfer program?

2.0.2- Methods

To answer the listed thematic areas, data about Pakistan's health care system were extracted by reviewing the following databases and data sources:

- Web search, using Brandeis Scholar, JSTOR database, searching for published peer reviewed journal articles, policy reviews; using search words: Pakistan, health care system, maternal health, access to health care, cash transfer program.
- Health repository websites by The World Bank and World Health Organization (WHO) and UN system.
- Health reports by the World Health Organization (WHO), Pakistan Bureau of Statistics (PBS).
- Government health reports, Planning Commission Documents (PC-1), legislature, and survey reports, whether they were unpublished or published on the government's official website.
- Country-level studies and reports, such as the National Health Accounts (NHA), Health Economics and Indicator Survey (HEIS), Multiple Indicators Cluster Survey (MICS) and Pakistan Demographic and Health Survey (PDHS).
- Technical reports on health system reform in Pakistan, by the World Bank, the USAID, and WHO.
- Informal interviews with government officials comprising Director, Deputy Directors, Monitoring & Evaluation Officers (M&E) of Maternal & Child Health Care program of Province KP.

2.1 Overview of Pakistan and Province KP

This segment responds to the first four key questions outlined earlier related to the health service system and provides a brief overview of Pakistan as well.

Pakistan is the sixth most populous country in South Asia, and is bordered by the fast-growing populations of India in the east, and China in the northeast. Its 193 million population is growing at the rate of 1.45 percent annually (CIA 2016). Pakistan's population pyramid is biggest in the middle, that is 36.87 percent of the population are between 25 to 54 years of age (CIA 2016). The majority of the population dwells in rural settings and is involved in agriculture business, whereas 39 percent of the population lives in fast growing urban centers. Life expectancy at birth for male and female is 66 years and 67 years respectively. Pakistan has five provinces; Punjab, Sindh, Khyber Pakhtunkhwa (KP), Baluchistan, a newly formed province of Gilgat Baltistan, one tribal territory and one capital territory. Pakistan remains in the low-income group countries with an annual percentage of 5.54 of GDP growth with its per capita income of US\$ 2,942. Around one quarter i.e., 22.3% of the population lives under the poverty line (CIA 2016). Public health expenditure remains low at 0.92, compared to 2.97 of the region's average (USAID's 2015).

Present research is conducted in the northern Province Khyber Pakhtunkhwa (KP), which lies at the gateway to the subcontinent and shares 1,100 kilometers long border with Afghanistan. KP is inhabited by many tribes, of which Pashtuns and Awans are settled in two separate regions. The KP's economy is primarily agricultural, and 83 percent of the population lives in a rural setting. Administratively the province has twenty-six districts as of 2017. The population of Khyber Pakhtunkhwa (KP) has increased from 17.7 million in 1998 to 30.5 million

in 2017, with a sex ratio of 102.7. The demographic profile of the province indicates that it has fast growing population, which has almost doubled between two census periods of 1998 and 2017, with an average annual growth rate of 2.89. Recent census indicates that clear majority of the population still lives in rural settings i.e., 24.79 million (Statistics 2017). Male to female ratio is 102 in the province. In addition, five million live in the federally administered Area (FATA), and there are three million Afghan refugees in the province. Over half of the population is illiterate within the province and thirty one percent of the population within the province lives below the poverty line (NWFP, 2008-2009). In short KP's population is fast growing, more people are poor, and more live below the poverty line when compared to the national demographic profile (NWFP, 2008-2009).

2.2 Health Service System of Pakistan

According to the current 18th amendment in the constitution of Pakistan, all provinces are responsible for the health care delivery (Nizar and Chagani 2016). Under this new system, each province is responsible to plan and organize its programs to improve the health of masses within its geographical boundaries. However, the federal government remains responsible for National Health Policy and legislation (see Fig. 2.1).

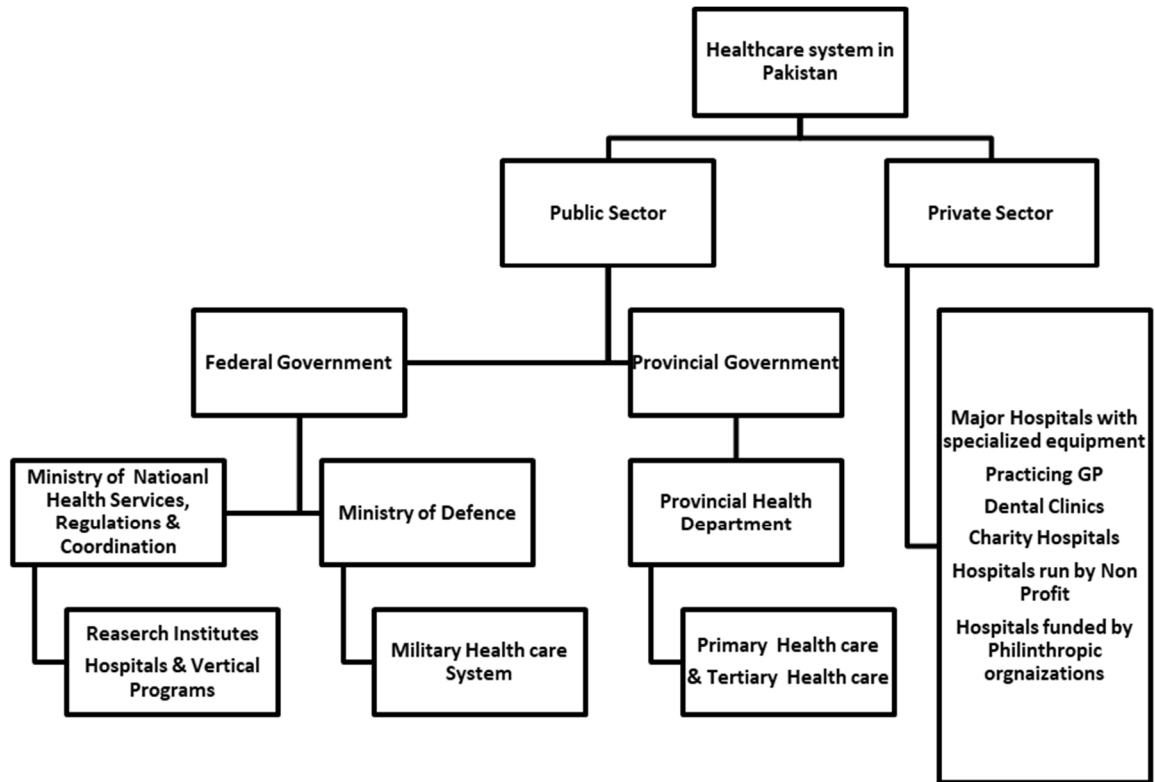


Fig 2.1 Healthcare Delivery System

Within each province, the health system is divided into public and private sectors.

Within free of cost public health care system, the first level care facility is a Basic Health Unit (BHU), and is located at a Union Council, which includes large village and surrounding areas (see Fig.2.2). BHUs offer services to a population of approximately fifty thousand within its catchment area (Nishtar, Bhutta et al.). BHUs provide promotive, preventive, curative services and referral to higher level facilities when needed. For example, eight essential components of primary health care (PHC) services are implemented at BHU level and include;

1. Health education, 2. Nutrition 3. Basic sanitation 4. Maternal and child healthcare (MCH)
5. Immunization 6. Control of endemic diseases 7. Treatment of common diseases comprising basic medical and surgical care and 8. Essential drugs (Health, 2011). Two to three BHUs are

attached to one Rural Health Center (RHC) which provides health services to a population of one hundred thousand.

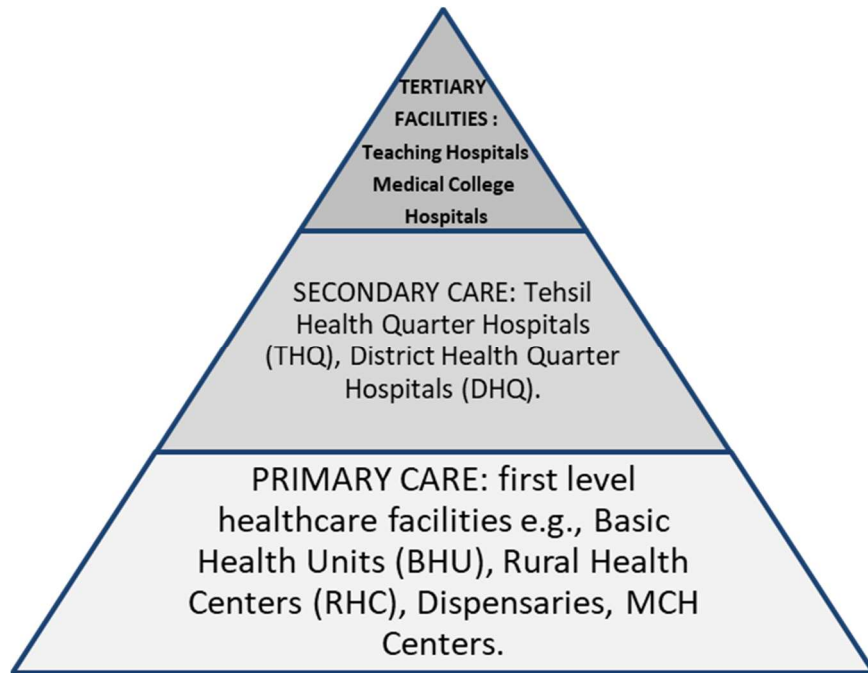
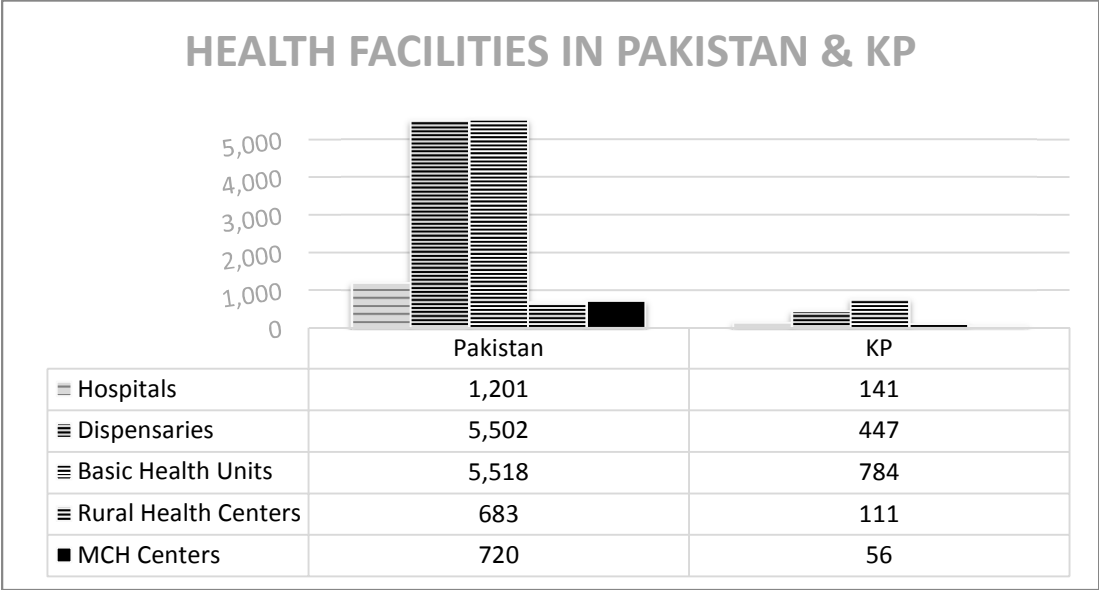


Figure 2.2 Health Care System organization

In addition to service package delivered at the BHU, the RHCs provide diagnostic and inpatient services as well. The RHCs provide ambulance services and managerial support to the BHUs, and MCH Centers, that fall within their geographical limits. Both BHUs and RHCs form the primary health care delivery system within Pakistan.

At secondary level, Tehsil headquarters (THQ) and district headquarters (DHQ) hospitals provide emergency services and up-to-date curative health services. At tertiary level, advanced diagnostic and curative facilities are accessible in teaching hospitals attached to medical colleges and established in the large urban centers predominantly. In addition to this, large corporations, e.g., airline, railways, telecommunication, and social security have their own health services available for their employees and their families. In short, the public health care

system comprises 1,201 hospitals, 5,518 BHUs, 683 RHCs, 720 MCH centers, and 5,502 dispensaries ; 1,23,394 beds are available in hospitals and dispensaries for the patients throughout the country (Finance 2014-15, Pakistan 2016-17) (see Graph 2.1). Province KP also has an extensive health infrastructure which serves 1,439 persons per bed.



Graph 2.1 Health Facilities in Pakistan

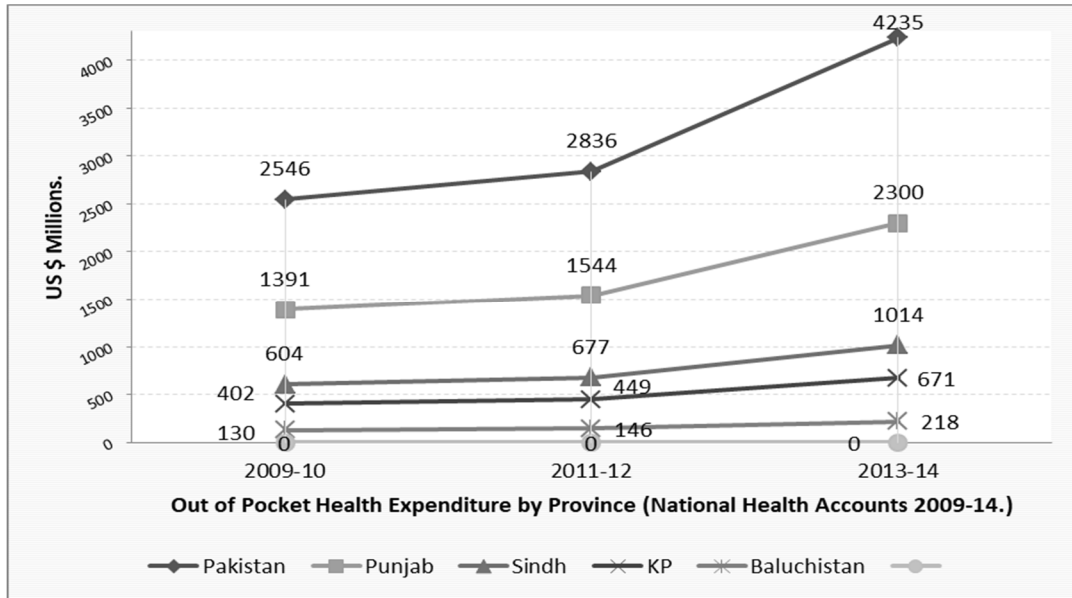
2.2.1- Health System Financing

On the one hand, in an economy funded by lowest tax-to-GDP ratio, the public sector spends 0.9 percent of the Gross Domestic Product (GDP) on health (Nishtar, Bhutta et al. 2013) (Lorenz 2010). Spending on health over the last decade ranged from 0.5 percent to 0.9 percent of GDP and is far below the standards of 6 percent set by WHO (Pakistan 2016-17). On the other hand, health sector in private setting is well organized and offers a fee for service of

modern diagnostic and curative services. According to National Health Accounts (NHA) , a reliable framework for estimating both public and private expenditures and is designed to assist policy makers in understanding the health system, shows that the allocated budget for health demonstrated an expansion over time. For example, the Total Health Expenditure (THE) between fiscal years 2007-08 and 2009-10 increased with an overall growth of 29 percent (PBS 2016). However, governmental contribution to THE remains low. National Health Accounts (NHA) for 2013-14 indicates that THE funded by the public sector is 32 percent, while 67 percent is funded through the private sector. In the private sector alone, ninety percent expense is out of pocket made by private households (Pakistan 2016-17). Even regionally, Pakistan lags behind in annual per capita health expenditures, which is 39.5 US\$ as per NHA 2013-14. Whereas, annual per capita health expenditures for Bangladesh, India, and Sri Lanka are 31.0 US\$, 75.0 US\$ and 127.0 US\$ respectively for the same year (WHO 2016) (Pakistan 2016-17).

National Health Accounts gather data for the provincial health accounts as well (see Graph 2.2). According to NHA, for 2005-06 the total health expenditure (THE) in the Province KP was US \$255 million (Pakhunkhwa 2010). Out of this figure, health expenditure in the public sector was 23.5 percent of the THE. Private expenditure, which takes account of OOP payments, remains the main source of financing and comprises the 57 percent of the total health expenditure mentioned previously. Per capita expenditure on health, including provincial, federal, and a nominal donor's contribution of 0.59, was only US\$ 7.38. According to National Health Accounts conducted during 2013-14 the expenditure in the public sector dropped to 18.65% and out-of-pocket (OOP) is 67.67 percent, and the share of developmental partner remains low at 0.9 percent (PBS 2016). NHA also observed a large variation in per

capita expenditure on health between districts of the Province KP. KP has spent 7.11 percent of its total annual development program in the health sector during 2015-16.



Graph 2.2.OOP Health Expense 2009-14

Source: National Health Accounts. (\$1=Rs.111 as of Jan.2018.)

There are diverse, trained health personnel in the field responsible for the delivery of health care within the country. Women Medical Officers (WMOs) provide clinical support in the field of obstetrics, and gynecology at Rural Health Centers (RHCs). They also provide technical support to the Lady Health Visitors (LHVs) posted at Basic Health Units (Bonu, Bhushan et al.). LHVs are an important segment of human resources engaged in primary health care (PHC) and are responsible for community home visits, providing antenatal, postnatal, family planning services, nutritional advice, and early childhood care. Midwives provide MCH services at the doorsteps of the community and work in close liaison with other community health workers like Lady Health Workers (LHWs). All of the above trained personnel in

midwifery are considered skilled birth attendants (SBA). These include Doctors, Nurses, LHV, and CMWs who can conduct uncomplicated delivery, can detect early signs of complications, and can refer patients in a timely manner. Countries that have successfully combated the high maternal mortality in the nineteenth century introduced two types of skilled attendance model. Western European countries focused more on providing the skilled attendance close to women’s home by providing community midwives. Whereas, across the Atlantic in America, facility (hospital) based skilled attendance was provided.

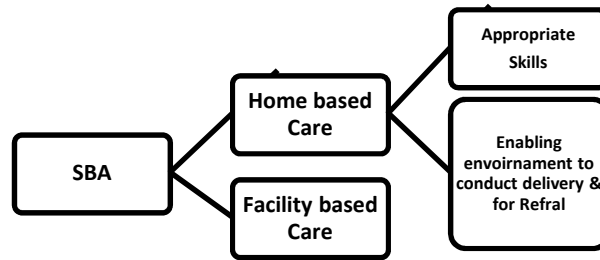
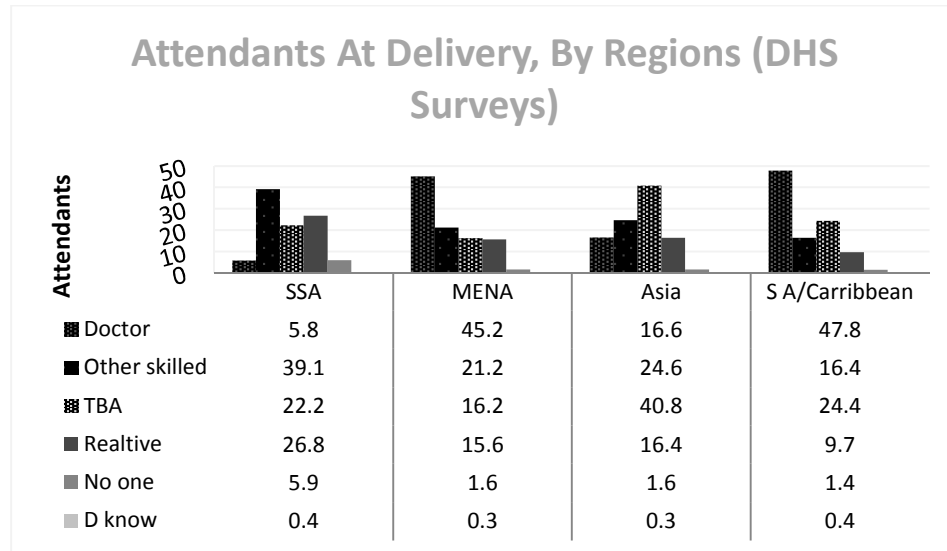


Fig 2.3 Effective Models of Skilled Attendance

Skilled birth attendance is the established approach to combat maternal mortality, since SBAs acquire midwifery skills to conduct the aseptic delivery. They provide an enabling environment in the shape of their aseptic birthing homes, sterilized instruments, antibiotics and a strong referral mechanism in case of complications (see Fig 2.3).

