



Faculty of Medicine and Health Sciences

Estimation of Out-of-Pocket Expenditure on Utilization of Delivery and Postpartum Services in Public and Private Health Care Facilities- Study in a Rural District of Pakistan

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Estimation of Out-of-Pocket Expenditure on Utilization of Delivery and
Postpartum Services in Public and Private Health Care Facilities- Study in a
Rural District of Pakistan

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DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



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ABSTRACT

Maternal health is considered a significant public health challenge in most developing countries. Over the last two decades, Pakistan witnessed a significant improvement in maternal healthcare infrastructure and maternal health outcomes during the past two decades. However, persistent urban-rural and socio-economic inequalities exist in access to maternal healthcare services across the country. These inequities are reflected in the utilization of maternal healthcare services and out-of-pocket expenditures (OOPEs) between urban vs. rural women and between the public vs. private healthcare sector. This cross-sectional study was conducted in Rajan Pur, a predominantly rural district in Punjab province. The district's maternal healthcare utilization and outcomes remain lower compared to other districts in the province. The overall objectives of this research were divided into two parts. Part 1 aims to study the utilization pattern and socio-economic factors determining the choice of healthcare institutions for delivery and postnatal care. Part 2 aims to estimate OOPEs on delivery and postnatal care and sources of financing OOPEs. The findings of this study make some significant contributions to understanding OOPEs in utilizing delivery and postnatal care by women in a rural district of Pakistan. The study was based on 368 randomly selected mothers who had childbirths from 1st October to 31st December 2020. Multi-stage random sampling technique was used to select the study participants. The results showed that about two-thirds of mothers preferred public hospitals for most recent delivery. The percentage of cesarean deliveries conducted in private hospitals (43.8%) was 4.7 times higher than in public hospitals (9.3%). This rate is almost three times the WHO recommended limit of 10% to 15%. Further, 70% of mothers who had childbirths in private hospitals sought postnatal care, in contrast to 56% of mothers in the public healthcare sector. The logistic regression analysis results showed that the use of public healthcare facilities for

delivery care increases with increasing maternal education, monthly household income, and distance to healthcare facilities. The results also showed that mothers' occupation and distance to healthcare facilities positively influence the decision to utilize public hospitals for postnatal care. About 99% of mothers incurred OOPE during delivery and postnatal care, and the mean OOPE incurred during delivery care was PKR 2840 in public hospitals and PKR 25596.3 in private hospitals. A significant difference in OOPE was observed between public versus private hospitals and normal versus cesarean deliveries. OOPE on cesarean delivery in private hospitals was 2.5 times higher than the public hospitals, whereas OOPE on normal delivery care in private hospitals was 9.5 times higher than OOPE in public hospitals. Overall, the mean OOPE on both delivery and postnatal care sought in public hospitals was PKR 3856.70, and in private hospitals, it was PKR 27288.40. The mothers who availed of postnatal care incurred a mean OOPE of PKR 1022.20 in public hospitals and PKR 1692.10 in private hospitals. The study showed that savings and current income were the primary sources of financing OOPE by 90% of participants. Further, 35% of low-income households borrowed money from friends and relatives to cope with the current expenditure on delivery and postnatal care. The research findings would add a significant dimension to addressing the barriers and challenges affecting the utilization of maternal healthcare services beyond individual and contextual perspectives. The findings of the research would also provide some direction for interventions aimed at scaling up the existing maternal healthcare programs at the district level. Finally, the findings and recommendations drawn from the research would provide some insights to health policymakers and planners in developing an integrated and viable maternal healthcare program in Pakistan.