Skilled attendance is one of the most effective front-line strategies to reduce maternal and infant mortality throughout the world. Recent experience in other countries of the Middle East (Egypt, Iran), South America and the Caribbean (Cuba, Jamaica), and the Far East (Thailand, Malaysia) that have effectively lowered maternal mortality have experimented with a variety of models of maternal healthcare provided by skilled attendants (Utz, 2013). However, the

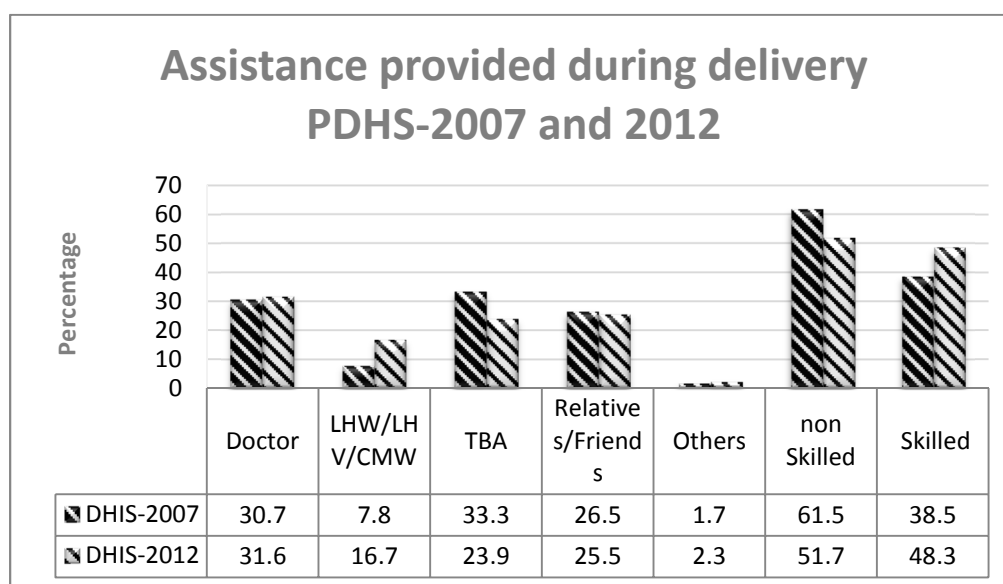
bottom-line of all these experiences is that the skilled attendants *should* conduct the majority of deliveries in their catchment areas.



Graph 2.3 Regional trend of attendance of deliveries

Regional Demographic and Health Surveys (DHS) indicate that a variety of professionals provide maternal healthcare services during pregnancy and labor in various regions around the world (de Bernis, Sherratt et al. 2003)(see Graph 2.3). Among them, in Asia, skilled and traditional birth attendants provide services to almost the same percentage of the pregnant women i.e. Skilled Birth Attendants 41.2, TBA 40.8, and Relatives 16.4. Situation of skilled birth attendance in Pakistan is still low but in improving slowly (see Graph 2.4 next page). i.e., skilled attendance has slowly progressed from 38.5 percent to 48.3 percent during the two rounds of Pakistan Demographic Health Surveys (PDHS) conducted in 2007 and 2013.

Traditional Birth Attendants (TBAs)⁶ have varied skills and educational background and have limitations in picking early signs of complicated pregnancies. The resultant delays, in seeking health care may further compound the problem resulting in mortality. Firstly, such limitations have precluded the investment made upon TBA's training or education in resource-poor settings and raise the need to include a new cadre of field workers called community midwives (CMWs) (Sibley, 2004) (Wajid, Rashid et al. 2010). Secondly, in order to implement facility-based skilled attendance a number of health facilities have to be built, something that may not be achievable in resource-limited settings of developing countries, thus resulting in more investment on a community model, instead of a facility-based model of skilled attendance.



Graph:2.4 assistance provided during delivery in Pakistan-DHIS 2007 & 2012.

⁶ Also known as Dai in Pakistan.

During 2006, the Ministry of Health (MoH) established the National Maternal Newborn and Child Health Program (NMNCHP) with federal and donor support (Khan 2012). The program aimed to have twelve thousand women trained by specialists to provide antenatal care, postnatal care, and to conduct delivery (Khan, 2012). These women were recruited from the same rural community as the pregnant women in the program in order to ensure their availability within the community. The eighteen-month training of midwives started in 2007 in designated midwifery schools where four senior tutors in the field and two clinicians at each site provided training. To add practical hands on, CMWs were provided a six-month practical training to conduct delivery successfully by the obstetricians. By December 2011, around 4,700 trained community midwives were deployed nationwide to provide skilled birth attendance. CMWs provided skilled attendance not only at the home of the pregnant women, bridging the gap between the health facility and the community, but also at the birthing station (at the CMWs' homes).

2.2.2- Challenges faced by Health Service System and Next Steps

In sum, the health service system is challenged by lack of proper infrastructure and personnel to meet the increasing demand of a fast-growing population, poverty, illiteracy, and women's low social status. Despite significant investment in the health sectors over the years the health indicators of Pakistan lag behind many regional countries. In urban areas, access is not an issue, but low quality services remains a concern (Bhatti 2015). On the contrary, in rural

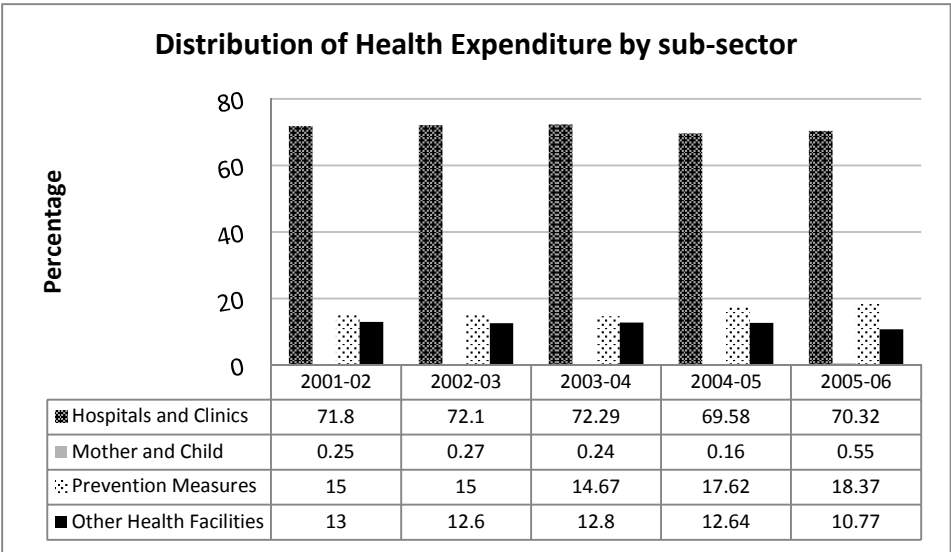
areas poor access leads to home births with or without the assistance of a skilled birth attendant (SBA).

The health service system has typically high out-of-pocket payments, low quality publicly financed and poorly regulated privately financed market provision of services, resulting in a mixed health service system (Nishtar 2010). Unfortunately, there is no health insurance system and the majority pay health care expenses themselves (Essays 2013). It strongly impacts the lower segment of society, which is compelled to adopt awkward health seeking behavior by approaching “quacks”, low-standard hospitals, self-medication, or even broken up treatment due to acute shortage of consistent funds.

The distribution of health care services is focused on large urban centers, while rural urban inequities are more profound (Akram and Khan 2007). Tertiary health care in Pakistan consumes major financial resources, and primary health care remains under funded despite 2 percent foreign aid as of total health sector allocation (see Graph 2.5).

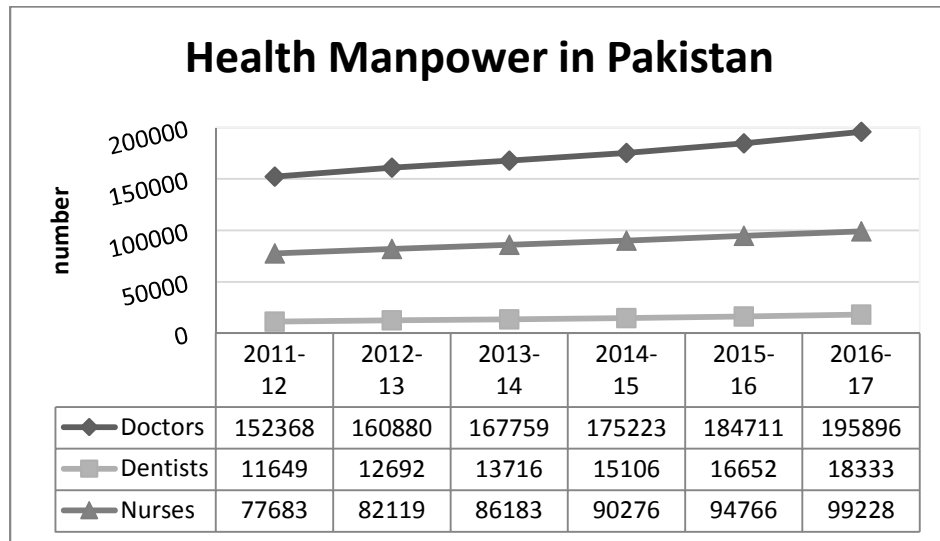
Both primary and tertiary health care facilities have poor referral linkages between them, and they work in isolation (Siddiqi 2001). The health care model focuses and consumes resources for curative purpose, prevention on the other hand, remains a secondary priority in the government’s declining public health spending. This results in the maldistribution of human resources who concentrate in urban areas despite their consistent growth (see Graph 2.6).

The health service system in the province of KP also faces many challenges. The province with the fastest growing population in Pakistan most of which is settled in the



Graph 2.5 Distribution of Health Expenditure in Pakistan

mountainous country, is further challenged by 2.5 million internally displaced population (IDP) after the recent insurgency as well as by Afghan migrant population. Compared to urban areas, the average distance to the health facility in rural areas is about ten kilometers, that is, three times more than in urban settings (NWFP, 2008).



Graph 2.6 Registered Health Manpower. (Pakistan Bureau of Statistics-2017)

Given the size of the population, there should be over 1,280 Basic Health Units compared to the 784 existing in the province, and 380 Rural Health Centers compared to the 86 created by 2010⁷.

It is evident from the above that compromises exist at the level of human, material, financial resources and resource accessibility. This has lowered the effectiveness of health care systems in Pakistan, resulting in a poor response to the health determinants. The situation is

⁷ District Health Information System (DHIS), NWFP. 2010.

further aggravated by a lack of consistent policy, institutional arrangements for policy review, as depicted above, and political will to change (Nishtar 2010).

2.2.3- Cultural and other contextual factors in Pakistan

In this part of the section, cultural, religious, and other contextual factors in Pakistan that may influence maternal healthcare utilization will be highlighted briefly. These factors are important, as they enhance the understanding of the utilization of maternal healthcare in the presence of cash incentive.

Utilization of health services depends upon many deep-rooted attitudes and social norms within a given society (O'Donnell 2007). This results in preference for traditional therapies over the modern interventions. This is more pronounced in societies with low education and income, and is reflected in a high number of home-based deliveries. The adherence to norms is influenced by socioeconomic environment. Gender attitudes in societies which restrict the public appearance of women influence the utilization pattern as well. Research indicates that the financial resources at the disposal of women facilitates health service utilization, as observed in Indonesia (Beegle, Frankenberg et al. 2001). Another instance is that of African countries, where low socioeconomic groups access health services less frequently as compared to men, however, the reverse is true for higher socioeconomic groups (Castro, Dayton et al. 2000).

Pakistan is predominately a Muslim country with a patriarchal society, while almost half of the population is women. The patriarchal society of Pakistan has severe implications for

maternal health services utilization. Female subordination is primarily due to dependency for financial resources and lack of permission to seek health advice independently, resulting in delay in seeking services or absence of services altogether. Such subordination results from gendered norms rather than as of biological sex. Therefore, liberal feminists underscore the need to change these norms by focusing on equal opportunities for men and women. On the one hand, due to religious reasons, women are not allowed to go outside alone and need to be accompanied by someone; they should be accompanied by their husband, their brother, or father (Mahram)⁸ during their medical visit (Mumtaz and Salway 2005). On the other hand, it is well known that unrestricted independent mobility improves access to information and interpersonal skills, resulting in higher health-seeking behavior (Cleland et al., 1996). This is due to the communication of the women with their peer groups, which further influences their choice of seeking better health. Feminist scholars consider that women's mobility and women's autonomy contribute to the improvement of women's reproductive health. Through increased mobility they become well aware of the health services provided within their society, and through autonomy they can reach the decision for obtaining them.

Mumtaz (2003) classified women's mobility into three types by interviewing 7,848 women in Punjab, the largest province of Pakistan (Mumtaz, 2003; Mumtaz, Z., & Salway, S. 2005). They classified mobility as: accompanied mobility (travel in the company of any other adult), unaccompanied mobility (travel without the company of any other adult), and hypothetical unaccompanied mobility (accompanied or unaccompanied travel to a health facility in times of need). The authors found that 48 percent of respondents had accompanied

⁸ Mahram in Islamic Sharia is an unmarriageable kin.

mobility, 18 percent had unaccompanied mobility and only 28 percent had hypothetical mobility, i.e., they could travel to the health facility alone, if needed. The authors indicate that characteristics like higher age and number of sons are associated with increased travel without company. Accompanied mobility was positively associated with antenatal care use. Both factors namely higher age and number of sons, are protective factors for women in the male dominated society of Pakistan, in which unaccompanied travel may either be dangerous or considered as soliciting.

*Purdah*⁹ is a religious practice observed by orthodox Muslims in which women have to wear a head scarf and Hijab (covering face) and leads to female seclusion. *Purdah* confines women's social and economic activities inside the boundaries of the house. She is only allowed to interact with blood relations and with her husband. This arrangement is observed strictly and is assumed as the basis of restricted sexuality for women. In her ethnographic findings, Mumtaz indicates that *purdah* is the basis for endogamy (marrying only within the tribe or clan), but it has also been used for the basis of distribution of resources and to limit communal boundaries. According to her, opportunities are restricted for women, and hence men can control the resources according to their will, and limit the access of resources on the basis of *purdah*. This dependency and restricted access to resources influences women's health-seeking behavior. On the other hand, due to restricted mobility, educated women opt less for field jobs; consequently, primary health care providers in first level care facilities are typically male. This distribution pattern within traditional society further limits health-seeking behavior among

⁹ *Purdah* is an Islamic tradition of seclusion of women from public observation. It is achieved by using the veil (hijab) and by confining women's activities within the walled house. Source: *purdah*. (2015). In *Encyclopedia Britannica*. Retrieved from <http://www.britannica.com/EBchecked/topic/483829/purdah>

women, as women prefer same-gender health care providers. Traditional birth attendants (TBAs) are easily accessible females within the home environment, and women therefore prefer to approach them during their pregnancy (Nakua, Sevugu et al. 2015).

According to Dictionary.com, “[a]utonomy is an independence or freedom, as of the will or one's actions” (Dictionary.com, 2018). Pakistani women who usually live in a combined family set up are less autonomous, and their health decisions are taken by others around them, mostly their husband, mother-in-law or even the elder brother of their husband (Upadhyay, Liabsuetrakul et al. 2014). Analysis of the Demographic and Health Survey (DHS) of Pakistan conducted in 2013 assessed female autonomy by asking the question: “who makes your health decision?” Analysis revealed that in 39.7 percent of cases the woman and her husband made the healthcare decision, in 39.5 percent of cases the husband alone made the decision and in only 11 percent of cases the woman alone made her health decision (International. 2011).

Mumtaz and Salway (2009) have conducted a systemic assessment of the adequacy of the autonomy paradigm for understanding the gendered influences on women’s reproductive health; they have also conducted thirty five semi-structured in-depth interviews (Mumtaz and Salway 2009). According to their findings, decisions concerning young women’s reproductive health are made by older women, as young women are considered new to the field of reproductive health and they are not considered capable of making appropriate decisions. Even a married woman’s decisions are not hers independently, but are reached through an exhaustive consultative process among family elders. In this consultative process, the newly wed can be a part of the process but her input is not highly regarded, and she should always keep her tone low. Using a loud voice is considered as rebelliousness and undermining of her

husband's masculinity. If the clan (*baraderi*) does not consider health services useful, then women cannot join or use them.

2.3 Conditional cash transfer program in the province of KP

This section provides details of conditional cash transfer program in the province of KP. This information is acquired from official government reports, Planning Commission document (PC-1), in-formal interviews with government officials comprising the Director, Deputy Directors, Monitoring & Evaluation Officers (M&E) of Maternal & Child Health Care program, as well as on-site field visits.

2.3.1- Background

The health outcomes in the Province of Khyber Pakhtunkhwa (KP) remain a challenging task which results in poor progression towards the improvement of the health status of the poor. The health and well-being of women, mothers and children in the province remain low. High infant mortality rate of 76 per thousand live births¹⁰ and the high maternal mortality rate (MMR) of 276 per hundred thousand live births¹¹ reflects the above challenging picture (Bhutta ZA, 2015; (Bhutta, Gupta et al. 2004). This is due to many supply side factors, natural disasters, and the insurgency faced by the province precipitated by the gradually increasing security related incidents. Realizing this, the newly elected democratic government in the province has increased its commitment towards the health of its population by increasing health spending.

¹⁰ Multiple Indicator Cluster Survey of NWFP, 2008.

¹¹ PDHS (2006-07).

This enhanced provision of funds will be used to improve the health of the province. Out of this allocation, around US \$ 2.7 million (Three hundred millions Pak Rupee) have been earmarked to improve the health of mother and child in the province (Health 2013-14).

2.3.2- Introduction

Conditional cash transfer provides a monetary incentive to the households that engage in health seeking behavior. Such programs can be an effective means to increase utilization of underserved services, as in the case of KP's community midwives, and they may also result in improvement of health outcomes. Although CCT programs started in South America, due to their popularity, they have been implemented in many parts of the world. Nepal, Bangladesh, and India have adopted policies to provide financial incentives for pregnant mothers to increase the use of maternal health care services. Such policies are not intended to act as a social safety net-they are more focused on a behavioral change.

In December 2013, the Department of Health of the Province Khyber Pakhtunkhwa (KP) sets off a special CCT program called, Chief Minister's (CM's) Special Initiative for Mother and Child Health in order to increase deliveries in public health facilities and delivered by Skilled Birth Attendants (SBAs) (Health 2013-14). According to an assessment conducted by the Planning Commission of Government of Khyber Pakhtunkhwa (KP), "Cash incentive intervention to encourage institutional deliveries (ID) and skilled birth attendance among the poor women of KP has considerable potential to overcome some of the important barriers that influence the utilization of healthcare services during the pregnancy" (Health 2013-14). These barriers are primarily the costs of accessing institutional health services. This intervention might also

influence the decision-making process within the family of pregnant women regarding seeking advice from the institutional health services or seeking skilled birth attendance. With the provision of cash transfers the attitude of family members of the pregnant women might be motivated towards institutional delivery (ID). Such interaction with the public health institutions is likely to influence their family's attitudes to accessing healthcare services in general. This change in health seeking behavior is likely to increase in child health care services utilization after the pregnancy.

2.3.3- Incentive

According to the specifics of the initiative, financial support of Rs. 2,700 (US \$27) is to be provided to every pregnant woman, who seeks health care from public health facilities including free medicines. This incentive is offered when pregnant women are examined by skilled birth attendants (SBA). Under this program, each woman who is examined regularly at the public health facilities or by CMWs, from conception to delivery and post-delivery care, will receive an amount (Rs. 2,700 or US\$ 27) in six instalments (Health 2013-14). Thus, a financial support of Rs. 300 (US \$3) during each of four antenatal care visits (ANC), and Rs. 1,000 (US \$10) for Institutional Delivery (ID) at a public healthcare setting or delivery by CMWs, Rs.500 (US \$5) for postnatal care (PNC) is offered by the government. The program also urges families to arrange for transport of pregnant women using this cash award to be given by the government at public hospitals or by community midwives (CMWs) (Health 2013-14). Indirect benefits of the incentive can cover the opportunity cost, cost of accompanying person,

purchase of high quality food, nutritional supplements, and psychological well-being and sense of security.

2.3.4- Payment System

Payments are made either through an electronic cash transfer to the mobile phone or through bank check. Lately, considering far flung areas in the hilly province, where such facilities are lacking the money order paid through postal services is being adopted. If the postman is unable to deliver the money order within seven days of receipt of money the said money order is returned.

2.3.5- Targeting

The central feature of most of cash transfer programs is the use of explicit targeting strategies to qualify for the enrollment. Such targeting may range from geographical localization based upon wealth index of households constructed from earlier survey results. However, the present program does not target specific population, and is open to all pregnant women, regardless of their parity, who deliver at a public health facility, and does not include deliveries in private settings. Initially, women, regardless of their socioeconomic background in ten pilot districts, were provided with the incentive. Pregnant women seeking medical advice from Community midwives (CMW), Lady Health Visitors (LHV), or medical doctors in basic Health Unit (BHU), Rural Health Center (RHC), THQs, Women & Children's Hospitals and District Headquarter Hospitals in ten pilot districts were provided the incentive. Pregnant women delivering at CMW birth stations along with afore mentioned health facilities were also

included. Postnatal women seeking medical advice within forty two days of delivery from CMWs, LHVs, BHUs, RHCs, THQ, and DHQ hospitals in ten pilot districts were targeted.

2.3.6- Implementation

Upon interaction with the eligible women, a CM initiative card is provided to women. Their current status of health visit, ranging from ANC visit, delivery, and postnatal care, is recorded in a special register available with each CMW and by each public health facility. Health care providers enter the relevant details of women, including her name, husband's name, CNIC number¹², phone number, address, current status, and preferred mode of payment. On a weekly basis, in charges of public health facilities and CMWs, a weekly list of eligible women is submitted on a standard form to their concerned District Health Office (DHO). These forms are then reviewed and forwarded to the provincial office with one copy sent to the Secretary of Health and Director General Health Services (DGHS). The provincial office works on the list and processes the payment within two days of receipt of the list of eligible women from the District Health Office (DHO). In ten pilot districts, regardless of their socioeconomic background, women were provided cash transfers to improve access to public health facilities and to promote safe deliveries in aseptic conditions. Cash recipients gradually increased as per financial resources of the program in these ten districts (see Annexures 2,3). Planning documents of project 2013-14 indicated that pilot districts were chosen on the basis of poor MNCH indicators for the initiative. However, this selection was not backed by information

¹² Computerized National Identity Card Number (CNIC) is a unique eighteen digit identification number allotted to each citizen of Pakistan.

provided by District Health Management Information System (DHMIS)¹³. Later, thirteen districts were phased in by May 2015, expanding to twenty-three districts. One district never joined the CCT program. The program also urges families to arrange for transport of the pregnant women using this cash award to be given by the government in public hospitals. It is expressed in a planning commission document that the initiative needs to be widely advertised in newspapers, electronic media, and that the information about the initiative is also to be made available by the CMWs and LHVs to all pregnant women in the rural areas. Orientation and training provided in each of the ten districts to the administration of the District Health Office and community midwives. This was followed by district level public seminars in ten pilot districts. Local residents were informed about the intervention through seminars, distribution of information flyers and posters in ten districts.

2.3.7- Performance Indicators

Two key indicators are used to assess the impact of the CM's special initiative:

1. Percentage of facility-based deliveries or deliveries conducted by community midwives (CMWs).
2. Number of women who delivered with more than one ANC visits.

¹³ District Health Management Information System collects data from all health facilities within the districts. The information is gathered about antenatal visits, women with low hemoglobin levels diagnosed during Antenatal visits, institutional deliveries, tetanus toxoid immunization, postnatal visits, babies born with low birth weight (<2.5kg), neonatal deaths and stillbirths.

2.3.8- Monitoring:

The District Health Officer (DHO) of each district maintains records and visits health facilities and subsequently shares this information with provincial office. The District Health Officer (DHO) or the District Coordinator of LHWs program or Public Health Specialist ensure and monitor the validity of data received from CMWs and health facilities in the catchment area. At the provincial level, the official designated by the provincial coordinator of the initiative or Director General Health Services (DGHS) shall visit districts to verify the payments of the incentive by random selection of names of women and by a physical visit to their house(Health 2013-14). During the field visit to the provincial Maternal and Child Health office situated in the provincial capital it was realized that the monitoring visits are infrequent and that the field visit plan was not part of planning commission document. There was only one field monitor operating throughout the province. In far flung areas, the reliance was made upon the information provided by the District Health Office of the concerned district.

2.4 Analysis of present Incentive

The purpose of this section is to enhance the understanding regarding the costing of incentive provided under the cash transfer program in Province KP. This section is further divided into three sub sections which include baseline information, costing studies, and breakdown of incentive.

2.4.1-Baseline information

National Health Accounts (NHA) provides the estimates of health care expenditures in public and private setting by the household (Pakistan, 2013-14). In Province KP the recent out of pocket (OOP) expense by type of health care accessed as documented by NHA indicates that around 66 percent of the population accessed outpatient healthcare services, and 11 percent accessed inpatient health care for their illness. 18 percent opted for self-medication and for the treatment of previously prescribed drugs for chronic ailments like hypertension or diabetes. Only 4.50 percent accessed healthcare for the delivery purpose. Further breakdown of OOP data of expenditure by private household indicates that spending incurred on medicine is the highest and second highest spending is on the doctor's fee in the Province KP.

Table 2.1: Category wise Out of Pocket (OOP) expenditures of private households in Province KP during 2013-14.

Expense	Percentage
Medicines/vaccine	49.05
Doctors fee	14.16
Medical supplies	9
Diagnostic tests	8.81
Cost of surgery	6.76
Transportation costs	5.07
Medical durables	2.09
Food	1.56
Admission fees	1.49
Accompanying person cost	1.15
Other	0.76
Tips	0.1
Total	100

Source: Pakistan National Health Accounts 2011-12 Pakistan, pp. 47.

2.4.2-Existing Costing Studies

Existing District Health Management Information System (DHMIS) provides information on services provided to the population and remains silent on costing (Green, 2001). Despite this existing data limitation few independent costing studies have been conducted in primary health care in Pakistan to gain provider's perspective. Malik (2015) conducted a literature review to find out the costing methods (Malik, Gul et al. 2015). The authors extended their research to find out cost of outpatient treatment during the visit to Basic Health Unit (BHU) in five districts of Province KP. The authors recorded expenditures acquired by District Health Office including salaries, supplies, equipment, and utility bills. The authors used 3 percent discount rate for calculating total cost and recurring cost. Mean total cost per outpatient visit was US\$ 5.89 (one US \$=59.8 Pakistani Rupee in 2005). Recurring cost per outpatient visit was 4.1 US dollars during 2005. This information is vital as under the present cash transfer program a financial support of US \$3 (Rs. 300) is provided during each of four antenatal care visits (ANC). Even if the exchange rate at present has doubled (one US\$ =115 Pak Rupee in 2018) the amount provided clearly is not sufficient as compensation for antenatal care (which is an outpatient service) as compared to calculation conducted in 2005.

Khan *et al* (2010) conducted a cross sectional study in a large tertiary level Maternal and Child Care Hospital in the capital city for the estimation of an average cost of spontaneous vaginal delivery (SVD) and Caesarian Section (CS) (Khan, 2010). Authors interviewed the 133 postpartum women in a short duration of one month to arrive at the actual cost of their out of pocket expense. The authors conducted costing from both the provider and consumer perspectives. From the consumer's perspective, they acquired direct and indirect expenses

against the SVD and CS. The expenditure details included expense on food, travel, diagnostic tests, medicines, and caregiver's time cost. For opportunity cost minimum permissible wage scale was used to convert time into monetary value. However, this costing did not include the intangible cost due to pain and suffering. From the provider's perspective authors used a top down approach and classified the costs into capital (land, building, equipment and furniture) and recurrent costs (operational and maintenance costs). Capital costs were obtained from the hospital accounts department. Recurrent costs were divided into three cost centers including shared services, directly rendered services, and personal services.

Thus, after the calculation average cost of spontaneous vaginal delivery from the provider's perspective was US\$ 40 and a Caesarean section was 162 US\$ (exchange rate US\$= 67 Pak Rs. in 2008). The calculations considered an average length of stay of one day for SVD and four days for CS. The average cost from a patient's perspective for SVD was US\$ 79 and for CS was US\$ 204. The analysis indicates that in provider's perspective recurrent costs comprised of 84% of total cost and remaining (16%) were recurrent costs for both events. In SVD major costs incurred by the pregnant women were in transportation whereas in case of caesarian section the major costs were drugs (27%) followed by hospital fee i.e., 26 percent.

2.4.3- Is incentive amount right?

In Pakistan per capita spending on health is 39.5 USD (Pakistan, 2013-14). Approximately sixty seven percent of health expenses are from private source out of which ninety percent is out of pocket expense. NHA provides details of health expenditure by kind of illness in each province as well. However, it provides nonspecific health expense among

women as “women issue” and does not provide details of delivery expense. Thus per unit cost of delivery cannot be calculated from NHA.

Present study also explored the planning commission documents of the cash transfer program to find out the basis of calculation of incentive but could not find any basis of such calculation.

Literature indicates that in regional programs higher incentive is offered to the pregnant women, for example in neighboring India women get an incentive of US\$ 14 (INR 1000) under JSY scheme to cover their expense (Lahariya 2009) .

2.4.4-Recommendations

Following points are noteworthy for the policy makers and program managers to review the amount of incentive;

Firstly, it is evident that the incentive provided under the present CCT program is definitely far low as per domestic costing studies and by the regional standards as outlined above.

Secondly, women in the household have to perform a variety of jobs ranging from cooking, making up house, laundering clothes, and other household chores which makes their opportunity cost very high which is further disincentive to deliver in the institutional settings.

Finally, present incentive’s universality does not consider the place of delivery, distance to health facilities, parity, and more importantly the outcome of delivery i.e., spontaneous vaginal delivery (SVD) and Caesarean section (CS). It is clear from Khan’s study that both events have different price tags as they are dependent upon their length of stay (LOS) in hospital. In

Caesarean section case women has to stay long and has to use more antibiotics, analgesic medicines escalating the cost. It is unsuitable to provide the same incentive under two different medical conditions which have different therapeutic requirements.

Chapter III Methods

3.0 Introduction

The present chapter provides the methodological basis needed to find the answer to the broad research question of this research, that is, whether conditional cash transfer intervention in ten pilot districts has improved access to skilled birth attendance (SBA) in the Province of KP in Pakistan. The answer to this question helps to understand how pregnant women invest in maternal health and how facilitation in terms of cash transfer by improving access modifies their health-seeking behavior. In addition, this answer helps to identify the implementation gaps that may exist in the social contract established through the cash transfer program.

3.1 Theoretical framework

Demand Side Financing (DSF) programs, such as CCT, are used to increase access to health services. The defining character of such programs is that they establish a link between the user of service, the underlying purpose or objective of the use, and the subsidy (Gupta, Joe et al. 2010). Such programs deliver monetary incentives to the users to incentivize the use of specific health care service by reducing the financial burden for such services (Bowser, Gupta et al. 2016). CCT programs shift and increase the purchasing power in the hands of users who, in turn, make rational decisions to maximize their benefits and reduce their losses. As health

service utilization is not monolithic, multiple factors come into play. For example, the utilization is subject to the availability of services and upon the presence of need (being pregnant) which leads to the creation of demand for service (Sugathan, Mishra et al. 2001). As demand overlaps the availability of health services, actual utilization occurs as utilization is facilitated by improved access. In the absence of such facilitation, women defer their health-seeking behavior due to a number of reasons, such as the opportunity cost of an accompanying person, some deferred work at home, like cooking or fetching water, or simple lack of empowerment, etc. Cash transfer programs may operate at various interfaces by ensuring the availability of financial resources, which can make money available for transportation to improve geographic accessibility. Cash transfer programs can also improve cash flow within society, thus improving affordability (Jacobs, Ir et al. 2011). The incentive in the form of cash transfer raises the demand and subsequently improves affordability for women to use such services. Cash transfer improves access by pregnant women and subsequently their utilization of maternal services, as utilization is an operational proxy of access. Access, the timely use of services, is multi-dimensional and includes availability, geographic accessibility, acceptability and affordability (O'Donnell 2007) (see Fig.3.1). The present study has used a framework built on factors on demand side identified by Tim Ensor (Ensor and Cooper 2004). All demand side factors, which operate at multiple levels and influence the utilization behavior of the healthcare buyer, have been used in the present analysis.

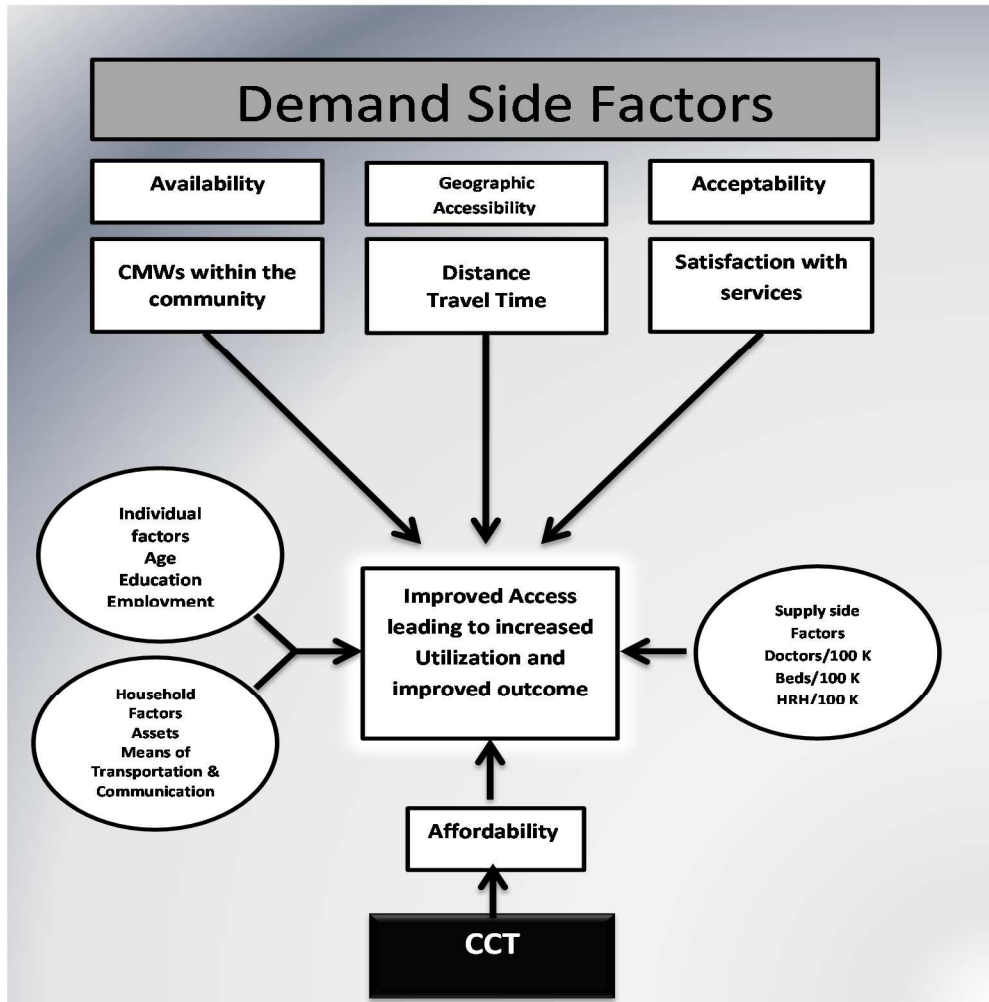


Figure 3.1: Demand Side Factors and Conditional Cash Transfer (CCT)

The covariates used in the present study are classified and discussed at length below.

3.1.1- Geographic Accessibility

Geographic accessibility is an important element in the utilization of health services, especially in developing countries where road infrastructure is poor and means of transportation are scarce. To compound this problem, most of the health facilities in rural Pakistan are inconveniently located outside the main settlement of villages. In KP, only forty

percent of referral hospitals are within the range of thirty kilometers (Ali, 2008). Literature indicates an inverse relationship between the distance, the travel time taken to the health facility, and geographic accessibility (Hjortsberg, 2003). Distant location will result in high cost as more financial resources are required to cover travel-related expenses before the utilization of health services. The famous Thaddeus and Maine's three delays model gives due attention to the lack of means of transportation or distance, which may delay reaching the health facility and seeking emergency obstetric care (Barnes-Josiah, Myntti et al. 1998). Such a delay can be fatal, as in cases of prolonged or obstructed labor. Delays are logistical in nature, but they can be an important factor in lowering mortality in difficult terrain. Physical distance to the health facility and the time taken to cover this distance are important factors, especially for a pregnant woman, and they influence the utilization of maternal health services (Shaikh and Hatcher 2005). As indicated above, distance to the health facility may refer to actual distance or to the time consumed to cover this distance. It may be facilitated by the presence of transportation within the household. Geographic accessibility in the PSLM is represented by the time period intervals dichotomized into less than and more than half an hour period required to reach the nearest hospital/clinic and the Basic Health Unit (BHU). Similarly, the question whether the distance can be covered by foot or by using transportation is asked in PSLM survey. Data also identifies the mechanical means of transportation available at household level e.g., bicycle, motor cycle, car, tractor in the survey. It is noteworthy that the health service system in the public sector within Pakistan is free of cost, so the monetary benefits provided under cash transfer are usually used to cover the opportunity or travel cost.

3.1.2- Affordability

The price of the service is also an important factor which influences the utilization. Increase in price leads to low utilization and this affects the poor population the most. On the contrary, the removal of the price results into increased utilization of services. The majority of public sector health services are free or have nominal charges. In the presence of CCT the affordability by pregnant women increases, as they have the ability to cover the opportunity cost associated with such services. Income and household resources which range from moveable to non-moveable assets and land ownership reflect the purchasing power of the consumer. However, such resources may not be at the disposal of the pregnant women. Literature indicates that the probability of receiving care during pregnancy, e.g. antenatal care, rises with the income level (Wong, Popkin et al. 1987). This consumption pattern is expected, as prices are less of a barrier for persons with high purchasing power. In the present study, affordability is echoed in terms of incentive provided through cash transfer. The study also probes how the increase of affordability improves the utilization pattern of health care services in the recipients.

3.1.3-Acceptability

Health services are acceptable to the community when they conform to the prevailing norms of society. The patient's perception of services is a key factor that influences the utilization of health services. This is the case for pregnant women, who may consult home-based services, public or private health services depending on their perception of services. If public health services are up to mark and conform to quality standards, patients will use them

more frequently. If they are not up to mark, then, even in the presence of cash transfer, the utilization will not reflect a change. Satisfaction with the service user is an important factor which may influence the utilization pattern (Gaumer and Gemmen 2006). Acceptability of health services in the catchment area of the health facility is reflected in the frequency with which the dwellers of the community use such services. The PSLM survey answers to this query through capturing the satisfaction with existing health services.

3.1.4- Availability

Availability is represented in terms of opportunity to access health services when they are needed by the patients. Absenteeism and lack of supplies hamper the utilization of health services, thus diverting patients to easily accessible services provided by traditional birth attendants (TBAs) (Sialubanje, Massar et al. 2015). Furthermore, knowledge of availability of health care services is dependent upon the information and education of the person.

Though the availability of health services can be expressed by the availability of health facilities or health care providers within the area, in the PSLM survey this is represented by the time of last visit by the lady health worker (LHW). This is not a direct indicator of availability of health services within an area, but it can serve as proxy for the health services. However, having skilled birth attendance (by CMWs) in a home setting indirectly indicates the availability of a healthcare provider for the women in the community.

3.1.5- Quality of health Services

Quality, as defined by Juran, is fitness for use, leading to consumer satisfaction. It can be expressed by the ratio of performance and consumer expectation. When both performance and expectation are at the same level, then the desired state has been achieved leading to consumer satisfaction.

Reasonable price of healthcare services improves affordability. Price is an important factor in the utilization of services, if price is very high, consumers are likely to expect high quality, and their actual perception will be influenced by this expectation. Pricing is very intricate, high price may carry a message of unconcern for the consumer, whereas too low a price may raise doubts on the organization's ability to deliver the quality. Patients may travel a long distance and may prefer to pay a high price for want of quality services. Unfortunately, the perception of services in the public sector is of low quality due to technical and process components of quality, as employees lack compassion, are disrespectful, and dishonest. Literature indicates that in many African countries provision of quality services improves utilization (Parker and Knippenberg 1991). Quality services also impact survival of both newborn and mother. Thus, quality is not only a prerequisite for improving utilization, but also influences the outcome. Monitoring, feedback and health system strengthening are a few mechanisms which ensure quality of services. Satisfaction with the services provided at BHU is used in the present analysis as proxy indicator of quality.

3.2 Assumptions

Current research assumed that;

1- The utilization of maternal health services in a public setting was sub-optimal and increase in the services promoted through the CCT would lead to increase in institutional deliveries and a subsequent decrease in maternal and neonatal mortality. This further assumed that quality services were provided in the public health setting and costs involved were not significantly high. Public health facilities provide free of cost services and cash provided through the cash transfer was enough to cover the opportunity cost or travel cost incurred during the utilization of services.

2-It was also assumed that the existing capacity of the supply side was enough to take the increase in demand created through the incentives. The beneficiaries of the program would demand better services whenever they need and the services were enough to meet this demand. It was assumed that supply side constraints e.g., over-crowded hospitals leading to long waiting hours, part-time and full-time operational hours, non-availability of CMWs in the community did not impact the demand thus created through cash transfer.

3.3 Research Question

The analysis was conducted to answer the research question "What were the utilization differences among women of reproductive age (15-49 years) in districts with Conditional Cash Transfer (CCT) and without CCT for Skilled Birth Attendance (SBA) and for deliveries at public health facilities during the year 2014 within the Province KP, Pakistan?"

3.4 Study population

The women of reproductive age (15-49 years) living within the ten intervention and thirteen non-intervention districts during the years 2012 and 2014 within the Province KP, Pakistan who participated in the PSLM survey.

3.5 - Data Source

Pakistan Social and Living Standards Measurement (PSLM) Survey collected information on social and economic indicators at provincial, and district level for alternate years ever since 2004. The objective of the survey was, to observe the progress towards the Sustainable Development Goals (SDGs) indicators (PBS, 2016). The survey collected information about health, education, household assets, water and sanitation, economic situation, and services used at district level. It collected information of pediatric immunization, pre-natal examinations during the last pregnancy, tetanus toxoid injections, place of delivery, assistance provided during the delivery and finally post-natal consultation. Other indicators included in the survey were primary school enrolment, literacy rate, and source of drinking water, toilet facility, and electricity.

A brief description of the methodology of Pakistan Social and Living Standards Measurement Survey (PSLM) will be given here, followed by a description of two rounds of PSLM, which is used in the present study (for a detailed description of methodology see (Statistics 2015). The universe for PSLM comprised of all urban and rural areas of the four provinces. By adopting a stratified two-stage sample design, samples were recruited according to probability proportional to size (PPS) from sampling frame for both urban and rural domains.

Each city was divided into enumeration blocks comprising 200 to 250 households with clear boundaries and maps. These enumeration blocks were considered as Primary Sampling Units (PSUs) (PBS, 2016). The stratification scheme was complex and it took large-sized cities as an independent stratum further sub-stratified according to socioeconomic background; the remaining urban population of an administrative division, after excluding the population of large cities, was grouped to form a stratum. For rural population, each administrative district in four provinces was considered as an independent stratum. PSUs were recruited from thus identified stratum according to a scheme of Probability Proportional to Size (PPS) method of sampling. Listed households within the sampled PSUs were Secondary Sampling Units (SSUs).

The sample size for the four provinces was fixed at 5,428 sample blocks (PSUs) comprising 8,1992 households (SSUs) (PBS, 2016). In order to ensure quality data, a frequent checking of fieldworkers by the supervisors in the field was followed by preliminary editing at the field office. In addition, centralized data entry was conducted, and the data entry program used underwent several in-built consistency checks.

3.5.1 Sampling Strategy

PSLM, 2012-13 was the eighth round of the Pakistan Social and Living Standards Measurement (PSLM) Survey, which included 75,516 households from the entire country and 12,473 households in the Province KP (PBS, 2016). A two-stage stratified sample design was used for the survey. Information gathered in the survey was representative at national/provincial and district level.