Keywords: Delivery care, postnatal care, out-of-pocket expenditure, public sector, private sector

Anggaran Perbelanjaan Luar Saku untuk Penggunaan Perkhidmatan Bersalin dan Selepas Bersalin di Institut Perubatan Awam dan Swasta: Kajian di Daerah Luar Bandar Pakistan

ABSTRAK

Kesihatan ibu bersalin dianggap sebagai cabaran di kebanyakan negara membangun. Sepanjang dua dekad yang lalu, Pakistan menyaksikan peningkatan ketara dalam infrastruktur penjagaan kesihatan ibu dan hasil kesihatan ibu. Walau bagaimanapun, ketidaksamaan bandar-luar bandar dan sosio-ekonomi yang berterusan wujud dalam akses kepada perkhidmatan penjagaan kesihatan ibu bersalin di seluruh negara. Ketidaksamaan ini dicerminkan dalam penggunaan perkhidmatan penjagaan kesihatan ibu dan perbelanjaan luar saku (OOPE) antara wanita bandar dan luar bandar dan antara sektor penjagaan kesihatan awam dan swasta. Kajian keratan rentas ini dijalankan di Rajan Pur, Punjab. Penggunaan dan hasil penjagaan kesihatan ibu kekal lebih rendah berbanding dengan daerah lain di Punjab. Objektif keseluruhan penyelidikan ini dibahagikan kepada dua bahagian. Bahagian 1 bertujuan untuk mengkaji corak penggunaan dan faktor sosio-ekonomi yang menentukan pilihan institusi perubatan untuk bersalin dan penjagaan selepas bersalin. Bahagian 2 bertujuan untuk menganggarkan OOPE untuk bersalin dan penjagaan selepas bersalin serta sumber pembiayaan OOPE. Penemuan kajian ini memberi beberapa sumbangan penting untuk memahami OOPE dalam menggunakan penjagaan bersalin dan selepas bersalin oleh wanita di daerah luar bandar di Pakistan. Kajian ini berdasarkan 368 ibu yang dipilih secara rawak yang bersalin dari 1 Oktober hingga 31 Disember 2020. Kajian ini menggunakan teknik persampelan rawak berbilang peringkat untuk memilih peserta kajian. Keputusan menunjukkan bahawa kira-kira dua pertiga daripada ibu memilih hospital awam untuk bersalin terbaharu. Peratusan bersalin secara cesarean yang

dijalankan di hospital swasta (43.8%) adalah 4.7 kali lebih tinggi daripada di hospital awam (9.3%). Kadar ini hampir tiga kali ganda had yang disyorkan WHO iaitu 10% hingga 15%. Selanjutnya, 70% ibu yang bersalin di hospital swasta mendapatkan penjagaan selepas bersalin, berbeza dengan 56% ibu dalam sektor penjagaan kesihatan awam. Keputusan analisis regresi logistik menunjukkan bahawa penggunaan kemudahan penjagaan kesihatan awam untuk penjagaan bersalin meningkat dengan peningkatan pendidikan ibu, pendapatan isi rumah bulanan, dan jarak ke fasiliti penjagaan kesihatan. Keputusan juga menunjukkan bahawa pekerjaan ibu dan jarak ke fasiliti penjagaan kesihatan secara positif mempengaruhi keputusan untuk menggunakan hospital awam untuk penjagaan selepas bersalin. Kira-kira 99% ibu mengalami OOPE semasa bersalin dan penjagaan selepas bersalin, dan purata OOPE yang ditanggung semasa penjagaan bersalin ialah PKR 2840 di hospital awam dan PKR 25596.3 di hospital swasta. Perbezaan ketara dalam OOPE diperhatikan antara hospital awam berbanding hospital swasta dan bersalin normal berbanding caesarian. OOPE untuk bersalin secara caesar di hospital swasta adalah 2.5 kali lebih tinggi daripada hospital awam, manakala OOPE yang ditanggung untuk rawatan bersalin normal di hospital swasta adalah 9.5 kali lebih tinggi daripada OOPE di hospital awam. Secara keseluruhan, purata OOPE bagi kedua-dua bersalin dan penjagaan selepas bersalin di hospital awam ialah PKR 3856.70, dan di hospital swasta, ia adalah PKR 27288.40. Ibu-ibu yang mendapat rawatan selepas bersalin menanggung purata OOPE PKR 1022.20 di hospital awam dan PKR 1692.10 di hospital swasta. Kajian menunjukkan bahawa simpanan dan pendapatan semasa adalah sumber utama pembiayaan OOPE oleh 90% peserta. Tambahan pula, 35% isi rumah berpendapatan rendah meminjam wang daripada rakan dan saudara mara untuk menampung perbelanjaan semasa bersalin dan penjagaan selepas bersalin. Penemuan penyelidikan menambah dimensi penting untuk menangani halangan dan cabaran yang mempengaruhi penggunaan perkhidmatan

penjagaan kesihatan ibu melangkaui perspektif individu dan kontekstual. Penemuan penyelidikan juga akan menyediakan beberapa hala tuju untuk intervensi langsung dan tidak langsung yang bertujuan untuk meningkatkan program penjagaan kesihatan ibu sedia ada di peringkat daerah. Akhirnya, penemuan dan cadangan yang diperoleh daripada penyelidikan itu akan memberikan beberapa pandangan kepada penggubal dasar dan perancang kesihatan dalam membangunkan program penjagaan kesihatan ibu yang bersepadu dan berdaya maju di Pakistan.

Kata kunci: *Penjagaan penghantaran, penjagaan selepas bersalin, perbelanjaan di luar poket, sektor awam, sektor swasta*

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LIST OF ABBREVIATIONS

ANC	Ante Natal Care
B-EmONC	Basic Emergency Obstetric and Newborn Care
B & C-EmONC	Basic and comprehensive emergency obstetric and newborn care
BHU	Basic Health Unit
C-EmONC	Comprehensive Emergency Obstetric and Newborn Care
DHQ	District Headquarter Hospital
EmONC	Emergency Obstetric and neonatal Care
EMOC	Emergency Obstetric Care
FP	Family Planning
GDP	Gross Domestic Product
IMR	Infant Mortality Rate
LHV	Lady Health Visitor
LHW	Lady Health Worker
MCHC	Maternal and Child Health Center
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MMR	Maternal Mortality Ratio
MNCH	Maternal, Newborn and Child Health
NGO	Non-Government Organization
OOP	Out-of-Pocket
OOPE	Out of Pocket Expenditure
PDHS	Pakistan Demographic and Health Survey
Ph.D.	Doctor of Philosophy

PHSRP	Punjab Health Sector Reforms Program
PKR	Pakistan Rupee
RHC	Rural Health Center
SBA	Skilled Birth Attendance
THQ	Tehsil Headquarter Hospitals
UHC	Universal Health Coverage
U5MR	Under-five Mortality Rate

CHAPTER 1

INTRODUCTION

1.1 Context

This chapter presents the present healthcare delivery system in Pakistan. It gives an overview of the maternal health care system and government initiatives to improve maternal healthcare delivery. It also gives an account of the utilization of maternal health services, including OOPes incurred by the families while seeking maternal healthcare services in Pakistan. The statement of problem, justification of the study, the significance of the study, research questions, study objectives, and limitations are also part of this chapter. The last part of this chapter gives the research and conceptual frameworks of the study.

1.2 Background

Maternal health is considered a significant public health challenge in most developing countries (WHO, 2015). About 295 000 women in the world died owing to reasons associated with pregnancies and delivery in 2017 (WHO, 2017). Nearly 830 women die every day from causes associated with pregnancy and childbirth globally (WHO, 2019). It is estimated that 99 % of maternal deaths occur in developing countries, and out of these, one-third of deaths occur in south Asia (WHO, 2019). Also, the Maternal Mortality Ratio (MMR) is considerably higher in women who belong to impoverished communities and live in rural areas than in urban areas (WHO, 2019). On average, in developing countries, women tend to have more pregnancies, and their lifetime risk of death due to pregnancy is higher compared to developed countries (WHO, 2017).

Despite much improvement in maternal healthcare globally, Sub-Saharan Africa and Southern Asia regions reported about 86% of the estimated global maternal deaths in 2017. Although there has been a reduction in MMR across South Asia, maternal mortality remains

high in many countries, including Pakistan, Afghanistan and Nepal (Akseer et al., 2017). Except for Pakistan and Afghanistan, there was almost a 50% or more significant decline in maternal mortality in most other South Asian countries between 1990 and 2008 (Hogan et al., 2010). The leading causes of maternal deaths in most countries include maternal hemorrhage, obstructed labor, hypertensive disorders, abortion and uterine rupture, miscarriage, or ectopic pregnancy (Akseer et al., 2017). These complications are also a source of disability among women of childbearing age (WHO, 2016).