PSLM, 2014-15 survey was also conducted by adopting a stratified two-stage sample design on 5,326 urban & rural Primary sampling units (PSUs) covering 78,635 households. The fieldwork was carried out between October 2014 and June 2015. PSLM data were available publically from Pakistan Bureau of Statistics (PBS), for PSLM surveys conducted during the years; 2004-05, 2006-07, 2008-09, 2010-11, 2012-13, 2014-15. Present study used PSLM survey data for 2012-13 as a baseline and 2014-15 as a follow up for the analysis.

3.5.2 Data Management

Even though the data were publically available written permission was sought to use the data. Data files were available in zipped STATA format. Each section file comprising of sociodemographic information, health seeking behavior were present as the separate data file for the survey year. These sections were merged together to make a large data file for the 2012-13 and 2014-15 surveys. Subsequently, yearly survey data files were appended together. One copy of the merged file was kept as a backup and the other was used for the analysis. Analysis was conducted on STATA 15 (Stata Corp LP, College Station, TX). The conventional level of statistical significance was used to indicate the significance of findings.

3.5.3 Measures used in the study

The main outcome of interest was utilization of natal care, comprising of institutional delivery (ID) in public setting, and skilled birth attendance (SBA) (see Table 3.1).

3.5.4 Institutional Delivery & Skilled Birth Attendance

Institutional delivery (ID) (also called Facility delivery) was defined as birthing in a medical institution under aseptic conditions, and under the supervision of trained health care providers (Sugathan, Mishra et al. 2001). In developing countries, pregnant women commonly prefer to deliver at home due to multiple factors. A research conducted in Ethiopia indicated that out of 506 respondents only eighteen percent of mothers delivered at health facilities during their last pregnancy, whereas the rest delivered at home (Fikre and Demissie 2012). Multiple factors were related with institutional delivery, among them were residential place, educational attainment of the mother, and earlier history of prolonged labor. The latter factor was the most important of all, since high risk pregnant women may start experiencing labor pain at home, and may be later brought to the hospital when unable to deliver at home. According to Agha (2011), significant increase in institutional delivery was noted among women of fourth and fifth quintiles of income registered with the pilot phase of the voucher program (Agha and Carton 2011). Education was one of the most important factors for seeking healthcare from the institution (Agha 2011). Institutional delivery (ID) comprises all public and private health care facilities; however, the current study narrows the definition of ID and limits itself to public health facilities as the incentive in the form of CCT is provided in the public setting only.

Skilled birth attendants were accredited health professionals, including doctor, midwife, lady health worker (LHW), lady health visitor (LHV), and nurse. SBAs were trained to proficiency in conducting uncomplicated pregnancy and can identify complications in the newborn and

mother. Due to their obstetric skills, equipment and medicine they were able to conduct deliveries in home setting.

Research indicated that the low utilization among Pakistani pregnant women was primarily due to a number of economic, cultural and community level reasons (Khadduri, Marsh et al. 2008). Low utilization resulted in a high percentage of births at home, i.e. 65 percent; more than half (52%) of these births were conducted by traditional birth attendants (TBAs), who were untrained about aseptic measures, and who also charged nominally (Bhutta ZA 2008). Similarly, when the time of delivery arrived, TBAs attend the birth at home under septic conditions that were unsafe for both mother and the child. If some complication developed during the delivery process, then mothers were left at the mercy of nature. On the other hand, if the delivery process took place under the supervision of a trained health care provider (i.e., gynecologist, doctor, trained nurse practitioner, or community midwife) and in the health care institution chances of successful resolve of complication were very high. In a cross sectional study conducted in sixteen government hospitals in Pakistan that included 13,175 women, nearly 99 percent of women had normal outcome, despite the fact that complications developed among 8.8 percent of women (Mazhar, Batool et al. 2015).

Table 3.1 List of variables used in analysis

Variable	Type	Definition
Dependent Variable		
Skilled Birth Attendance	Binary	Skilled Birth Attendant (SBA) delivered/assisted during the last pregnancy either in public or home settings 1= yes 0= no
Independent Variable		
Districts with Cash transfer	Binary	Women delivered in the cash transfer district during pilot phase 1= yes 0= no
Controlling Variable		
Sociodemographic		
Mother's Age	Binary	Mother's Age 1= 14 years to \leq 35 years 0= > 35 years to 49 years
Education	Binary	Have you ever attended any educational institution? 1= yes 0= no
Housing	Binary	What is your present occupancy status? 1= own house 0= does not own house
Availability of electronic media at HH	Binary	Electronic media (radio, television) at household level 1= yes 0= no
Availability of transportation at household	Binary	Transportation is available at household level 1= yes 0= no
Water within premises	Binary	Availability of main source of drinking water at HH 1= within premises 0= outside premises
Household has toilet	Binary	Availability of toilet facility at household level 1= yes 0= no
Electricity used for lightening	Binary	What is the main source used for lighting purpose? 1= electricity 0= other arrangement
Urban region	Binary	1= Urban 0= Rural
Travel time to BHU	Binary	How much time does it take to reach the nearest

		BHU from home? 1= <= half hour 0= > half hour
Travel time to Hospital	Binary	How much time does it take to reach the nearest Hospital from home? 1= <= half hour 0= > half hour
Travel method to BHU	Binary	How is distance to reach the nearest BHU covered? 1= on foot 0= on transport
Travel method to Hospital	Binary	How is distance to reach the nearest hospital covered? 1= on foot 0= on transport
Users of BHU	Binary	How often do you use the facility of BHU? 1= use 0= don't use

3.6 Econometric Analysis

The present observational study intended to estimate the impact of demand side intervention, i.e. CCT program. The study aimed to estimate the utilization differences for the institutional delivery (ID) conducted at public health facilities and skilled birth attendance (SBA) sought by women of reproductive age among districts with and without the CCT intervention within the Province KP. The study measured the variable of interest without assignment of subjects to the treatment group in the natural environment. It also used a quasi-experimental design, as the recent CCT program had presumably changed pregnant women's health seeking behavior in Province KP, where it was being offered. The control group was pregnant women in the non-CCT districts, in which the CCT program was not being offered. The treatment group included pregnant women of reproductive years in ten districts within the province of KP. There was no randomization in this process; however, the recent policy change in the province of KP had resulted in a design which was the best suitable for quasi-experimental design. To measure and control systemic differences in those women who received the cash transfer and those that did not, the study used two years of data, one before the policy change and one after the policy change, i.e. Pakistan Social and Living Standards Measurement (PSLM); 2012-2013, was before the policy change, and was used as a baseline, while 2014-15 was after the policy change. The analysis included four groups: the control group before the CCT, the control group after the CCT, the treatment group before the CCT, and the treatment group after the CCT implementation.

As indicated above, the outcome variable was skilled birth attendance (SBA) provided either in the public health facilities or in home setting. For this purpose, the Difference-in-

Differences (DD) model was adopted. DD is a useful tool in public policy research, since it is a flexible approach that allows for inclusion of covariates that influence the baseline change or the amount of change anticipated by the intervention. In such models, the treatment effect is estimated by the difference of the outcome measure at two specific times for both the treated group and the control groups, the difference between the groups is then compared. The approach is robust enough to detect a small treatment effect.

As the data set collected for the two-time periods used the same instrument, they were comparable. However, control for all the covariates that might cause systematic differences between the groups was ensured. Additionally, an interaction of the treatment dummy variables with confounders was tested to define if they could add more information. The statistical significance at conventional level was reported to evaluate the effect of the treatment dummy on our dependent variables. All estimates as well as standard errors were adjusted for the sampling design and clustering weights were applied for national representation.

The PSLM survey data were collected throughout the country; the CCT participating districts were considered treatment, and other non-participating districts were control sites in the present study. This arrangement helped to identify the counterfactual as well as to identify the impact of CCT within the Province KP. As there was no information about the non-participating households, the counterfactual in the present case was identified by the control group. In the present case, the control group was simply the households in the non-participating districts, the key difference was that they did not receive the CCT. The key assumption here was that the difference between the participating and non-participating

districts remained constant throughout the specified period of two rounds of PSLM. Using a regression framework equivalent to the difference-in-differences with covariates was the most suitable for this purpose.

$$Y_{it} = \beta_0 + \beta_1 D_{it} + \beta_2 R_t + \beta_3 (R_t * D_{it}) + \sum \beta_i Z_i + \mu_{it}$$

Where Y_{it} was the outcome indicator of interest; D_{it} was a dummy equal to 1 if, mother delivered in the district that received the cash transfers

R_t was a time dummy equal to “0” for the baseline PSLM 2012-13 and “1” for the follow up round of 2014-15.

$(R_t * D_{it})$ was the interaction term between the cash transfer intervention and time dummy

μ_{it} was an error term

Z_i was a vector indicating demand side factors, and it included: Geographic Accessibility, Affordability, Acceptability, and Availability, and household characteristics that might influence the outcome of interest beyond the treatment effect alone. However, it had left out the cultural and other contextual factors that might influence the results as this data were not available. β_0 was a constant term

β_1 measures cross sectional impact of CCT among mothers between 2013 and 2015

β_2 represented the effect of moving from the baseline to the follow up period

β_3 was the double difference estimator and captures the treatment effect

3.6.1-Estimation Problems

Variables with large and small values were checked before the analysis through box plots. Similarly, normal distribution of data was checked through plotting histograms.

The present data had near zero missing values, however; data about quality variable had some missing values but only less than 2%. Given the small percentage of missing values for the study analytical variables, the analysis was restricted to the observations without missing values.

Further, in order to avoid collinearity among covariates used in our models, we performed Variance Inflation Factor (VIF) test. Covariates with the high VIF score as sign of collinearity were dropped from our model, and the VIF test was repeated until we reached the most parsimonious model.

3.7- Ethical Considerations

The current study used anonymous, publicly available data and did not collect any primary data. There was no human subject involvement and prior permission to use the data was obtained as well. Participation in the PSLM survey was voluntary and no coercion was used in the recruitment process. There were no identifying features present in the data with minimal risk to the subjects.

Chapter IV Results

4.0 Descriptive Results

This section provides the sample characteristics of two cross sections of the Pakistan Social and Living Measurement (PSLM) survey conducted during 2013 and during 2015. First it compares Province KP with other three provinces of Pakistan to provide an insight of distinct features of the women of child bearing ages of KP. Then it expands on specific sample characteristics of the Province KP.

4.0.1- Pooled Sample

Two cross sections of PSLM survey conducted during 2013 and during 2015 interviewed 79,263 and 85,491 women nationwide respectively (see Table: 4.1). Thus, in total, 164,754 women were interviewed throughout the country during the two rounds of PSLM surveys. Ages of the respondents ranged from fifteen to forty-nine, covering childbearing age. The mean age of the women in the nationwide pooled sample was 32.8 years (SD; 8.4). Out of all the four provinces, namely KP, Sindh, Baluchistan, and Punjab, women interviewed in the province of KP were the youngest among all women interviewed in the survey (see Table 4.1). In the Province KP the mean age of 31,201 interviewed women was 32.1 years (SD: 8.7). In comparison, in the Punjab the mean age of 70,320 women interviewed was 33.0 years (SD: 8.5), in Sindh 38,822 women interviewed were about 32.9 years (SD:

8.4) and in Baluchistan, the most thinly populated province with the largest land area, the mean age of 24,411 interviewed women was 32.9 years (SD : 8.0).

4.0.2- Province –Wide Socio Demographic Characteristics of Mothers

In both PSLM surveys a question regarding the parity of the women is asked to gain the knowledge of their obstetric experience, which comprises prenatal and postnatal period, place of birth and assistance provided during the birth process. Out of 164,754 women in the pooled sample, 66,143 women, i.e., 40 percent had recent pregnancy experience, while 98,611 (60%) of the women did not have recent pregnancy history.

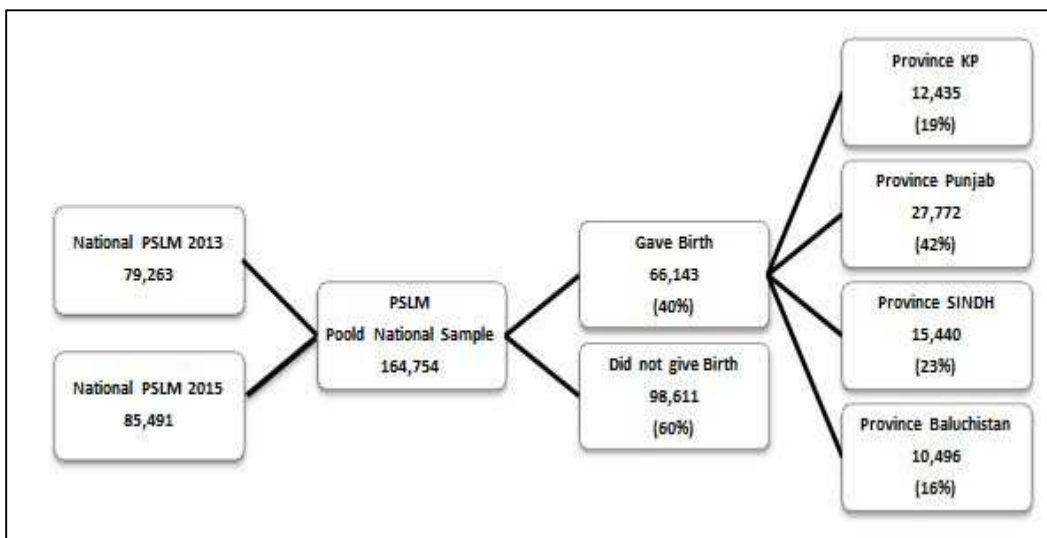
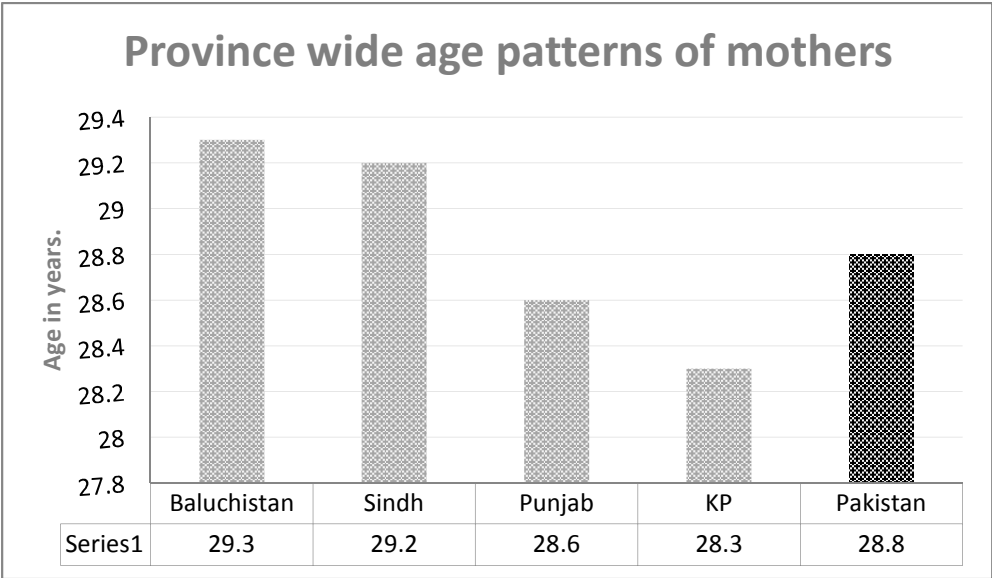


Fig 4.1. Pooled sample distribution of PSLM surveys

As indicated above, in total, 66,143 women throughout the country during two cross sections of Pakistan Social and Living Measurement (PSLM) survey conducted during 2013 and during 2015 responded that they had delivered a child in the recent past. The mean age of 66,143 women who delivered nation-wide was 28.8 years (SD: 6.2). These women ranged in age from sixteen to forty-nine. Out of all the four provinces, namely KP, Sindh, Baluchistan, and

Punjab, women interviewed in the Province KP were the youngest among all women interviewed in the survey (see Table 4.2). In the Province KP 12,435 women with a mean age of 28.3 years (*SD*: 6.5) were interviewed. In all other remaining provinces, the number of women interviewed and their mean age were: in the Punjab 27,772 women with a mean age of 28.6 years (*SD*: 6.0), in Sindh 15,440 women with a mean age of 29.2 years (*SD*: 6.4), and in Baluchistan, the most thinly populated province with the largest land area, 10,496 women were interviewed with a mean age of 29.3 years (*SD*: 6.1) (see Graph. 4.1).



Graph 4.1. Province wide age pattern of mothers

The education of women was assessed by their ability to read and write in any language with understanding. Out of all four provinces, mothers living in the province of Baluchistan had the highest percentage of uneducated mothers followed by the Province KP. Thus 10,496 mothers interviewed in the province of Baluchistan 1,156 (11.01%) had schooling and the majority of mothers, 9,340 (88.99%), could not read or write. In the Province KP 12,435 mothers were interviewed; this included mothers living in the cash transfer, non-cash transfer

districts, and those living in Federally Administered Tribal Areas (FATA). Out of these women, 3,228 (25.96%) in the Province KP could read or write and 9,207 (74.04%) were unable to read or write. In Sindh, 4,101 (26.56%) mothers were educated and the majority 11,339 (73.44%) were unable to read or write. Most thickly populated and developed province Punjab had the highest number of women who could read and write, i.e., 13,619 (49.04%). Whereas 14,153 (50.96%) could not read or write in any language.

Participating women with history of pregnancy most frequently lived in houses owned by their family in the Province Baluchistan 9,735 (92.75). Home ownership was the least in Punjab among all the provinces, i.e., 10,680 (38.46), preceded by Province KP.

Among all provinces, in Baluchistan alone 4,922 (46.89%) of urban women were included in the survey. This was followed by 6,650 (43.07%) women in Sindh province. In the Punjab province the least number of women in an urban setting participated in the survey, i.e., 10,680 (38.46%), which was preceded by the Province KP 5,049 (40.60%).

4.0.3- Socio Demographic Characteristics among CCT and non-CCT Districts¹⁴

Among cash transfer and non-cash transfer districts in the Province of KP alone, 6,355 women in non-CCT Districts and 3,980 in CCT Districts were interviewed¹⁵. In the intervention Province KP alone, a majority of women in ten cash transfer and thirteen non-cash transfer districts were less than thirty-five years of age (see Table 4.3). In the Province KP 5,404 (85 %)

¹⁴ Cash transfer program was piloted in ten districts with poor mother and child health indicators. There were no documented baseline differences among districts with and without cash transfer as per planning document of the cash transfer program.

¹⁵ The total sample size of women with recent pregnancy history was 12,435 in the Province KP. Out of this, 6,355 (51%) women resided in non-cash transfer districts. Whereas, 3,980 (32%) were from ten cash-transfer districts. The remaining women, i.e., 17% resided in Federally Administered Tribal Areas (FATA) and non-participating district in the program.

mothers in non-CCT districts and 3,380 (85 %) in CCT districts were of less than thirty-five years of age. Whereas 951 (15%) mothers in non-CCT districts and 600 (15 %) in CCT districts were more than thirty-five years of age.

Among those who were interviewed, 1,051 (26%) in cash transfer districts and 1,515 (24%) in non-cash transfer districts could read and write in any language. Whereas the majority of the women in both cash transfer and non-cash transfer districts were unable to read or write in any language, i.e., 4,840 (76%) in non-cash transfer districts and 2,929 (74%) in cash transfer districts.

The majority of the women in both cash transfer and non-cash transfer districts lived in houses owned by their families, i.e., 5,571 (88 %) women in non-cash transfer and 3,594 (90 %) women in cash transfer districts. Whereas, only a negligible portion of women lived in houses not held by their families, i.e., 784 (12 %) women in non-cash transfer districts and 386 (10%) in cash transfer districts did not own the house. There were significant differences for housing in cash transfer and non-cash transfer districts ($\chi^2 = 16.967$, $P=0.000$).

4.0.4- Household Characteristics

3,064 (48%) of women in non-cash transfer districts and 1,896 (48 %) in cash transfer districts had access to electronic media in their households. Availability of some sort of transportation at the household level was found to be same in cash transfer districts, and non-cash transfer districts, i.e., 3,565 (56%) in non-cash transfer districts and 2,226 (56 %) in cash transfer districts had access to transportation.

Water was accessible to 4,243 (69%) women in non-cash transfer and 2,965 (76%) in cash transfer districts within the premises of their households in the province of KP. Similarly, toilet facility was more available to women in the cash transfer districts, i.e., 3,609 (91%) in cash transfer districts and 5,217 (82 %) of women in non-cash transfer districts lived in a house with a toilet facility. 5,786 (91%) of women in the non-cash transfer districts and 3,847 (97%) in cash transfer districts had used electricity for lighting purposes. The majority of women who were interviewed in the survey in both cash transfer and non-cash transfer districts were of rural background. In non-cash transfer districts 4,387 (69%) of women and 2,469 (62%) in cash transfer districts were living in the countryside. Almost one third of the women in both cash transfer and non-cash transfer districts i.e., 1,968 (31%) in non-cash transfer districts and little more 1,511 (38%) in cash transfer districts were from urban settings and there were significant differences for between two groups ($\chi^2 = 53.655$, $P=0.000$).

4.0.5- Access to the health services

Accessing the location of health care services in the Province KP among cash transfer and non-cash transfer districts is not dissimilar in the case of Basic Health Units Health (BHU) facilities. More than sixty percent of the population, i.e. 3,868 (61%) in non-cash transfer districts and 2,464 (62%) in cash transfer districts could travel to basic health units within half an hour in order to receive health services (see Table. 4.1). However, accessibility to hospitals among cash transfer and non-cash transfer districts varied. Among non-cash transfer districts 4,237 (67%) women of childbearing age reported that the hospitals are less or equal to half an hour distance from their home. However, this percentage dropped in the case of cash transfer

districts, in which 2,588 (65%) mothers indicated that the hospitals were within half an hour distance.