There is a lack of adequate healthcare services for millions of women in developing countries, which results in poor overall health in women (WHO, UNICEF 2013). Besides, there are many barriers, including physical distance, out-of-pocket expenditures (OOPes), and familial influences (Riaz et al., 2015). Whereas poor functionality of health centers in rural areas is another significant barrier.

The shreds of evidence suggest that by improving access to Skilled Birth Attendance (SBA), maternal deaths can be reduced by 33% in developing countries (Adegoke & Van den Broek, 2009). It is also suggested that the availability of comprehensive maternal healthcare services with skilled healthcare providers delivering emergency obstetric care can reduce maternal mortality and improve the quality of maternal health outcomes (Jha et al., 2008; Campbell & Graham, 2006).

High MMR levels remain a significant public health challenge in Pakistan. Despite the country's mission to reduce MMR by two-thirds between 1990 and 2015, as endorsed in the Millennium Development Goals (MDGs) number 5, the MMR remains high in Pakistan (Rizvi et al., 2015). One of the reasons for this state of affairs is the failure of maternal healthcare programs to recognize and address the various barriers that restrict access to maternal healthcare services for women living in poor socio-economic societies (Mumtaz et

al., 2014). The Pakistan Demographic and Health Survey (PDHS) (2017-2018) indicates that women in urban areas are more likely to benefit from maternal healthcare services than women in rural areas. The report also shows the persistence of urban-rural and socio-economic inequalities in access to maternal healthcare services and maternal health outcomes (PDHS, 2017-2018). Such inequities are reflected in the utilization of maternal healthcare services and OOPes between urban vs. rural women and between the public vs. private health sector (ADB, 2012; Zahito & Fatmi, 2018).

1.3 Healthcare System in Pakistan

The population of Pakistan was 200 million in 2017, with 61% living in rural areas (PBS,2018). Health indicators for Pakistan are by no means satisfactory. The country has an under-five mortality rate of 74.9 per 1000 live births against the global average of 39 (WHO, 2019). The MMR of 178 per 100,000 live births is the highest among the neighboring countries (WHO, 2019a). According to the World Bank, 29.5 % population lives below the poverty line (World Bank, 2019). The poor, particularly in rural areas with lower incomes, poor sanitary living conditions, and low access to public healthcare, are likely to have high morbidity and mortality rates but tend to have lower utilization of healthcare services than those who are better off (WHO, 2021). They also spend higher proportions of their incomes on healthcare that they access (WHO & World Bank, 2019). Uncertainty related to health and the catastrophic nature of health expenditures often renders even non-poor households into cycles of poverty (WHO & World Bank, 2019).

Healthcare in the country is mainly financed by the private sector, which accounts for about 63.4% of aggregate healthcare spending, and out of this, 91% are household OOPes (PBS, 2018). In 2015-16, per capita health expenditure (\$ 45) was one of the lowest among the Asian countries and below the figures of Sri Lanka (US\$118) and Iran (US\$ 366)

(WHO, 2018). Pakistan's total healthcare expenditure as a share of Gross Domestic Product (GDP) in 2015-16 was 2.7, one of the lowest among Asian countries (WHO, 2018).

1.3.1 Public Healthcare System in Pakistan

Pakistan has a decentralized public healthcare delivery system managed at the district level. With the abolition of the Ministry of Health in 2011, all responsibilities related to health, including health planning and resource allocation, were devolved to provincial levels (PBS, 2018). Healthcare services delivery has been the primary responsibility of the Provincial Government, with the Federal Government playing a supportive and coordinating role. All Federal Government-funded vertical health programs such as the extended Program of Immunization, Primary Health Care, Family Planning, National Tuberculosis Control Program, and National AIDS Control Program are implemented at the provincial and district levels.

In Pakistan, primary healthcare is delivered through Basic Health Units (BHUs), Rural Health Centres (RHCs), Maternal and Child Health Centres (MCHCs), and Dispensaries. Every BHU covers about 10000 to 15000 population, and every RHC covers between 5-10 BHUs (WHO, 2007). BHUs deliver preventive care and promotive healthcare services, including immunization, maternal & child health services, malaria control, and diarrheal disease control. BHU also provides mental healthcare services, prevention & control of locally endemic diseases, school health services, and essential drugs (PBS, 2018). Each RHC covers 25,000 to 50,000 population. It mainly provides preventive, promotive, and curative services for common diseases (PBS, 2018). MCHCs are part of the integrated healthcare system, focusing on maternal and child healthcare. First and secondary level referral healthcare facilities deliver acute, ambulatory, and inpatient care through Tehsil Headquarter Hospitals (THQs) and District Headquarter Hospitals (DHQs). THQs and

DHQs cover 100,000 to 300,000 and 1-2 million population respectively. Tertiary healthcare is delivered through specialized hospitals, directly administered by the Provincial governments (PBS, 2018).

1.3.2 Private Healthcare System

The private healthcare facilities in Pakistan are diverse and mostly unregulated. They include hospitals and nursing homes delivering variable quality care, clinics run by individuals or general practitioners, including dental and eye care. These clinics are owned as the sole proprietor or run on a partnership basis. The private healthcare system also includes homeopaths, Hakeem, tabibs, other traditional health providers, health care facilities run by Non-Government Organizations (NGOs), including philanthropic organizations delivering ambulatory healthcare services, opticians and private pharmacies (PBS, 2018). It is reported that about 81% of the population in the country depends on the private sector for healthcare services (PBS, 2018).

1.3.3 Maternal Health Services in Pakistan

Maternal healthcare service is defined as the services that women receive to acquire the quality of maternal health during antenatal, childbirth, and postnatal care in healthcare institutions (Aregay et al., 2014; Dairo & Owoyokun, 2011; Dhaher et al., 2008). Pakistan is a signatory to the Alma Alta Declaration of 1978, which aimed to improve the availability and accessibility of primary healthcare institutions that provide maternal healthcare services, specifically among the vulnerable and underserved communities, during prenatal, childbirth, and postnatal stages (WHO, 1978). In a concerted effort to improve maternal healthcare services, Pakistan launched the MDGs in 2000, and goal number five explicitly advocated to put in place measures to reduce MMR to about 100 deaths per 100 000 live births in 2015 (WHO, 2000).

Government's strategies for promoting safe childbirth in a fully functional public healthcare system are reflected in the maternal health policy (Government of Pakistan, 2006). Significant efforts were made to effectively implement this policy through Safe Motherhood and the MDGs initiatives. However, notwithstanding these strategies aimed at improving the availability, accessibility, and affordability of maternal healthcare services, Pakistan failed to achieve MDGs 4 and 5. One reason for this failure could be that these strategies have failed to recognize and address the barriers that restrict access to maternal healthcare for women living in underserved societies (Mumtaz et al., 2014).

The first community health worker program, namely the Lady Health Worker (LHW), was implemented in 1994 (Hafeez et al., 2011). This program was a significant initiative for providing Universal Health Coverage (UHC) founded on the International Conference on Population and Development's Program of Action (Sarfraz & Hamid, 2016). The program, which covers every district in Pakistan, employs lady LHWs to deliver 22 core tasks (appendix-1). The LHWs play an integral part in Pakistan's primary healthcare system. The management of the LHW program faced many difficulties due to the frequent transfer of managerial staff at various levels.

In 2006, the Government implemented another program known as the Maternal, Newborn and Child Health (MNCH), aiming to improve maternal health outcomes, especially those related to the MDGs 4 & 5. This program's policy and strategic framework were developed through a series of consultations at the provincial and district levels. Subsequently, the Government and donors unanimously accepted the Islamabad Declaration on the MNCH policy framework on April 2, 2005. The program's primary objectives were to enhance the accessibility of quality maternal and child health services by strengthening the district health system. The program envisaged training and deploying 12000 community-

based skilled birth attendants, training and recruitment of 324 new midwifery tutors for nursing education, providing comprehensive EmONC services through 268 hospitals, and primary emergency obstetric care (EMOC) services in 608 RHCs and preventive services in 5882 BHUs (PBS, 2018).