Distance to the health facilities was covered either by foot or by mechanical means of transportation. 3,615 (57%) of women of childbearing age in non-cash transfer districts and 2,342 (59%) in cash transfer districts covered the distance to Basic Health Units (BHU) on foot. Similarly, 4,203 (66%) women of child bearing ages in non-cash transfer districts and 2,548 (64 %) in cash transfer districts covered the distance to the hospital on foot.

The majority of the population used Basic Health Units (BHU) for the health services in both cash transfer and non-cash transfer districts. However, the comparably large numbers of women of childbearing age in cash transfer districts did *not* use BHU for treatment purposes, i.e., 1,533 (39 %) as compared to 2,242 (35 %) women of childbearing age in non-cash transfer districts.

A tetanus toxoid injection, which is given during pregnancy to protect against the life-threatening disease of lockjaw, was vaccinated to a majority of the women population, i.e., 1,976 (70.2%) in non-cash transfer districts, and almost the same percentage of women in childbearing ages 1,355 (70.0%) received two or more tetanus toxoid injections for protection against tetanus.

4.0.6-Relative Risk Ratio and predictors of place of delivery for last pregnancy among CCT & non-CCT districts in Province KP

Out of a total sample of 12,435 women who gave birth in Province KP, the majority of women delivered at home, i.e., 6,703 (53.9%), regardless of the source of assistance provided by Traditional Birth Attendants (TBA) or by Skilled Birth Attendant (SBA). The second most common place of delivery was in private hospital settings. In private hospital settings 3,530 (28.39%) delivered their babies. Public institutional deliveries were less common, and 2,167 (17.43%) women delivered their babies in public hospitals. In addition, less than half percent of the women delivered in non-specified places.

In Province KP, If pregnant women were to increase their cash transfers by a unit, the relative risk for home delivery as to private hospital would be expected to increase by a factor of 1.17 (95% CI: 1.06-1.29, p: 0.001), given the other variables in the model are held constant (see Table 4.4). More commonly, if a pregnant mother was to increase her cash transfer, she would more likely prefer home over government hospital for delivery. If pregnant women were to increase their basic health unit utilization, the relative risk for delivery at home increases significantly by a factor of 1.28, given the other variables in the model are held constant.

4.1 Skilled Birth Attendance in Province KP

4.1.1-Prevalence of Skilled Birth Attendance in Home and Public Institutes

In Province KP skilled birth attendance is available in public, private and in home settings. The present cash transfer program provides payment to the mothers who deliver either in a public setting or at home with the assistance of skilled birth attendants, namely

community midwives (CMWs). There is no reward if the mothers deliver in the private setting assisted by the skilled attendant. Based on this, the deliveries conducted in the private settings were excluded from the analysis of the overall skilled assistance provided in the province. Present analysis only includes skilled assistance provided at home and public settings.

Prevalence of skilled attendance in each setting, i.e., home and public hospitals along with combined pool were calculated in a case control study manner (see Table: 4.5).

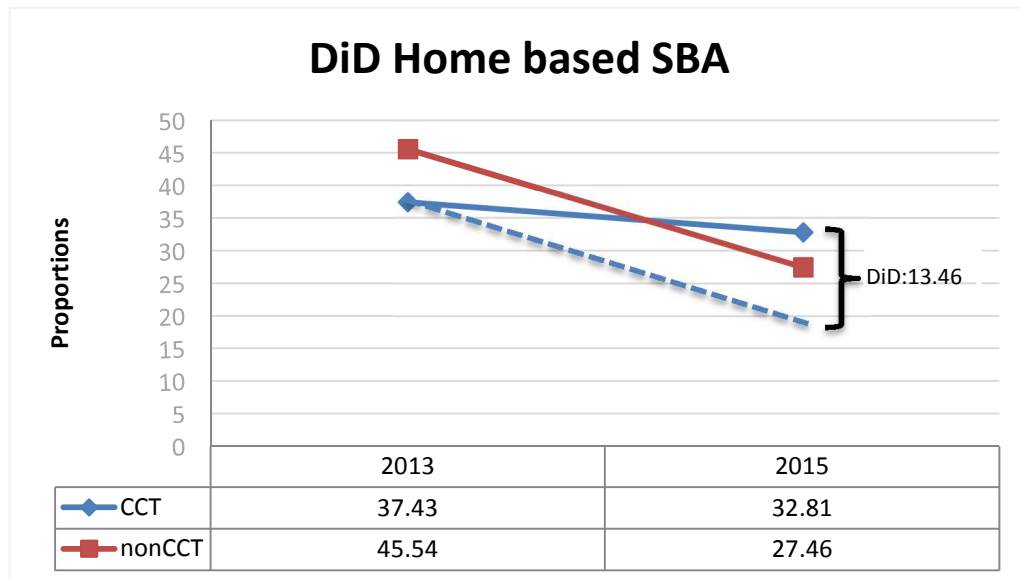


Fig 4.2. Difference-in-Differences for Skilled Birth Attendance in Home setting

Based on prevalence, it is obvious that baseline differences existed between CCT and non CCT districts. Home deliveries dropped less steeply in cash transfer districts as compared to non-intervention districts. Over a period of time, a proportionately high number of women delivered at home after the start of the intervention (see Fig. 4.2). On the contrary, proportionately fewer pregnant women delivered in public hospitals after the start of the intervention (see Fig 4.3, at the end of chapter). In a nut shell skilled birth attendance reduced

in all categories which includes home, public institutes, but the reduction in skilled attendance was less in the CCT districts than in the non-CCT districts.

4.1.2-Difference-in-Differences for Skilled Birth Attendance

In the present logistic regression, a dummy variable of districts with cash transfer and non-cash transfer was interacted with a time dummy to find the differences over a period of time. Two models were run for each skilled birth attendance settings. First, an unadjusted model was built followed by the addition of controlling variables comprising sociodemographic of mother and household characters; thus, two specifications were built for each category of skilled birth attendance.

Table 4.6 displays the results of the estimators of unadjusted (without controlling variables) and adjusted (with controlling variables) difference-in-differences regression analyses of the utilization of Skilled Birth Attendants (SBA) among pregnant women (16-49 ages) in CCT and non-CCT districts in the Province KP. Column (1) of the Table 4.6 provides an unadjusted odds ratio of Skilled Birth Attendance (SBA) in both home and public health facilities. Thus, it provides information of the total skilled attendance other than sought in private hospitals. Column (2) provides difference-in-differences results of adjusted Skilled Birth Attendance in both public health institutes and at home. Column (3) and column (4) provide results of unadjusted and adjusted analyses of deliveries assisted by Skilled Birth Attendants in government settings respectively. Finally, column (5) and column (6) provide results of unadjusted and adjusted analyses of deliveries conducted by Skilled Birth Attendants in home settings respectively.

Results from the unadjusted difference-in-differences analysis, as shown in column (1), indicated that mothers in the cash transfer districts were less likely to deliver at government and home settings at the baseline. This same trend was seen for the difference-in-differences between the years 2012 and 2014, i.e., during 2014 women were less likely to deliver with the assistance of Skilled Birth Attendant in comparison with 2012. The interaction term between cash transfer and year, to examine the difference over time in outcome variable of skilled birth attendance, showed that mothers were significantly more likely to seek skilled attendance in the districts with cash transfers in combined home and government settings (OR: 1.40, CI: 1.15-1.70. p; 0.001). This trend was not maintained at conventional significance level in the adjusted analysis as shown in column (2) of Table 4.6. The year variable in column (4) showed that women of childbearing ages significantly sought more skilled attendance in public settings compared to the year 2012. The insignificant findings depicted in the columns (3, 4) of DD estimator show the difference over time in outcome variable of skilled birth attendance in public settings; these depicted that women were less likely to seek skilled attendance in the districts with cash transfers in public health facilities or institutional deliveries (AOR: 0.89, 95% CI: 0.68-1.17).

Columns (5 & 6) provide unadjusted and adjusted difference-in-differences regression analyses of skilled attendance provided in the home setting of women who delivered in cash transfer and non-cash transfer districts. In unadjusted analysis without covariates, the interaction term between cash transfer and year, to examine the difference over time in outcome variable of skilled birth attendance at home, revealed that mothers were significantly more likely to seek skilled attendance in the districts with cash transfers (OR: 1.80, 95% CI: 1.80,

p ,_0.000). The year variable in column (6) indicates that women were significantly less likely to seek skilled attendance in 2014 in comparison with 2012. After adjusting for observable characteristics, results showed that mothers were more likely to seek skilled attendance in the home setting (AOR. 1.54, 95% CI: 1.19-2.00, p; 0.001), i.e., women living under the cash transfer program had 1.54 times higher odds of having a baby delivered by a Skilled Birth Attendant (SBA) at home. Among the controlling variables, the most significant factors that influenced the utilization of SBA included education, type of construction of house, roof, presence of transportation, availability of water within premises, toilet, electricity, urban region and travel time to hospital. Study also controlled for the supply side factors but no considerable change in the results was found (results not shown).

4.1.3- Difference of prevalence of SBA among mothers of various sociodemographic backgrounds

Simple prevalence of skilled attendance in each setting, i.e., home and public hospitals were calculated in a case control manner for women of various sociodemographic backgrounds (see Table: 4.7). This was followed by calculation of difference between prevalences to arrive at difference among differences of prevalence of skilled attendance at various settings for each sociodemographic characteristic of pregnant women. Based on these prevalences, it is apparent that, over a period of time, a proportionately higher number of women delivered at home and public settings in rural areas of the province after the start of the intervention. On the contrary, a proportionately lower number of pregnant women in urban areas delivered in the home and public hospitals settings with assistance of SBA after the start of the intervention.

A proportionately higher number of women who did not attend school delivered in the home setting, while women who attended school preferred skilled attendance provided at government settings. Young mothers, those less than thirty-five years of age, sought proportionately more skilled attendance at home in comparison with mothers more than thirty-five years of age. On the contrary, mothers of more than thirty-five years of age sought skilled attendance in the public setting compared to young mothers.

High proportions of mothers who lived distantly and took more than half an hour to reach the hospital sought skilled attendance at home setting. Similarly, mothers with a long commute to health facilities sought proportionally more skilled attendance at the public institutes.

The emergent themes from this proportion analyses can be outlined as;

1-In nutshell, rural mothers, mothers who did not attend school, mothers younger than thirty-five years of age, and mothers with more than half an hour commute to the hospital proportionately favored home setting for the skilled attendance over a period of time in cash transfer districts.

2-A higher proportion of skilled attendance provided at public hospitals was used by rural mothers, school attendees, mothers of more than thirty-five years of age, and long commuters.

4.1.4- Sub analyses on sociodemographic characteristics of mothers for skilled attendance

Based on the emerging trends outlined above, segmented analyses were performed for each group of utilizers of skilled birth attendance by women of various sociodemographic

characteristics. Unadjusted analyses were followed by full specification models controlling for various sociodemographic characteristics.

4.1.5- Difference-in-Differences for Skilled Birth Attendance (SBA) in Urban & Rural settings

Significantly higher odds of skilled birth attendance in home settings are seen in unadjusted as well as in adjusted models of rural women. Women in rural settings had higher odds of delivering at home with the assistance of skilled birth attendants in cash transfer districts compared to non-cash transfer districts after controlling for covariates over a period of time (AOR; 1.74, 95% CI: 1.07-2.84, p; 0.025) (See Table 4.8). Urban mothers also showed higher odds of delivering in home settings, but these findings were insignificant. Rural women also showed higher odds of receiving skilled attendance in cash transfer districts over a period of time for un-adjusted pooled sample of public and home settings compared to non-skilled delivery (OR; 1.66, 95% CI: 1.12-2.40, p; 0.010) (See Table 4.8).

4.1.6- Difference-in-Differences for Skilled Birth Attendance (SBA) among educated and uneducated mothers

Table 4.9 shows results of the unadjusted and adjusted difference-in-differences regression analyses of skilled birth attendance provided in government and home settings by educated and uneducated women between the years 2013 and 2015. Results indicated that, over a period of time, uneducated women had the higher odds of receiving skilled attendance in home settings in cash transfer districts as compared to non-cash transfer districts (AOR; 1.67 95% CI: 1.25-2.23, p; 0.001). The interaction term between cash transfer and year to examine

the difference over time in outcome variable of combined skilled attendance provided at public facilities and at home, in unadjusted model, showed that skilled attendance significantly increased in the districts with cash transfer (AOR; 1.34 95% CI: 1.08-1.68, p; 0.008).

4.1.7- Difference-in-Differences for Skilled Birth Attendance (SBA) among young and old mothers

Both unadjusted and adjusted models for the skilled birth attendance received in home settings by mothers younger than thirty-five years of age showed higher odds. Young women living in cash transfer districts over a period of time were more likely to receive the skilled attendance at home, even after the control of sociodemographic characteristics (AOR; 1.61 95% CI: 1.21-2.15, p; 0.001) (see Table 4.10).

Skilled attendance in public settings of women younger than thirty-five years of age showed improvement during 2014, i.e., women were more likely to receive skilled attendance in public settings in comparison with the baseline year. However, the overall trend over a period of time was insignificant.

4.1.8- Difference-in-Differences for Skilled Birth Attendance (SBA) among nearby and distant commuter

Women in distant locations from the hospital, those who took more than half an hour travel time to the hospital, had 2.33 times higher odds (AOR: 2.33, 95 % CI: 1.39-3.92, p; 0.001) of skilled birth attendance at home, compared to their counterparts, who lived in a location less than half an hour away (see Table 4.11). Unadjusted model for combined skilled attendance

provided at public and home settings also showed higher odds of skilled attendance among mothers who lived more than half an hour travel time from the health facility in cash transfer districts (OR; 2.45 95% CI: 1. 71-3.52, p; 0.000) (see Table 4.12). However, when controlled for sociodemographic and household factors the findings became insignificant.

4.2-Conclusion

The findings of the present analysis indicated that there were no significant differences in skilled attendance care sought from public institutions by women of reproductive years residing in cash transfer districts and in non-cash transfer districts. However, there was credible evidence that SBA utilization remained significant among women who gave birth at home in cash transfer districts in the Province KP. Rural, uneducated women, women younger than thirty-five, and with more than half an hour commute to hospital facilities had higher odds for seeking skilled attendance at home settings. The travel time to the health facility had the largest impact on choice of place of delivery in CCT districts. Urban women were less likely to use skilled attendance provided at public health facilities.

Table 4.1 Broad Sociodemographic profile of KP and other provinces

N= 164,754				
	KP (CCT) n=31,201	Punjab (non-CCT) n=70,320	Sindh (non-CCT) n=38,822	Baluchistan (non-CCT) n=24,411
Age	μ (SD)	μ (SD)	μ (SD)	μ (SD)
	32.1 (8.7)	33.0 (8.5)	32.9 (8.4)	32.9 (8.0)
Education	n (%)	n (%)	n (%)	n (%)
yes	6,897 (22.11)	31,162 (44.31)	10,415 (26.83)	2,274 (9.32)
No	24,304 (77.89)	39,158 (55.69)	28,407 (73.17)	22,137 (90.68)
Housing				
yes	27,585 (88.41)	62,060 (88.25)	34,320 (88.40)	22,741 (93.16)
No	3,616 (11.59)	8,260 (11.75)	4,502 (11.60)	1,670 (6.84)
Region				
Urban	12,785 (40.98)	26,434 (37.59)	16,251 (41.86)	11,567 (47.38)
Rural	18,416 (59.02)	43,886 (62.41)	22,571 (58.14)	12,844 (52.62)

National Mean Age 32.8 years (SD: 8.4) Source: Pooled sample PSLM

Table 4.2 Sociodemographic profile of women who gave birth in various provinces (Pooled Sample)

N=66,143				
	KP (CCT) n=12,435	Punjab (non-CCT) n=27,772	Sindh (non-CCT) n=15,440	Baluchistan (non-CCT) n=10,496
Age	μ (SD) 28.3 (6.5)	μ (SD) 28.6 (6.0)	μ (SD) 29.2 (6.4)	μ (SD) 29.3 (6.1)
Education	n (%)	n (%)	n (%)	n (%)
yes	3,228 (25.96)	13,619 (49.04)	4,101 (26.56)	1,156 (11.01)
No	9,207 (74.04)	14,153 (50.96)	11,339 (73.44)	9,340 (88.99)
Housing				
yes	10,949 (88.05)	24,361 (87.72)	13,645 (88.37)	9,735 (92.75)
No	1,486 (11.95)	3,411 (12.28)	1,795 (11.63)	761 (7.25)
Region				
Urban	5,049 (40.60)	10,680 (38.46)	6,650 (43.07)	4,922 (46.89)
Rural	7,386 (59.40)	17,092 (61.54)	8,790 (56.93)	5,574 (53.11)

National Mean Age 28.85 years (SD: 6.2) Range 16-49 yrs. Source: Pooled sample PSLM

Table: 4.3- Background Characteristics of women who gave birth in CCT & non CCT districts in KP

		Non –CCT Districts n=6,355		CCT Districts n=3,980		chi2	p value
<i>Sociodemographic Characteristics</i>							
Age (years)	>35	951	15%	600	15%	0.023	0.878
	<35	5,404	85%	3,380	85%		
Education	no	4,840	76%	2,929	74%	8.644	0.003
	yes	1,515	24%	1,051	26%		
Housing	no	784	12%	386	10%	16.967	0.000
	yes	5,571	88%	3,594	90%		
<i>Household Characteristics</i>							
Electronic Media	no	3,291	52%	2,084	52%	0.325	0.569
	yes	3,064	48%	1,896	48%		
Transportation	no	2,790	44%	1,754	44%	0.0280	0.867
	yes	3,565	56%	2,226	56%		
Source of Water	outside premises	1,898	31%	915	24%	63.176	0.000
	within premises	4,243	69%	2,965	76%		
Toilet facility	no	1,138	18%	371	9%	144.67	0.000
	yes	5,217	82%	3,609	91%		
Lightening	other arrangement	569	9%	133	3%	121.73	0.000
	has electricity	5,786	91%	3,847	97%		
Region	rural	4,387	69%	2,469	62%	53.655	0.000
	urban	1,968	31%	1,511	38%		
<i>Access to Health Services</i>							
Travel time to BHU	> half hour	2,487	39%	1,516	38%	1.242	0.289
	<= half hr	3,868	61%	2,464	62%		
Travel time to Hospital	> half hour	2,118	33%	1,392	35%	2.595	0.085
	<= half hr	4,237	67%	2,588	65%		
BHU travel method	on transport	2,740	43%	1,638	41%	3.850	0.050
	on foot	3,615	57%	2,342	59%		
Hosp. travel method	on transport	2,152	34%	1,432	36%	4.841	280.0
	on foot	4,203	66%	2,548	64%		
BHU utilization	don't use	2,242	35%	1,533	39%	11.069	0.001
	use	4,113	65%	2,447	62%		
Tetanus Toxoid	one shot	840	30%	580	30%	0.011	0.915
	two or more shots	1,976	70%	1,355	70%		

Source: Pakistan Social & Living Measurement Survey 2013 & 15.

Table: 4.4. Relative Risk Ratios & predictors of place of delivery for last pregnancy among CCT & non-CCT districts in Province KP. (m Logit)

VARIABLES	Private Hospital		Home		Government Hospital	
	RRR	95% CI	RRR	95% CI	RRR	95% CI
Cash transfer Beneficiaries	-	-	1.17***	1.06 - 1.29	0.93	0.82 - 1.06
Socio demographic						
Mother's Age less than 35 years	-	-	0.75***	0.65 - 0.86	0.9	0.75 - 1.08
Has attended educational institution	-	-	0.43***	0.38 - 0.48	0.83***	0.73 - 0.95
Household characteristics						
Ownership of House	-	-	0.84**	0.72 - 0.98	0.69***	0.57 - 0.83
Availability of electronic media at HH	-	-	0.80**	0.67 - 0.96	1.12	0.88 - 1.41
Availability of transportation at HH	-	-	0.77***	0.64 - 0.92	0.75**	0.59 - 0.96
Source of Water within premises	-	-	0.63***	0.56 - 0.71	0.75***	0.64 - 0.88
Toilet facility at HH	-	-	0.84**	0.71 - 0.98	1.02	0.82 - 1.27
Electricity	-	-	0.96	0.77 - 1.19	1.51**	1.09 - 2.10
Urban region	-	-	1.06	0.96 - 1.18	1.10	0.96 - 1.24
Geographic Accessibility						
Less than half an hour of Travel time to BHU	-	-	0.70***	0.56 - 0.88	1.08	0.79 - 1.47
Less than half an hour of Travel time to Hospital	-	-	0.95	0.76 - 1.20	1.2	0.88 - 1.65
Travel to BHU on foot	-	-	0.9	0.75 - 1.09	1.35**	1.05 - 1.74
Travel to Hospital on foot	-	-	1.04	0.86 - 1.26	0.70***	0.54 - 0.91
Acceptability						
BHU utilization	-	-	1.28***	1.16 - 1.41	1.07	0.95 - 1.22
Constant	1	1	8.04***	5.99 - 10.81	0.76	0.50 - 1.15
Observations	9,995		9,995		9,995	

*** p<0.01, ** p<0.05, * p<0.1

Data Source: Pakistan Social & Living Measurement Survey 2013 & 15

Table 4.5: Prevalence of Skilled Birth Attendance (SBA) in various settings
Excluding private institutes

Home			
	Before- Y ₂₀₁₃	After- Y ₂₀₁₅	
			† DD*
Treatment (CCT)	37.43	32.81	-4.62
Control (n CCT)	45.54	27.46	-18.08
‡	-8.11	5.35	
DD**			13.46
Government			
Treatment (CCT)	33.83	28.88	-4.95
Control (n CCT)	38.38	31.49	-6.89
‡	-4.55	-2.61	
DD**			1.94
Government & Home			
Treatment (CCT)	52.6	47.21	-5.39
Control (n CCT)	59.33	45.6	-13.73
‡	-6.73	1.61	
DD**			8.34

† $CCT_{Y_{2015}} - CCT_{Y_{2013}}$ & $n\ CCT_{Y_{2015}} - n\ CCT_{Y_{2013}}$

‡ $Y_{2013}\ CCT - Y_{2013}\ n\ CCT$ & $Y_{2015}\ CCT - Y_{2015}\ n\ CCT$

* $(CCT_{Y_{2015}} - CCT_{Y_{2013}}) - (n\ CCT_{Y_{2015}} - n\ CCT_{Y_{2013}})$

** $(Y_{2015}\ CCT - Y_{2015}\ n\ CCT) - (Y_{2013}\ CCT - Y_{2013}\ n\ CCT)$

Table 4.6 DD for SBA in various settings among cash transfer districts in Province KP

Variables	SBA at Govt. & Home Vs. No SBA		SBA at Govt. Vs. No SBA		SBA at Home Vs. No SBA	
	OR	95% CI	OR	95% CI	OR	95% CI
Un-adjusted Models						
	(1)		(3)		(5)	
CCT Districts	0.76***	0.65-0.88	0.82*	0.67-0.99	0.71***	0.59-0.85
Year 2014	0.57***	0.50-0.65	0.73***	0.63-0.86	0.45***	0.38-0.52
DD estimation	1.40**	1.15-1.70	1.07	0.84-1.37	1.80***	1.42-2.27
Constant	1.45***	0.50-0.70	0.62***	0.54-0.70	0.83*	0.74-0.94
Observations	7,342		5,458		5,569	
Pseudo R2	0.08		0.03		0.01	
Adjusted Models						
	(2)		(4)		(6)	
CCT Districts	0.75***	0.63-0.88	0.84	0.68-1.04	0.70***	0.58-0.85
Year 2014	1.04	0.86-1.26	1.41**	1.13-1.77	0.77*	0.61-0.97
DD estimation	1.20	0.96-1.49	0.89	0.68-1.17	1.54**	1.19-2.00
Sociodemographic Characteristics						
Age < 35 years	0.95	0.83-1.10	1.12	0.94-1.35	0.83*	0.71-0.98
Education	2.46***	2.14-2.82	2.72***	2.32-3.19	2.25***	1.91-2.65
Employment	0.50***	0.42-0.58	0.56***	0.46-0.70	0.47***	0.38-0.58
Household Characteristics						
Ownership of House	0.95	0.82-1.12	0.81*	0.67-0.98	1.08	0.89-1.31
RCC Roof of House	0.91	0.79-1.06	1.22*	1.03-1.43	0.67***	0.56-0.80
Brick wall of House	1.64***	1.44-1.86	1.71***	1.46-2.00	1.57***	1.35-1.83
Electronic media	0.76**	0.63-0.93	1.10	0.85-1.41	0.55***	0.44-0.70
Transportation	1.22*	1.00-1.49	1.06	0.82-1.37	1.36**	1.09-1.70
Water within Premises	1.31***	1.17-1.48	1.24**	1.07-1.45	1.39***	1.20-1.61
Toilet	1.31***	1.12-1.54	1.19	0.97-1.46	1.34**	1.09-1.64
Electricity	1.63***	1.29-2.05	1.44*	1.06-1.96	1.77***	1.31-2.40
Urban Region	1.32***	1.12-1.55	1.34**	1.10-1.63	1.24*	1.01-1.51
Geographic Accessibility						
Less than half hour travel time to BHU.	0.93	0.74-1.17	1.22	0.90-1.66	0.75*	0.57-0.98
Less than half hour travel time to Hospital	2.42***	1.92-3.05	1.71***	1.25-2.32	3.18***	2.41-4.20
On foot Travel method to BHU	1.39**	1.14-1.71	1.55***	1.20-2.02	1.27	1.00-1.62
On foot Travel method to Hosp.	0.53***	0.43-0.65	0.52***	0.39-0.67	0.54***	0.42-0.70

Acceptability						
BHU utilization	0.80	0.84-1.05	0.90	0.78-1.03	1.02	0.89-1.17
Constant	0.25***	0.18-0.36	0.11***	0.07-0.17	0.15***	0.10-0.23
Observations	7,127		5,337		5,396	
Pseudo R2	0.25		0.14		0.12	

p<0.05; ** p<0.01; *** p<0.001 *Data Source: Pakistan Social & Living Measurement Survey 2013 & 15*

Table 4.7: Prevalence of Skilled Birth Attendance (SBA) among mothers of various sociodemographic backgrounds provided At Home and Public settings excluding private institutes

Urban (n=2,443)					Rural (n= 4,899)			
Home								
	Y ₂₀₁₃	Y ₂₀₁₅	†	DD*	Y ₂₀₁₃	Y ₂₀₁₅	†	DD*
Treatment (CCT)	35.62	59.26	23.64		45.14	31.03	-14.11	
Control (n CCT)	43.41	58.75	15.34		56.65	26.32	-30.33	
‡	-7.79	0.51			-11.51	4.71		
DD**	8.3				16.22			
Government								
Treatment (CCT)	30.17	53.52	23.35		47.54	27.34	-20.2	
Control (n CCT)	34.32	78.85	44.53		56.65	28.24	-28.41	
‡	-4.15	-25.33			-9.11	-0.9		
DD**	-21.18				8.21			
Government & Home								
Treatment (CCT)	49.63	72.27	22.64		63.36	45.24	-18.12	
Control (n CCT)	56.32	83.74	27.42		72.32	42.88	-29.44	
‡	-6.69	-11.47			-8.96	2.36		
DD**	-4.78				11.32			
Attended School (n=1,447)					Did not Attended School (n=5,895)			
Home								
Treatment (CCT)	55.21	46.01	-9.2		32.74	30.19	-2.55	
Control (n CCT)	62.04	50.98	-11.06		41.4	24.51	-16.89	
‡	-6.83	-4.97			-8.66	5.68		
DD**	1.86				14.34			
Government								
Treatment (CCT)	53.01	51.48	-1.53		28.72	23.38	-5.34	
Control (n CCT)	65.11	61.42	-3.69		29.61	26.88	-2.73	
‡	-12.1	-9.94			-0.89	-3.5		
DD**	2.16				-2.61			
Government & Home								
Treatment (CCT)	70.24	65.67	-4.57		47.08	42.45	-4.63	
Control (n CCT)	77.78	72.47	-5.31		52.99	40.91	-12.08	
‡	-7.54	-6.8			-5.91	1.54		
DD**	0.74				7.45			

Table 4.7 (continued): Prevalence of Skilled Birth Attendance (SBA) among mothers of various sociodemographic backgrounds provided At Home and Public settings excluding private institutes

Age < 35 years (n=6,139)				Age >35 years (n=1,203)			
Home							
Treatment (CCT)	37.21	32.39	-4.82		38.56	34.82	-3.74
Control (n CCT)	46.24	27.83	-18.41		41.51	25.87	-15.64
‡	-9.03	4.56			-2.95	8.95	
DD**	13.59				11.9		
Government							
Treatment (CCT)	34.65	29.8	-4.85		29.32	23.96	-5.36
Control (n CCT)	38.76	33.25	-5.51		36.3	23.02	-13.28
‡	-4.11	-3.45			-6.98	0.94	
DD**	0.66				7.92		
Government & Home							
Treatment (CCT)	52.89	47.47	-5.42		51.04	45.93	-5.11
Control (n CCT)	59.89	46.91	-12.98		56.13	39.32	-16.81
‡	-7	0.56			-5.09	6.61	
DD**	7.56				11.7		
Near Dweller (n=4,622)				Distant Dweller (n=2,720)			
Home							
Treatment (CCT)	45.86	46.58	0.72		16.85	18.94	2.09
Control (n CCT)	49.38	38.77	-10.61		37.54	14.15	-23.39
‡	-3.52	7.81			-20.69	4.79	
DD**	11.33				25.48		
Government							
Treatment (CCT)	34.65	29.8	-4.85		21	15.91	-5.09
Control (n CCT)	38.76	33.25	-5.51		27.09	16.14	-10.95
‡	-4.11	-3.45			21	15.91	
DD**	0.66				5.86		
Government & Home							
Treatment (CCT)	60.2	61.61	1.41		31.9	29.72	-2.18
Control (n CCT)	63.6	58.53	-5.07		49.3	26.32	-22.98
‡	-3.4	3.08			-17.4	3.4	
DD**	6.48				20.8		

Y₂₀₁₅ CCT Y₂₀₁₃ & n CCT Y₂₀₁₅ - n CCT Y₂₀₁₃

‡ Y₂₀₁₃ CCT - Y₂₀₁₃ n CCT & Y₂₀₁₅ CCT - Y₂₀₁₅ n CCT

** (CCT Y₂₀₁₅ - CCT Y₂₀₁₃) - (n CCT Y₂₀₁₅ - n CCT Y₂₀₁₃)*

*** (Y₂₀₁₅ CCT - Y₂₀₁₅ n CCT) - (Y₂₀₁₃ CCT - Y₂₀₁₃ n CCT)*

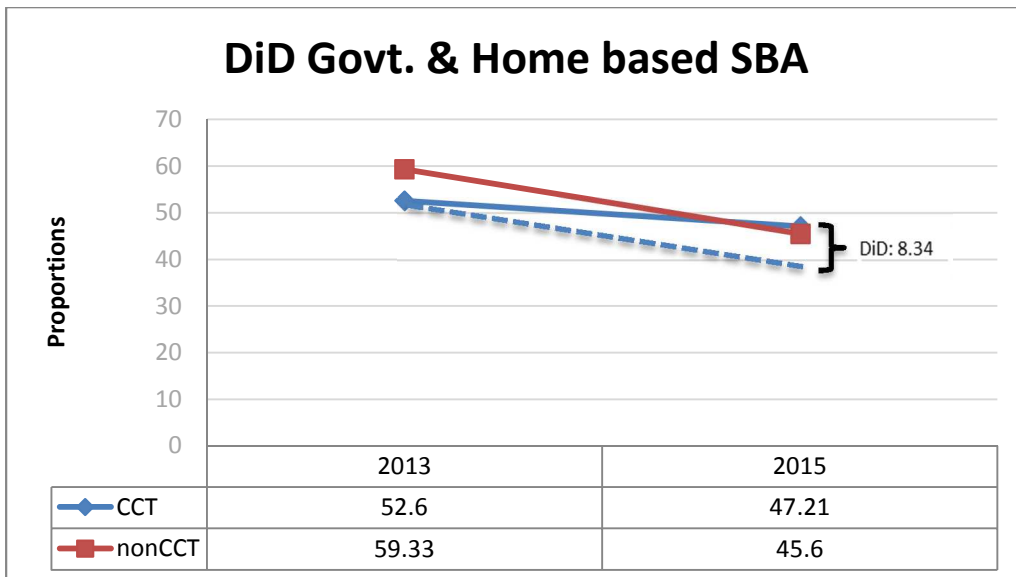
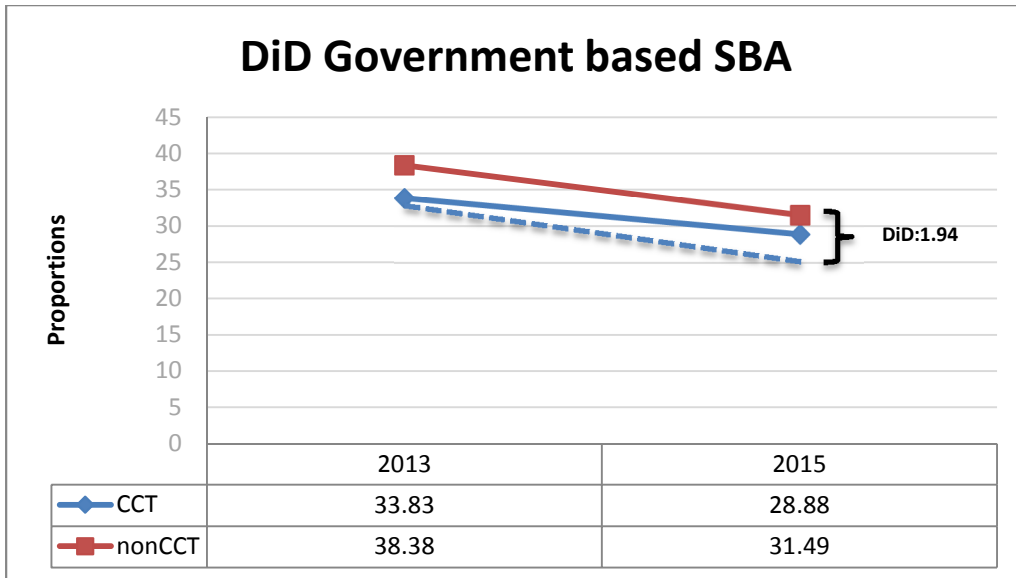


Figure 4.3 Difference in Differences of proportions of Skilled Attendance in Government and combined Govt.+Home Settings

Table 4.8 DD for Skilled Birth Attendance (SBA) in Urban & Rural settings among cash transfer districts in Province KP

variables	Urban					
	Govt. + Home		Govt.		Home	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
CCT Districts (CI: 95%)	0.76*** (0.64-0.90)	0.79* (0.66-0.96)	0.82 (0.66 - 1.0)	0.88 (0.69- 1.13)	0.72** (0.59-0.88)	0.75* (0.60-0.93)
Year 2014 (CI: 95%)	3.99*** (2.70-5.90)	3.01*** (1.90-4.75)	7.13*** (4.72-10.76)	4.81*** (2.92- 7.94)	1.85** (1.16-2.95)	1.60 (0.92-2.76)
DD (CI: 95%)	0.66 (0.37-1.17)	0.63 (0.34-1.17)	0.37** (0.19-0.71)	0.34** (0.17-0.69)	1.41 (0.73-2.73)	1.35 (0.66-2.74)
Constant (CI: 95%)	1.28 (1.14-1.44)	0.46 (0.25-0.84)	0.52 (0.45-0.60)	0.21 (0.10- 0.46)	0.76*** (0.67-0.87)	0.26*** (0.90-1.48)
Pseudo R2	0.029	0.10	0.06	0.13	0.01	0.09
Observations	2,443	2,348	1,691	1,628	1,808	1,736
variables	Rural					
	Govt. + Home		Govt.		Home	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
CCT Districts (CI: 95%)	0.66** (0.45-0.95)	0.62* (0.42-0.91)	0.69 (0.45-1.05)	0.68 (0.44-1.07)	0.62** (0.41-0.96)	0.61* (0.39-0.96)
Year 2014 (CI: 95%)	0.28*** (0.21-0.37)	0.69* (0.50-0.94)	0.30*** (0.21-0.41)	0.88 (0.61-1.26)	0.27*** (0.19-0.37)	0.51*** (0.35-0.73)
DD (CI: 95%)	1.66** (1.12-2.40)	1.46 (0.96-2.2)	1.37 (0.88-2.15)	1.15 (0.71-1.87)	1.99** (1.27-3.13)	1.74** (1.07-2.84)
Constant (CI: 95%)	2.61 (2.0-3.41)	0.26*** (0.16-0.42)	1.30 (0.96-1.76)	0.11*** (0.06-0.21)	1.30 (0.96-1.76)	0.14 (0.07-0.25)
Pseudo R2	0.01	0.14	0.01	0.15	0.01	0.13
Observations	4,899	4,779	3,767	3,709	3,761	3,660

Controlling Variables:

Sociodemographic Characteristics of Mother: Age of less than 35 years, Education, Employment.

Household Characteristics: Ownership of House, RCC Roof of House, Brick wall of House, Electronic media, Transportation, Water within Premises, Toilet, Electricity.

Geographic Accessibility: Less than half hour travel time to BHU. Less than half hour travel time to Hospital. On foot Travel method to BHU. On foot Travel method to Hospital.

Acceptability: BHU utilization.

Legend: * p<0.05; ** p<0.01; *** p<0.001

Data Source: Pakistan Social & Living Measurement Survey 2013 & 15.

Table 4.9 DD for Skilled Birth Attendance (SBA) among educated and uneducated mothers in cash transfer districts in Province KP

variables	Educated					
	Govt. + Home		Govt.		Home	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
CCT Districts (CI: 95%)	0.67** (0.47-0.95)	0.58*** (0.39-0.85)	0.62* (0.40 – 0.89)	0.55** (0.35- 0.84)	0.75 (0.50-1.12)	0.65 (0.42-1.01)
Year 2014 (CI: 95%)	0.75 (0.54-1.03)	0.91 (0.61-1.34)	0.85 (0.60-1.20)	1.06 (0.69- 1.62)	0.63 (0.44-0.91)	0.76 (0.47-1.23)
DD (CI: 95%)	1.07 (0.67-1. 71)	1.29 (0.78-2.16)	1.10 (0.65-1.85)	1.32 (0.74-2.36)	1.08 (0.63-1.86)	1.19 (0.65-2.17)
Constant (CI: 95%)	3.5*** (2.73-4.47)	0.62 (0.19-0.37)	1.86*** (1.42-2.43)	0.33 (0.08- 1.31)	1.63*** (1.24-2.51)	0.39 (0.09-1.65)
Pseudo R2	0.077	0.07	0.009	0.09	0.01	0.07
Observations	1,447	1,403	979	950	876	847
variables	Un Educated					
	Govt. + Home		Govt.		Home	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
CCT Districts (CI: 95%)	0.78** (0.66-0.94)	0.80* (0.66-0.96)	0.95 (0.76-1.20)	0.98 (0.77-1.26)	0.68*** (0.56-0.84)	0.71* (0.56-0.88)
Year 2014 (CI: 95%)	0.61*** (0.53-0.70)	1.09 (0.87-1.36)	0.87 (0.72-1.05)	1.57** (1.19-2.07)	0.45*** (0.38-0.54)	0.79 (0.60-1.04)
DD (CI: 95%)	1.34*** (1.08-1.68)	1.16 (0.91-1.48)	0.86 (0.64-1.15)	0.77 (0.56-1.06)	1.93*** (1.48-2.51)	1.67** (1.25-2.23)
Constant (CI: 95%)	1.12 (0.99-1.27)	0.24*** (0.16-0.36)	0.42*** (0.35-0.49)	0.12*** (0.06-0.16)	0.70*** (0.61-0.80)	0.14 (0.08-0.22)
Pseudo R2	0.006	0.10	0.01	0.10	0.01	0.11
Observations	5,895	5,724	4,479	4,387	4,693	4,549

Controlling Variables:

Sociodemographic Characteristics of Mother: Age of less than 35 years, Employment.

Household Characteristics: Ownership of House, RCC Roof of House, Brick wall of House, Electronic media, Transportation, Water within Premises, Toilet, Electricity, Urban Region.

Geographic Accessibility: Less than half hour travel time to BHU. Less than half hour travel time to Hospital. On foot Travel method to BHU. On foot Travel method to Hospital.

Acceptability: BHU utilization

Legend: * p<0.05; ** p<0.01; *** p<0.001

Data Source: *Pakistan Social & Living Measurement Survey 2013 & 15.*

Table 4.10 DD for Skilled Birth Attendance (SBA) in young and old mothers among cash transfer districts in Province KP

Age less than 35 years						
variables	Govt. + Home		Govt.		Home	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
CCT Districts (CI: 95%)	0.75** (0.63-0.88)	0.83 (0.68-1.03)	0.83 (0.68-1.03)	0.84 (0.67-1.06)	0.68*** (0.56-0.83)	0.67*** (0.54-0.83)
Year 2014 (CI: 95%)	0.59*** (0.51-0.67)	0.78* (0.66-0.99)	0.78 (0.66-0.93)	1.45* (1.13-1.85)	0.44*** (0.38-0.52)	0.71** (0.55-0.92)
DD (CI: 95%)	1.35* (1.09-1.68)	1.01 (0.78-1.32)	1.01 (0.78-1.32)	0.89 (0.66-1.19)	1.80*** (1.39-2.32)	1.61** (1.21-2.15)
Constant (CI: 95%)	1.49*** (1.33-1.67)	0.63*** (0.54-0.72)	0.63 (0.54-0.72)	0.13*** (0.08-0.20)	0.86* (0.75-0.97)	0.15*** (0.09-0.24)
Pseudo R2	0.075	0.028	0.009	0.14	0.01	0.12
Observations	6,139	4,570	4,570	4,476	4,600	4,462
Age more than 35 years						
CCT Districts (CI: 95%)	0.81 (0.55-1.20)	0.80 (0.52-1.2)	0.72 (0.44-1.20)	0.84 (0.48-1.46)	0.88 (0.56-1.39)	0.80 (0.48-1.31)
Year 2014 (CI: 95%)	0.50*** (0.36-0.69)	1.15 (0.70-1.8)	0.52* (0.34-0.78)	1.25 (0.68-2.30)	0.49*** (0.33-0.72)	1.10 (0.61-1.97)
DD (CI: 95%)	1.60 (0.98-2.60)	1.08 (0.62-1.8)	1.44 (0.75-2.75)	0.81 (0.39-1.67)	1.73 (0.97-3.06)	1.29 (0.67-2.46)
Constant (CI: 95%)	1.27 (0.97-1.67)	0.10*** (0.04-0.26)	0.56** (0.40-0.7)	0.06*** (0.02-0.19)	0.70*** (0.51-0.97)	0.43*** (0.01-0.13)
Pseudo R2	0.01	0.14	0.01	0.14	0.01	0.13
Observations	1,203	1,161	888	861	969	934

Controlling Variables:

Sociodemographic Characteristics of Mothers: Education, Employment.

Household Characteristics: Ownership of House: RCC Roof of House, Brick wall of House, Electronic media, Transportation, Water within Premises, Toilet, Electricity, and Urban Region.

Geographic Accessibility: Less than half hour travel time to BHU. Less than half hour travel time to Hospital. On foot Travel method to BHU. On foot Travel method to Hospital.