MNCH program recommended to provide complete coverage for child care and neonatal resuscitation at every EmONC facility, a well-baby clinic in every hospital, and collaborate with the supplementary nutrition program. Further, it was recommended to provide essential drugs and equipment to healthcare facilities, comprehensive family planning (FP) services through all health facilities, and performance-based incentives for health management teams at federal, provincial, district, and hospital levels. However, an evaluation of this program found that it has faced several challenges in service delivery, management of funds and logistics, skill training and placement of health workers, and integration with the healthcare system at various levels (Sarfraz & Hamid, 2016; Dobson & Lalji, 2011).

In 2011, the healthcare system governance in Pakistan experienced significant restructuring. With the 18th constitutional amendment, all functions of the Ministry of Health at the Federal level were devolved to health departments at the provincial level (Khan et al., 2014). However, all vertical programs management remained with the Federal ministry. Devolution of functions provided greater opportunities for provincial governments to implement reforms in healthcare. However, implementing reform has been an intimidating task primarily due to the lack of a comprehensive national health policy and provincial health policies (Nishtar et al., 2013; Khan et al., 2014). Moreover, the weak provincial management units and district health systems, inadequate financing of the health sector, and lack of implementation of quality assurance standards were the most significant challenges for

managing community health worker programs at the provincial levels (Sarfraz & Hamid, 2016).

In the past decades, various advocacy measures at the global level, such as the Alma-Ata declaration, the MDGs, and the emphasis on maternal and child health by the international donor community, have contributed to the development of many initiatives around primary healthcare in Pakistan (Malik & Bhutta, 2018). However, these programs have faced funding and implementation challenges due to political instability and poor civil-military relations. Presently, about 70% of the total health sector budget in Pakistan is allocated to tertiary care facilities in metropolitan cities and urban areas, leaving less than 30% for delivering primary healthcare, including preventive measures; as a result, only 0.1% of the health budget is allocated for maternal and child health (PDHS, 2018).

Currently, Basic and Comprehensive Emergency Obstetric and Newborn care (B & C-EmONC) services are delivered at different levels of the public healthcare system. In Pakistan (Ansari et al., 2015). While primary healthcare centers deliver B-EmONC services, secondary level facilities provide C-EmONC, including complicated delivery care, cesarean deliveries, care for newborns, and advanced resuscitation (Ansari et al., 2015). Although private healthcare facilities provide C-EmONC services, most of these facilities are concentrated in urban areas, leaving rural populations no choice but to travel to cities if they need C-EmONC. Due to these reasons, maternal healthcare coverage, access, and utilization remain unsatisfactory. A situation analysis conducted in Sindh province showed that 82% and 96% of those who availed themselves of public and private C-EmONC facilities incurred a substantial transport cost (Ansari et al., 2015). A majority of mothers who used public healthcare facilities (55%) and private healthcare facilities (71%) incurred a substantial amount of transport charges, which were unaffordable for them (Ansari et al., 2015). The

study also revealed that low income, ethnicity, caste system, the unfavorable attitude of health staff, and the private practices of government doctors were hampering the utilization of C-EmONC services (Ansari et al., 2015).

According to MICS 2017-2018 Government of Punjab, Infant Mortality Rate (IMR) of the district was 54 per 1000 live births and under-five mortality rate of 62 per 1000 live births, while Punjab province has an IMR of 60 per 1000 live births and under-five mortality of 69 per 1000 live births. Maternal Mortality Rate (MMR) in the province was 180 per 100,000 childbirths. About 33.6 % of children under 5 years are underweight, while 21.2% are in the province. Total Fertility Rate (TFR) in the district was one of the highest in the country (5.9), as against the TFR of 3.7 in Punjab province. While skilled birth attendants assist 76.4% of all deliveries in the province, only 40.3% of all deliveries in the district were conducted by skilled birth attendants. According to the survey, 17.2% of deliveries in the district took place in public healthcare facilities, while it was 20% in private healthcare facilities. These figures are pretty low compared to 29.7% of the deliveries in the public health care facilities and 43.5% in the private health facilities for Punjab province. However, it is interesting to note that the proportion of cesarean deliveries in the district is only 7% compared to 28.9% in the province. While 70.7% of all mothers who delivered in public or private healthcare facilities in the province availed postnatal check-ups, only 40.3% of mothers in the district sought postnatal check-ups from public or private health care facilities during 2017-18.

1.4 Maternal Health Services Utilization

Maternal health services utilization depends on multiple factors; access is one of the significant factors. Many researchers have defined the concept of 'access to care. Levesque et al. (2013) outlined five dimensions of access to healthcare: availability, appropriateness,

affordability, approachability, and acceptability. A similar framework with somewhat different aspects of access has been put forward by Obrist et al. (2007) and Putrik et al. (2013). Availability refers to the physical location, distribution, and adequacy of healthcare institutions, opening hours, and the services and healthcare providers that the service pregnant women can choose from (Levesque et al., 2013). In developing countries, access to maternal healthcare may be limited in some localities due to the unavailability of services, lack of health professionals, healthcare facilities, or specific services (Miteniece et al., 2018).

Availability can be impacted by the distance between the woman's residence and the healthcare facility and the time spent traveling or waiting (Colombini et al., 2012; Berki & Ashcraft, 1980). Appropriateness is considered the technical and professional aspects of care and their adequacy, i.e., what healthcare services are delivered and how they are delivered (Levesque et al., 2013). Appropriateness encompasses two dimensions, clinical and social quality (Berki & Ashcraft, 1980). When talking about maternal care, clinical quality refers to the quality of procedures and care provided by healthcare providers. Improvement in health outcomes requires that healthcare is of good quality: which should consider the dimensions of safety, effectiveness, timeliness, efficiency, equitability and people-centeredness (Miteniece et al., 2018). The standards for improving the quality of maternal and newborn care published by the WHO in 2016, places people at the center of healthcare by improving both the provision of and patients' experience of healthcare (Miteniece et al., 2018).

The concept of affordability refers to the payments made by the health service user, including various types of OOPes, including indirect expenditures (e.g., travel costs) that make healthcare less affordable and should not limit its access (Levesque et al., 2013). Barriers to affordability refer that even if healthcare is available and appropriate to users, the

pregnant woman might not use it because she cannot pay for the services. All types of OOPE (direct or indirect) can severely limit the ability of pregnant women to access maternal care (Arsenijevic et al., 2014). Approachability refers to the users' awareness of the availability of healthcare services and the information regarding available treatment facilities and services (Levesque et al., 2013). Acceptability is influenced by traditional, cultural, and literacy factors that determine whether individuals accept institutional care and whether and how often it will be demanded (Sado et al., 2014; Levesque et al., 2013). Thus, maternal care might be available, appropriate, affordable, and approachable, but not acceptable due to traditional, cultural, and health awareness aspects determining the need for institutional care (Putrik, 2013).

In Pakistan, there has been a substantial urban-rural variation in women's utilization of maternal healthcare services. The recent national health survey reveals that 72.5% of the pregnant women in urban areas availed themselves of four or more antenatal care visits against only 47.9% of pregnant women in rural areas. Similarly, a skilled provider conducted 83.4% of deliveries in urban areas and 65.6% in rural areas. In Punjab province, 80.5% of deliveries among urban women were conducted by a skilled provider instead of 63.5% among rural women (PDHS 2017-2018). Existing surveys showed that percent of pregnant women who receive ANC from a skilled healthcare provider increases with the mother's educational level and economic status (PDHS 2017-2018). The survey showed that 76% of illiterate pregnant women received ANC from a skilled provider, compared with more than 95% of pregnant women with a primary or above level of education. It is also reported that 56% of births to mothers with no education were assisted by a skilled healthcare provider in a healthcare facility, compared with 93% of births to mothers with a higher level of schooling. A similar relationship is observed with the income status of women (PDHS 2017-

2018). Despite implementing many programs to provide maternal care to disadvantaged and vulnerable women, there has been a growing recognition that a supply-side and technical approach is inadequate to address inequalities in maternal healthcare utilization and outcomes (Mahmud et al., 2011; Chowdhury et al., 2006). It has been recognized that maternal health-seeking behavior is constrained by several cultural and structural barriers (Mumtaz et al., 2014). Inadequate access and under-utilization of healthcare services are significant factors for poor health outcomes in most developing countries (Ronsmans & Graham, 2006). Appropriate and timely care-seeking makes a big difference in achieving health outcomes (Kagabo et al., 2018).