Acceptability: BHU utilization.

Legend: * p<0.05; ** p<0.01; *** p<0.001

Data Source: Pakistan Social & Living Measurement Survey 2013 & 15.

Table 4.11 DD for Skilled Birth Attendance (SBA) among near and distant commuter mothers in cash transfer districts in Province KP

<1/2 hour travel time						
variables	Govt. + Home		Govt.		Home	
	<u>Unadjusted</u>	<u>Adjusted</u>	<u>Unadjusted</u>	<u>Adjusted</u>	<u>Unadjusted</u>	<u>Adjusted</u>
CCT Districts (CI: 95%)	0.86 (0.71-1.04)	0.86 (0.71-1.05)	0.86 (0.68-1.08)	0.89 (0.69-1.13)	0.86 (0.70-1.07)	0.87 (0.69-1.09)
Year 2014 (CI: 95%)	0.80 * (0.68-0.94)	1.15 (0.93-1.4)	1.00 (0.83-1.27)	1.54** (1.20-1.79)	0.64*** (0.53-0.78)	0.84 (0.65-1.08)
DD (CI: 95%)	1.31* (1.02-1.68)	1.14 (0.87-1.48)	1.09 (0.80-1.47)	0.89 (0.64-1.23)	1.58* (1.19-2.11)	1.42 (1.05-1.94)
Constant (CI: 95%)	1.74*** (1.53-1.98)	0.72 (0.82-1.08)	0.77** (0.66-0.90)	0.22*** (0.11-0.44)	0.97 (0.84-1.12)	0.52* (0.28-0.98)
Pseudo R2	0.01	0.05	0.006	0.08	0.005	0.05
Observations	4,622	4,466	3,184	3,095	3,261	3,139
>1/2 hour travel time						
CCT Districts (CI: 95%)	0.48*** (0.35-0.65)	0.53*** (0.38-0.73)	0.71 (0.48-1.05)	0.74 (0.48-1.14)	0.33*** (0.22-0.49)	0.38*** (0.25-0.58)
Year 2014 (CI: 95%)	0.367*** (0.29-0.46)	0.57 (0.32-1.01)	0.51*** (0.38-0.70)	0.62 (0.82-1.35)	0.27*** (0.20-0.36)	0.50* (0.25-0.99)
DD (CI: 95%)	2.45*** (1.71-3.52)	1.46 (0.97-2.18)	1.37 (0.85-2.19)	0.90 (0.53-1.52)	4.20*** (2.63-6.70)	2.33** (1.39-3.92)
Constant (CI: 95%)	0.97 (0.80-1.17)	0.37** (0.17-0.77)	0.37*** (0.28-0.47)	0.16*** (0.06-0.42)	0.60*** (0.48-0.74)	0.21 *** (0.08-0.58)
Pseudo R2	0.02	0.11	0.001	0.12	0.03	0.12
Observations	2,720	2,661	2,274	2,242	2,308	2,257

Controlling Variables:

Sociodemographic Characteristics of Mother: Age of less than 35 years, Education, Employment.

Household Characteristics: Ownership of House, RCC Roof of House, Brick wall of House, Electronic media, Transportation, Water within Premises, Toilet, Electricity, Urban Region.

Geographic Accessibility: Less than half hour travel time to BHU. Less than half hour travel time to Hospital. On foot Travel method to BHU. On foot Travel method to Hospital.

Acceptability: BHU utilization

Legend: * p<0.05; ** p<0.01; *** p<0.001

Data Source: Pakistan Social & Living Measurement Survey 2013 & 15.

Chapter V Discussion and Policy Implications

5.0-Discussion

The present study examined that assistance provided by Skilled Birth Attendant (SBA) remained significant after controlling for sociodemographic and household characteristics among women who give birth at home (OR:1.54; 95 %CI: 1.19-2.00, p: 0.001) (see Table 4.6). The present findings conform to other studies that home setting is preferred place of delivery (Sychareun, 2012). SBA is an effective strategy to reduce maternal mortality (de Bernis, Sherratt et al. 2003). SBA includes trained doctors, nurses, midwives, and community health workers. Skilled Birth Attendants can conduct delivery under aseptic conditions and are trained to identify complications, and to make timely referrals when needed. They can effectively train pregnant women to watch for danger signs of abnormal pregnancy and can approach them easily. As mentioned earlier, there are two models under which SBA care is provided to lower maternal mortality. The first model is an institutional/hospital-based model, which harbors trained doctors, nurses and provides obstetric services in an institutional setting. The second model is cost effective; it is devised in western European countries, where there is an effort to offer skilled attendance at community/home level in order to reduce maternal morbidity/mortality. The alternative low-budget model of training of Traditional Birth Attendance (TBA) in developing countries is also present. An attempt has been made to train TBAs, but their obstetric skills grossly vary; hence, results are not productive.

On the one hand, the findings of the study indicated that the institutional model of care was not very effective in the Province KP, even after cash transfer intervention. On the other hand, the second model, which provided services at women's doorstep through Community Midwives (CMWs) was generating an effective result under the cash transfer scheme. A probable reason for not using institutional health care in the present scenario is the hilly terrain and distant health facilities from mountainous dwellings within the Province KP. Poor road infrastructure, dissatisfaction with low quality of services provided in the health care setting may have contributed to the situation. Even though the study controlled for some of these factors, SBA remained insignificant in comparison with home-based SBA. In addition, low remuneration offered under the cash transfer may have contributed to women not seeking healthcare in facility setting, as travelling to the hospital results in an additional cost and surmounts additional financial burden. In the presence of incentives in both public and home settings, women prefer to stay at home and deliver in home settings. Women generally prefer home setting in eastern culture because of a number of reasons. A qualitative study conducted in Bangladesh carried key informant interviews and highlighted that women prefer home delivery because of familiarity with their surroundings or presence of a supportive environment in a home setting (Morrison, Thapa et al. 2014, Sarker, Rahman et al. 2016). Lack of privacy in hospital settings i.e., being exposed to unacquainted, non-availability of female doctor in health facility, preference for squatting labor position at home are well documented in the literature (Sychareun, 2012). Home based health-seeking behavior is culturally and religiously more suitable as it does not violates the *purdah* as indicated under the cultural factors in chapter 2 (Shiferaw, Spigt et al. 2013).

On the other hand, Difference-in-Differences analyses of the present study between the pre- and post- intervention periods for cash transfer districts and non-cash transfer districts indicated that there were non-significant differences among mothers (ages 16-49) for the utilization pattern of combined public and home setting (overall skilled assistance sought by women regardless of site, comprising of public and home, compared to non-skilled assistance) and even in public setting alone (see Table: 4.6). It is not uncommon to find such insignificant domino effect in a short run evaluation; this is similar to the case of the cash transfer program in Mexico. Gertler (2000) found that children 0-2 years and 3-5 years showed non-significant change in visits to health facilities among cash transfer and non-cash transfer beneficiaries (Gertler, 2000). Findings of the current study are also opposed to evaluation of JSY i.e., Difference-in-differences estimates indicate 49.2% (CI: 43.2-55.1) increase in facility-based delivery among beneficiaries of the program and 39.3% (CI: 33.7-45.0) increase in skilled attendance (Lim, Dandona et al. 2010). Rajni Ved in her oral presentation at 2nd National Conference on Bringing Evidence into Public Health Policy, Bangalore, India also conform the trend of shift from home based to facility based care among beneficiaries of the same cash transfer program (Ved, 2012).

5.0.1- Travel Time

The present study makes a contribution to the understanding of utilization behavior for skilled attendance, which depends upon location of the health facility. Distance in scientific term is a product of speed and time. A long commute to the health facility indirectly indicates a long distance from home. Commuting time in the present setting is a binary variable, which is

dichotomized into less than half an hour and more than half an hour to indicate the time period taken to reach health facilities comprising BHUs and Hospitals. The higher odds of skilled birth attendance at home among long commuters (AOR: 2.33, 95 % CI: 1.3-3.9, p; 0.001), in comparison with less than half an hour commuters, conforms to the earlier research, which shows that the physical accessibility of health facilities from individuals' dwelling largely influences their health seeking behavior (Prasad and Nagaraj 2001, Ager and Pepper 2005, Kawakatsu, Sugishita et al. 2014) (Titaley, 2010). Considerable research on access to health facilities and their proximity to the catchment population has been conducted in Africa. Gabrysch (2011) conducted his research by using Demographic Health Survey (DHS) data and a geographic information system in Zambia (Gabrysch, Cousens et al. 2011). Authors were of the opinion that health facility utilization is dependent upon various factors, such as health service environment, which includes distance to the health facility. Their findings from multilevel, multivariate regression analyses indicate that the nearness of the health facility was strongly associated with delivery at the health facility. Lohela (2012) extended this research to Malawi and found that the odds of facility delivery decreased with every ten kilometers increase in the distance to the facility (Lohela, Campbell et al. 2012). Hounton (2008) constructed the functionality index of health facilities and found that more than three quarters of births took place within 1 km of the health facility, thus concluding that distance is the major determinant for institutional delivery in two districts of Burkina Faso (Hounton 2008). The density of health care providers and the functionality index of health centers were not related to institutional delivery. The present study does not have this qualitative information about health facilities; however, future studies may gather this information in order to determine how the population

reacts to the functionality of health facilities. In the present case, the data yields satisfaction with the use of health facility, which is controlled for both CCT and non CCT districts. An Ethiopian study based upon a survey conducted on mothers who delivered in the past six months indicated that those living far from the health facility were less likely to deliver in the health facility (Fisseha, Berhane et al. 2017). On the other hand, those who perceived the facility to be well equipped were more likely to deliver in the health facility (Fisseha, Berhane et al. 2017). This undoubtedly indicates the multidimensionality of the issue under discussion which varies from place to place.

On the one hand, current research highlights that the comparably higher odds for home-based skilled attendance among long commuters, in comparison with less than half an hour commuters, indicates that women prefer to stay at home. This conforms to the earlier work as highlighted above. On the other hand, present findings indicate that those mothers who lived near the health facility were insignificantly less likely to deliver in an institutional setting as well and, instead, were more likely to deliver in the home setting as per unadjusted model. Though these findings are insignificant but ideally women have chosen health facility under the cash transfer incentive (Karkee,R. 2013). Other studies also favor the finding that even the nearness does not improve the utilization patterns among the users of health facilities (Airey 1992). According to Thaddeus (1994) the decision to use health facilities is a complex phenomenon; there are three factors at interplay in reaching a decision, namely cost, quality and distance (Thaddeus, 1994). The author called it a first level of decision, and according to him multiple actors are involved in making up the decision; these include mothers-in-law, family members, and cultural factors. Long distance or more commute time work as a

disincentive; however, as in the present case, the less usage of health facilities located at a distance of less than half an hour of commute time indicates the complexity of the first level decision. In South Asian region mother in law influence the health seeking behavior of the young mother (Riaz, Zaidi et al. 2015). As they (mother-in-laws) themselves did not go to health facility for delivery they discourage such behavior (Sychareun, 2012).

Pakistan has a rural topography, and the majority of the population live in a rural setting. Like other developing countries, most of female patients travel on foot and do not have access to transportation (R., 1983). Even when they may have access to transportation, women do not drive, and the public transport system is not very well established. Delivery is a special situation, since women cannot travel under such condition; therefore, transportation is much needed. The cash provided through cash transfer could help in this situation, but it is only provided after the delivery has been conducted. Patients have less money at hand for transportation, which makes them seek substitutes for institutional delivery. To receive a small amount of incentive when fuel prices are escalating may not be an attractive enough option for travelling to the health facility.

Feasibly the home setting is preferred, as there is no transportation cost involved and no permission will be required from the head of the household to travel outside the home for seeking healthcare (Dhakal, van Teijlingen et al. 2011). This helps to explain the significantly higher odds of utilization of the home-based model of skilled attendance among long commuters (see Table 4.11). Beside this, findings also indicate that cash transfer has only improved home-based delivery, while it has not increased institutional delivery. It has been unable to improve the access of mothers to health facilities. Other cultural factors, such as lack

of emotional support or privacy, rudeness and humiliating treatment by hospital staff, especially in public settings, needs to be explored in future studies (Munguambe, Boene et al. 2016). In addition, in patriarchal societies childbirth is considered a natural process that does not require unnecessary hospitalization, especially when there is pressure on women to have an early return to assume the home responsibilities of child rearing and meal preparation. Hospitalization is only sought when there is prolonged or obstructed labor. More so hospitalization is deferred because of fear of Caesarian section (Carter 2010). Future studies, exploring the aspect of; who delivers in hospital settings and under what conditions, can benefit cash transfer implementation.

5.0.2- Education

The present study conducted analyses to see the distribution of educated mothers in the cash transfer, non-cash transfer districts. Findings indicated that the majority of the women of childbearing age in both cash transfer and non-cash transfer districts were unable to read and write in any language, i.e., 4,840 (76.0%) in non-cash transfer districts and 2,929 (74%) in cash transfer districts (see Table 4.3). This may strongly impact the awareness and subsequent consumption of skilled attendance at health care facilities in the Province KP (Nakua, Sevugu et al. 2015). The findings of the evaluation of the largest program of maternal health care, *Janani Suraksha Yojana (JSY)* indicate that women without prior childbearing knowledge and low education significantly delivered at home, as opposed to the desired institutional settings (Sidney, 2012). A mother who delivers at home is more vulnerable to obstetric complications and has poor access to emergency obstetric services. Education

increases employment opportunities for women, which subsequently increases their disposable income, and grants them more decision-making power (Weitzman 2017). However, these pathways need further research and could not be explored due to paucity of existing data.

The current research gives in-depth insight that the education of the mother was a strong predictor of Skilled Birth Attendance (SBA) in public and home-based settings (see Table 4.6). Other research also demonstrates this influence of education on health care services utilization (Liku 1999) (Agunwa, Obi et al. 2017) (Kkonde 2010). Studies conducted at a regional and national level on health seeking behavior among educated women by using Pakistan Demographic & Health survey endorse this relationship of education as well (Khan, Z., Soomro, G. Y., Soomro, S., & Hafeez, S. (1994); Rani, 2003). Given that education changes the awareness level and health-seeking behavior, it subsequently increases the demand for health services. Education becomes more important in a conservative setting, as is the case of the Province KP where women are economically and socially dependent and require permission to seek a medical advice. Education in such settings brings decision making authority and knowledge of better health choices (Shaikh, 2005).

The findings of Difference-in-differences (DD) sub-analysis indicated that, uneducated women had significantly higher odds of skilled assistance to be provided in home settings (see Table 4.9). These findings are at odds with the results obtained by BARAL (2012), who carried out research in Nepal that indicates that low female literacy is associated with low uptake of Skilled Birth Attendance (BARAL 2012). Another research, conducted in neighboring Afghanistan, under similar sociocultural conditions, indicates that low literacy rates lead to low uptake of Skilled Birth Attendance (Mayhew, 2008). Zakar (2012) used the nationally

representative Pakistan Demographic and Health Survey (PDHS) and arrived at the conclusion that there is a decreased likelihood among women of reproductive years without formal education to deliver with the assistance of a skilled health care provider (Zakar,R. 2012). A possible explanation for the evidence provided in the present inquiry, which shows high odds of skilled attendance at home among uneducated women, may be that uneducated women have low financial resources accessible at their disposal, and subsequently adopt less expensive treatment options. In the present case, as the incentive is universally offered, even at home settings, women have preferred to stay at home and receive incentives. Cash transfer is an incentive for mothers diverting them from traditional birth attendance (TBA) to the skilled attendance provided by community midwives (CMWs). This has been an immense behavior shift induced by the cash transfer incentive, given that home-based delivery without skilled assistance is not uncommon in the region, especially in culturally similar settings (Sarker 2018). A qualitative assessment conducted in the neighboring province of KP indicates that TBA is the most preferred assistance sought by women (Shaikh, 2014). This is due, firstly, to the fact that they are easily accessible (Shaikh, 2014) (Shah, Rohra et al. 2010). In addition, they provide assistance to mothers before and after delivery in completing household chores, bathing the newborn and even washing baby's clothes. They also charge nominally, or receive in kind reward (Sialubanje, Massar et al. 2015). Secondly, CMWs are considered young, inexperienced, and due to their non-ideal working conditions are less chosen by mothers (Sarfranz 2015). CMWs themselves are restricted in mobility, face insecurity, and issues of gender sensitivity, and they lack transportation, especially in difficult terrain (Ahmed, 2017). Despite all this, the shift from traditional means of assistance to more trained assistance is clinically desirable, as

SBA can provide essential newborn care (ENC), aseptic treatment to the cord, and can effectively remove the placenta, and initiate early breast feeding (Haider, Rahman et al. 2018). Despite this desirable shift from traditional means of delivery the maternal deaths according to facility based Demographic Health Information System (DHIS) data has indicated an increase and reduction in neonatal deaths. This trend is counter intuitive as higher proportion of high risk or complicated deliveries will approach to the health facility (Shah, Rohra et al. 2010). Due to this adverse selection of patients by health facilities high neonatal deaths are anticipated (see Annexure: 4). What pathways have steered to such consequences remains unclear, is beyond the scope of present research, and offers the venue for the future work in years to come.

The present study points toward the possibility that educated women are more likely to deliver in public settings; however, findings are insignificant. This is in contradiction with the work carried out in Ethiopia, where despite low-skilled attendance educated women are five times more likely to use health care facilities significantly (Hailu 2014). In Pakistan, the health services available in public settings are lower in quality due to absenteeism and low medicine supply, which makes them unattractive for educated women. Educated women might have preferred private clinics for their delivery; however, this fact needs further endorsement.

5.0.3- Age

The present study indicates that out of all the four provinces of Pakistan, namely KP, Sindh, Baluchistan, and Punjab, women interviewed in the province of KP were the youngest among all women in the survey with a mean age of 32.1 (*SD*: 8.7). The mean age of women in

the Province KP is even lower than the national mean age 32.8 (*SD*: 8.48). This pattern is a reflection of the age structure in Pakistan, which has a typically youthful population with a broad base pyramid that thins out at the top (International. 2013). Young mothers are not uncommon in conservative societies and disadvantaged segments, where women leave schooling and tend to marry at an early age to start their reproductive life. Young mothers have poor parenting skills and are less sensitive to their children's need, resulting in poor health and developmental outcomes of their children (Geronimus, Korenman et al. 1994). Couples who become parents in their teenage years have more children during their long reproductive years (Card & Wise, 1978). Women who marry early and who subsequently become teenage mothers are at risk of adverse outcomes, ranging from violent offending to early school leaving (Jaffee, Caspi et al. 2001). This is also reflected in the present study, in which the majority of the mothers are lowly educated. This is especially true in the Province KP, where mothers are second least educated after Baluchistan, i.e., 22.11 percent went to school in the Province KP, compared to 9.32 percent in the province Baluchistan (see Table 4.1). The age of mother plays an important role in the utilization of health care services. Difference-in-differences analysis of mothers younger than 35 years in CCT and non CCT districts indicates that mothers younger than thirty-five are more likely to deliver at home. This finding contradicts earlier literature, which indicated that young women are more likely to deliver in the institutions, and that the likelihood of intuitional delivery increased with decrease in age (Maru, 2016). A possible explanation for this direction of relationship is that the circumstances of young women in Pakistan are different from elsewhere. Young women usually remain confined to houses and are less resourceful and empowered to make decisions.

5.0.4- Region

Higher odds for home-based skilled birth attendance and insignificant public skilled attendance by rural women are not surprising. Firstly, regional variation, as observed in the present study, conforms to other regional work where regional variation in the utilization pattern has been documented (Mayhew, 2008). Secondly, in rural settings public health care facilities have limited daytime operation hours and do not admit patients on a twenty-four-hour basis, even though the staff is provided residence within the premises (Sarfraz 2015).

5.1 Limitations

Every study no matter how well it is constructed has some limitations, so is present study. Some of worth mentioning limitations are listed below.

- 1- The present survey data is self-reported and asks question about pregnancy experiences in “the last three years.” Women in rural settings with less education may not have accurate time orientation, resulting in a count of even more than three-year-old pregnancies. Women may have delivered in a private setting but provide information about a public setting. The information based upon PSLM questions and some variables of the present study’s conceptual framework have a recall bias.
- 2- Inaccuracies in data acquisition may result in misclassification bias as well. Misclassification bias may occur as there is a short window of phase-out period of the CCT program in the Province KP, from December 2013 to May 2015. The magnitude of the bias may be unknown and correction for it may pose difficulty.

- 3- The current research has used cross-sectional data, and the temporal relationship cannot be established.
- 4- Threats to internal validity are possible, as alternative explanations are operating in the study. For example, the beneficiaries of the cash transfer received the cash after giving birth, which might have strongly influenced their health seeking behavior from the institutional setting.
- 5- Confounding variable might have caused threat to internal validity. Due to limitation of data regarding birth rate in intervention district is not known. Higher birth rate leading to more deliveries at home conducted by CMWs is possible. This may have resulted in less steeper decline in the home based deliveries under cash transfer program. This may be erroneously attributed to the intervention under discussion.
- 6- There is a wide range of district wise incentivized deliveries, during December 2013 to May 2015. This ranges from 27% in district S to 2.0% in district M of total deliveries which were provided cash transfer. This flow of incentive has resulted in the varied response as well. For example, in district S forty one percent women delivered with assistance of skilled birth attendant and in district M which received considerably low funds for cash transfer only twenty three percent delivered with assistance of skilled birth attendant (SBA). Furthermore, analysis is conducted on district representative data under assumption that all deliveries conducted in the districts has received cash transfer whereas in actual

small fraction of deliveries in the district has received the cash transfer funds.

This arrangement may have soiled the results.

- 7- The internal validity of the outcomes is dependent on the randomization that controls for the effect of unobserved variables, which is omitted in the current analysis. In the absence of true randomization, there is always a possibility that some critical difference, not echoed in the pretest, is functioning to soil the posttest data. Randomization ensures that the subjects receiving treatment are comparable (Blanchard 2013). Furthermore, the findings of the current research may not be applicable in other settings, and hence may lead to limited generalizability.
- 8- The time period analyzed in the present study was small and the program was in preliminary years. It is possible that the utilization of SBA in public settings in following years may have improved due to more injection of money in the program.
- 9- Present research could not explore the pathways of some inherent components e.g. level of information about the CCT program among women recipients influencing their utilization behavior.

All caveats considered, the strength of the present study is that it has pre/post-treatment/comparison group, which has controls as well. Secondly, the DD method adopted for the present study is a recommended tool for policy analysis and has increased precision. It is effective to safeguard against the well-known threats to external validity. Furthermore, protection is achieved through the usage of a large data set collected meticulously to minimize

inconsistencies. Finally, the study has provided a low-cost answer to the potential social policy question in a resource constraint setting.

5.2 Policy Implications

Achieving Millennium Development Goal 5 had been a tough task in the public health canvas in Pakistan. High maternal mortality due to various causes had been under discussion for many years by policy makers. The situation is further grimed by the presence of a high number of youths starting their reproductive life very early; this causes high fertility, low education among women, poverty, and poor access to maternal health services, which results in low-skilled birth attendance and low institutional deliveries.

Under the 18th constitutional amendment health services have become a provincial responsibility, while the federal government only provides policy direction to the provinces. Policy direction is provided to the provinces through a mutually agreed strategic framework based on an exhaustive consultative process. This strategic framework provides the roadmap to ensure the highest quality services for the pregnant population, especially the poor and needy throughout Pakistan. The primary purpose of the strategic framework is to strengthen primary and secondary level health services, as well as to enhance outreach services.

With this shift to the lower level, every province within the country has tested various models to enhance access to maternal health services in order to improve their maternal health care indicators. Under the umbrella of the framework, the government of KP has launched cash transfers to pregnant women to increase institutional deliveries and Skilled Birth Attendance in

order to lower maternal deaths. The cash transfer program was piloted in ten districts and subsequently widened its network to the remaining districts within the province. Due to poor administrative capacity and an uneducated population a flat rate of cash transfer was provided to pregnant women.

Present evaluation by using difference-in differences (DD) has provided the evidence for the policy makers to review the implementation process of the cash transfer program within the province of KP. Chapter 2 provides not only an introduction to the cash transfer program, but also the basis for understanding the program in Pakistan's context. This Chapter includes the information gathered from government officials and from official policy documents to provide an insight on the cash transfer program. Chapter 3 provides a detailed outline of methodology to evaluate the policy under discussion. Chapter 4 provides the evidence that there is a significant improvement in the Skilled Birth Attendance provided at home in cash transfer districts. However, the skilled assistance provided at public institutions does not show improvement, despite the cash transfer program for pregnant women. The present study identifies an encouraging shift from assistance provided by the Traditional Birth Attendants (TBAs) to assistance provided by the Skilled Birth Attendants (SBAs) in home settings in cash transfer districts. Skilled attendance in the home setting is a promising sign, since skilled attendants can apply chlorhexidine to the cord, provide misoprostol, induce birth, and provide Early Neonatal Care (ENC). However, the treatment they offer is limited in case of high risk pregnancy, prolonged labor, breach presentation, and obstructed labor. There is paucity of data to evaluate the outcome of pregnancies with post-partum complications (e.g., postpartum hemorrhage, Sheehan syndrome) developing after skilled attendance in home settings. In

order to provide indirect evidence, the present study extended its scope to see the rate of maternal deaths and neonatal deaths in cash transfer districts compared to non-cash transfer districts by using DHIS data. There was an insignificant drop in neonatal deaths only (data not presented here). If Pakistan is to reduce maternal and neonatal mortality the network of skilled services has to be effectively used in facilities under cash transfer intervention. In this regard, the following is recommended.

5.3 Recommendations

Literature indicates that success of cash transfer program is multifactorial ranging from their inherent design, implementation, and contextual factors (Glassman, 2013). Present research considers such areas and recommends following;

5.3.1-Cash-transfer Disbursement

Findings of the present study indicate that the women prefer to stay at home and use skilled attendance even under the cash transfer program. This is due to the fact that the cash transfer incentive is provided after delivery through postal or electronic transfer. Women don't have access to the cash at the time of their need. It is desirable that such transfers are made before the delivery. It is also hoped that by doing so the said amount can be used for transport purposes, resulting in an increase in institutional delivery.

5.3.2-Incentive

Flat rate as offered under present CCT program is justifiable with low administrative capacity of health department, and under uneducated and rural profile of beneficiaries. However, present research indicates higher odds of skilled attendance in home setting among long commuters to the health facility. Based on this, CCT program may consider higher incentive to such inhabitants that live more than half an hour from the health facility or live in far flung areas.

As outlined in chapter 2 that incentive does not consider the place of delivery, an outcome of pregnancy and remain quiet on costing of incentive. Khan's study has indicated that the average cost from patient's perspective for spontaneous vaginal delivery (SVD) is US\$ 79 and for C Section is US\$ 204 (Khan, 2010). This indicates a wide gap between the present incentive and actual cost incurred by the patient. Regional evidence also disfavors the amount being offered under the present program (Lahariya 2009). Lack of existing data to estimate the incentive remains a huge constraint in determining the amount of the incentive i.e., as NHA does not provide the cost of delivery incurred by the household within Pakistan and its provinces. However, the present research recommends that the future rounds of Pakistan Social and Living Measurement (PSLM) surveys may consider collecting information of expenses incurred by the household on delivery in various settings.

5.3.3-Targeting

The present program provides universal cash transfer to pregnant women. Therefore, a more structured delivery of CCT is desirable; one that intends for the program to reach the poorest of the poor, and that takes into account the parity of pregnant women for qualification to receive the incentive. This may include all income groups in the poorest districts, but only poor households in the remaining districts, i.e., less support for others and more for poor households. These are good starting points and can address inequalities that have not been deliberated in the present implementation of CCT. Thus, better targeting techniques, which have yielded good results in South America, must be adopted.

5.3.4-Integration of TBAs

Institutional deliveries can be promoted through an incentive provided to CMWs or lady health workers for mobilization of pregnant women to the hospital. Alternatively traditional birth attendants (TBAs) have influence in the community that can be used to mobilize high risk pregnancies to the institutions. TBAs can be offered nominal outcome based incentive for informing community of available services and for mobilization. This incentive offer must consider that how a split be made between the actual cost of the service, transportation and incentive for mobilization to the traditional birth attendant (TBA).

5.3.5-Cultural factors and women empowerment

Understanding contextual factors to increase the effectiveness of the program will have far reaching results. Sociocultural factors play a vital role along with access in utilization of maternal healthcare and they need to be addressed. Women need resources and permission to seek health care in a conservative society. Thus, it will prove advantageous to include the household head or an influential member of the family e.g. mother-in-law, in health education sessions that show the benefits of institutional delivery. Alternatively social workers to motivate mothers and their families to participate in the program will be worthwhile.

5.3.6-Collateral Damage

The CCT program may be a positive incentive for future pregnancies in a country with a fast-growing population, child labor, and a poor implementation of labor laws. However, if this incentive is coupled with subsequent contraception, it may result in a more positive impact on the growing population, keeping teenage mothers safe for the long reproductive years ahead of them.

5.3.7-Future evaluations

A culture of evaluation should be promoted in the health sector. For this purpose, a detailed MIS system of the program is recommended. Identification of beneficiary households (cases) and non-beneficiary households (controls) of similar socioeconomic background will help to a better understanding of the impact of the program. Future research may also look

into which socioeconomic household, geographic areas uses private health facility and which uses public health facilities. This information shall be helpful in the implementation.

5.3.8 Finances

All else being equal higher amount injected in present CCT program will bring better impact as the number of the incentivized deliveries at present are considerably low (see Annexure 2).

5.3.9 Dissemination of Results

Finally, the findings of the present study shall be shared with policy makers and managers who intend to revisit the project. Thus, the program manager can describe actions based upon the present evaluation before elected members, as well as publicize them in order to seek more funding for the program.

5.3.10 improvement in supply side

Given the size of the population of Province KP, there should be over 1,280 Basic Health Units compared to the 784 existing in the province, and 380 Rural Health Centers compared to the 86 created by 2010. An investment should be made to fill this gap in existing health facilities.

5.3.11 Private Sector

In present cash transfer program incentive is not provided to the women, if they deliver in the private setting. Pooled sample of data indicate that after home the most common place of delivery the second most common place of delivery was private settings i.e. 53.9 percent and 28.39 percent. The least common choice of delivery by the pregnant women was public settings i.e. 17.43 percent. Private sector that remain a preferred place of delivery due to varied number of reasons ranging from quality of services, short waiting time etc. (Shaikh, 2015) has been completely overlooked under present cash transfer program. Private sector which exists in a highly competitive environment and responds to the patients' need of easy availability of services (Brugha and Pritze-Aliassime 2003). No mater this sector can play a pivotal role in lowering the maternal mortality within the province KP and needs to be incentivized. The inclusion of private sector in future design is commendable as per existing utilization pattern which can further reduce maternal mortality within the country.

5.3.12 Future PSLM data

The purpose of the PSLM is to see the progress towards Sustainable Development Goals (SDGs) and maternal mortality is an interest area. In this regard, it is desirable that PSLM gathers information of average household expense on last delivery and transportation cost as well.

5.4 Way Forward

A qualitative study by using focus group discussion (FGD) from carefully recruited six to eight women that delivered in the home and public hospitals in districts with and without cash transfer programs separately shall be helpful.

Following close ended questions can enhance the level of information;

Do you have knowledge of any scheme which can facilities your delivery by providing an incentive in your area? Did anybody provide this information to you? What made you shift to deliver from traditional means to skilled attendance? What made you to seek healthcare from public hospital versus to deliver at home? What extra money shall be required by the women to deliver in the private hospital? How you choose between the health care providers ranging from public, private and at home. How these choices were made? How periodicity of receiving cash before and after the services can impact your behavior?

Specialized key informant interviews from Mother and Child Health (MNCH) official, district health officers (DHO), service provider's e.g. women medical officers (WMOs) and CMWs regarding the existing background of women seeking health care, existing monitoring mechanisms and about further improvement. What are the bases of calculation of cash transfer incentive what is left out of the calculation and what is the optimum level? What data is present regarding the fate of home based deliveries conducted by SBA. Future research can offer further information through the gold standard Randomized Controlled Trial (RCT) through an unbiased relationship between an intervention and impact. This effect is clear when interventions have short causal pathways and have simple impact models. RCT further rule out chance and reduces confounding and minimize selection bias. An RCT which randomly selects

recipients of cash transfers before and after delivery will provide better insight to the fact how the timing of the incentive is important to their health seeking behavior.

6.0 Annexures

Annexure 1 Impact of Cash Transfer Programs on Health Outcomes

Program	Methods	Health Outcome	Results	Reference
Programa de Asignación Familiar-PRAF. Honduras	Seventy municipalities with highest malnutrition allocated to four groups. Immunization history of children younger than 3 years old was analyzed. Randomized Trail.	Immunization coverage for Diphtheria, Pertussis, Tetanus and Measles.	increased coverage of DPT(6.9***), but not for measles (-0.2).	(Morris, Flores et al. 2004)
Oportunidades. Mexico	320 villages randomized into treatment and control villages out of total 506 rural villages. Randomized Trail	Vaccination coverage for TB & Measles.	Results with mixed effects. No effect on TB immunization. 3 percent significant difference for Measles.	(Barham, 2005)
Familias en Acción Colombia	Participating municipalities with less than 100,000 individuals were randomly selected. Control municipalities were matched to the participating municipalities. Differences-In-Differences Propensity Score Matching	Compliance with Diphtheria, Pertussis, Tetanus vaccination.	Increased the probability of adequate DPT Vaccination for < than 24 months Child 0.089*. Not significant DPT Vaccination for children between 24 to 48 months 0.032	(Attanasio, Gómez et al. 2005)

Red de Protección Social-RPS Nicaragua	Children of less than three years from intervention and control areas.	Vaccination Coverage	Full vaccination coverage (13.0) but administrative data shows significant findings, i.e., net increase of 16 percentage points of children < 3 yrs. in VPCD program.	(Maluccio and Flores 2005)
Chile Solidario Chile	The assignment of the program exploited exogenous geographic variation to estimate the impact. Regression Discontinuity Design	Enrolment in Public Health System.	Households participating areas were more likely to be enrolled in Public Health System. Preventive health care visits by children <6yrs showed non-significant effects.	(Galasso, 2006)
Program of Advancement through Health and Education-(PATH) Jamaica	Regression Discontinuity Design	Preventive visits to Health Centers during the past six months by children less than six years.	Significant effects on Preventive health care visits by children less than six years.	(Levy and Ohls 2003)
Bono de Desarrollo Humano -BDH program Ecuador	Randomized Trail	Child growth in last 6 months.	Large effect on hemoglobin among the poorest children No effect among somewhat less poor children in rural Ecuador.	(Paxson 2008)
Social Risk Mitigation Project Turkey	Regression Discontinuity Design	Full immunization coverage of children less than 6 years of age in participating and non-participating areas.	14 percentage points increase among children under the age of 6 years who participated in the CCT program.	(Ahmed, 2007)

Annexure 2 District wise incentive provided in pilot districts compared with total deliveries during December 2013 to May 2015

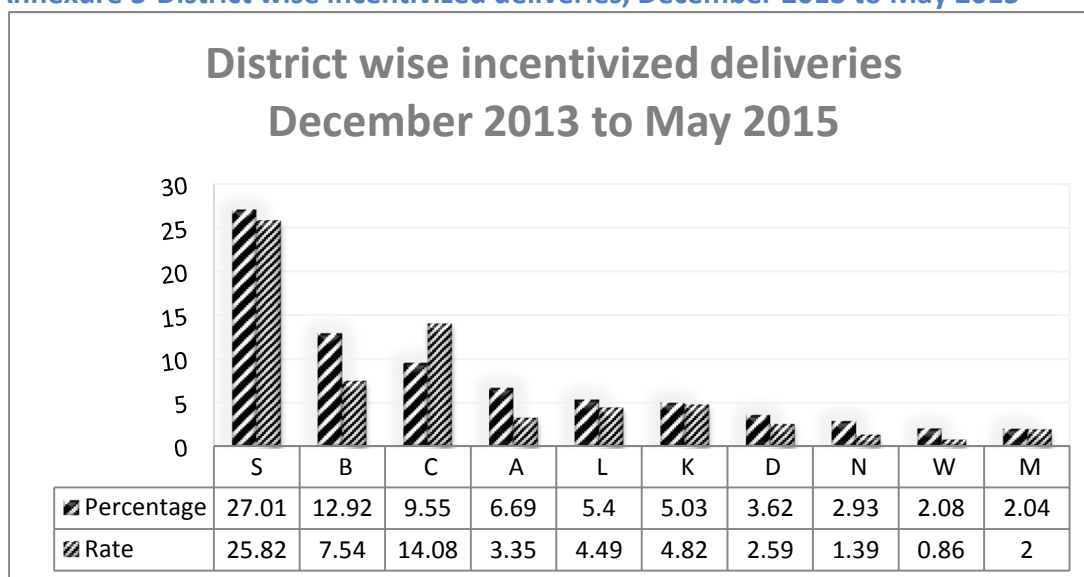
Districts	Population	CBA*	Delive ry by SBA	Normal vaginal deliveri es in facility	Vacuum / forceps deliveri es in facility	Total	Incentiviz ed Deliveries	%age	Rate**
A	1247456	199593	16641	7709	284	24634	1648	6.69	3.35
B	1070851	171336.2	5967	2752	60	8779	1134	12.92	7.54
C	423966	67834.56	7586	5984	452	14022	1339	9.55	14.08
D	873738	139798.1	2424	6394	107	8925	323	3.62	2.59
K	652620	104419.2	4366	3196	34	7596	382	5.03	4.82
L	751345	120215.2	2500	6393	217	9110	492	5.40	4.49
M	636461	101833.8	4975	18341	300	23616	482	2.04	2.00
N	1311822	209891.5	8178	10015	566	18759	549	2.93	1.39
S	653750	104600	1109	2780	180	4069	1099	27.01	25.82
W	1510082	241613.1	6437	7451	5367	19255	401	2.08	0.86

*Child Bearing Ages (CBA) is 16 percent of general population. **Percentage/CBA* 100,000.

CCT Districts (starts with single alphabet) District A =Abbottabad, District B =Bannu, District C=Chitral, District D =Dir Upper, District K=Karak, District L=Lakki Marwat, District M=Malakand, District N =Nowshera, District S=Shangla, District W=Swabi.

Above table provides the details of ten CCT districts in Province KP. It presents general population as of 2014, based on this population of child bearing ages, deliveries at various sites, deliveries reimbursed in each district by cash transfer, and their percentage and rate. Percentages are projected in graphical form on the next page.

Annexure 3-District wise incentivized deliveries, December 2013 to May 2015



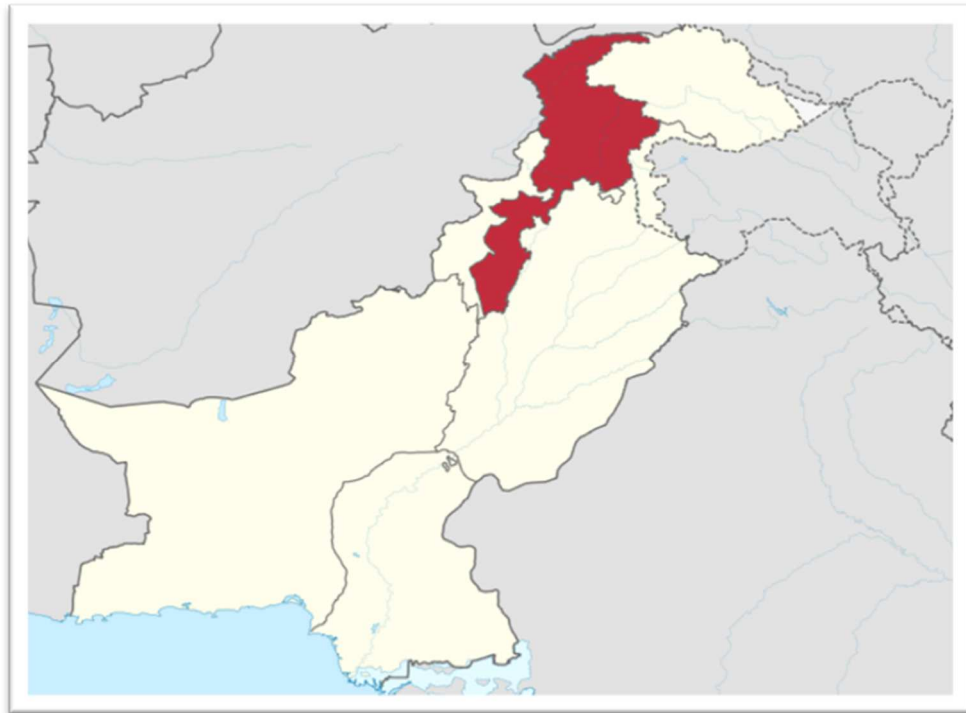
Annexure 4 Difference-in-Differences for Death Rates among women in Cash Transfer and non-Cash Transfer Districts in Province KP

Variable	Neonatal Death Rate		Maternal Deaths Ratio		Still Birth Rate	
	Un adjusted	Adjusted	Un adjusted	Adjusted	Un adjusted	Adjusted
Year	3.68 (8.22)	2.85 (8.48)	397.73 (773.82)	350.19 (749.62)	-1.23 (20.28)	1.26 (18.49)
District with Cash Transfer	-0.28 (9.00)	0.01 (11.38)	399.82 (846.82)	1133.19 (1005.73)	50.70* (22.21)	43.90 (22.84)
DD estimation	-11.68 (12.73)	-11.30 (13.19)	102.49 (1197.5)	114.88 (1165.70)	-40.23 (31.42)	-34.93 (28.76)
District characteristics						
Education (ever attended school)		0.47 (0.48)		-7.54 (42.70)		-1.49 (1.05)
Population having access to Water		-0.05 (0.23)		3.69 (20.70)		-0.68 (0.51)
Married Women of Childbearing Age Population		0.001 (0.00)		0.006* (0.004)		0.001* (0.0001)
Human Development Index (Percent)		-0.25 (0.46)		67.82 (41.04)		0.304 (1.01)
Immunization coverage (recall & record)		-0.02 (0.25)		9.64 (22.47)		1.01* (0.55)
Supply side Factors						
MCH centers		-2.25 (1.95)		22.61 (172.89)		-0.43 (4.26)
Beds per 100,000 of population		-0.14 (0.18)		1.85 (15.97)		-0.016* (0.394)
Hospitals per 100,000 of population		-2.2 (2.47)		187.27 (218.73)		12.03 (5.39)
HRH per 100,000 of population		0.18 (0.16)		-8.469 (14.99)		0.29* (0.37)
_cons	14.56*	15.68	466.78	-5322.88*	16.03	-48.38
No of Districts	48	48	48	48	48	48
R-squared	0.03	0.19	0.02	0.27	0.13	0.43
Adj. R-squared	-0.02	-0.08	-0.04	0.02	0.07	0.23

Legend: * p<0.05; ** p<0.01; *** p<0.001, Standard Errors are presented in parenthesis.

Source: District Health Management Information System 2012 & 2014, province KP.

Table provides DD results conducted on DHIS of 2013 & 2014 end year data of CCT& non CCT Districts for facility based maternal deaths, neonatal deaths and still births.



Annexure 5. Map of Pakistan and Province KP (filled with maroon color)

7.0 References

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