1.5 Statement of the Problem

It is estimated that 80% of the poor population in Pakistan lives in rural areas (Mansuri et al., 2018). In rural areas of Pakistan, there is limited availability of healthcare facilities. So achieving equity in health is one of the significant goals to improve the poor's well-being and survival in rural areas. However, achieving equity is far from reality, particularly with rapid privatization that has taken healthcare beyond the reach of the poor. Even though these services were fraught with issues in terms of access and quality, the poor could still find it difficult to access health care services, including maternal and postnatal services. Due to reasons like lack of access and distance to government health facilities followed by an inadequate supply of medicines and diagnostic facilities in public healthcare facilities, especially in rural areas, people seek treatment in the private sector, which is the dominant source of care, including maternal and child health services (Pomeroy, Koblinsky & Alva, 2014). The existing studies and reports in different districts in Pakistan have revealed that the private sector provides about 80% of all outpatient contacts (PBS, 2018; Rehman et al., 2017). Even sudden and catastrophic expenditures can push families below

the poverty line (ADB, 2012; WHO & World Bank, 2019). Expenditure on drugs accounted for a substantial percentage of household expenditure in general and health care expenditure in particular.

The past decade witnessed a significant improvement in maternal health outcomes in Pakistan. Although all provinces in Pakistan have made progress in improving the maternal mortality rate (MMR), infant mortality rate (IMR), and under-five mortality rate (U5MR), the progress in rural areas in the country remains slow. NIPS (2020) indicates a significance increase in incidence in maternal mortality in the rural areas of Pakistan contributed by low utilization of maternal healthcare services and low levels of socioeconomic and demographic factors, but the most common cause was postpartum haemorrhage (41%) followed by pre-eclampsia/eclampsia. The Punjab province records a low per capita health expenditure as compared to other provinces, and high burden of out-of-pocket expenditures on healthcare by households affecting the utilization of quality maternal health services, due to which maternal deaths are higher in the lowest quintile (PERI, 2020). Further, most of the complications related to childbirth such as postpartum haemorrhage and infections start instantly after birth, which put mothers' health at risk. These complications can be addressed by giving timely care to mothers during postnatal care period (Iqbal et al., 2023; Titaley et al., 2009; Gogia & Sachdev, 2010).

The Government of Punjab has taken several initiatives to improve the maternal and child health indicators, including integration of LHWs, MNCH program, nutrition program, and strengthening EmONC services. Still, the available reports reveal low utilization of maternal health services in rural areas (Riaz et al., 2015; Rehman et al., 2017).

Low utilization of maternal health services could be due to unavailable accessibility of appropriate maternal health services at affordable costs. Also, in the case of maternal

health services, socio-economic factors play a paramount role (Pomeroy, Koblinsky & Alva, 2014; Riaz, Zaidi & Khowaja, 2015). Moreover, the unavailability of lady doctors in rural areas has been a big hurdle in availing maternal and postnatal services. Thus, the community's delivery and postnatal services utilization is primarily influenced by accessibility, availability, and affordability factors. Therefore, there is a strong need to understand the utilization pattern of delivery and postnatal services and OOPes incurred by the rural community while seeking these services from public and private healthcare facilities.

However, there appears to be limited information on OOPes associated with the utilization of maternal healthcare services in Pakistan. To the best of the researcher's knowledge, and based on an extensive literature review, a detailed study has not been conducted to understand the OOPe on maternal health services among rural women in Punjab province. Against this background, the present research has focused on estimating OOPe on the utilization of delivery and postnatal services in a rural district. Thus, the present research was undertaken in Rajan Pur, predominantly a rural district, and has recorded the province's lowest maternal and child health indicators (MICS, 2008).

1.6 Justification of the Study

Studies in developing countries revealed that maternal healthcare utilization and OOPes by the households in public or private healthcare sector generally depend upon socio-economic and demographic factors (Rehman et al., 2017; Mohanty & Kastor, 2017). Also, cultural beliefs, gender discrimination, the status of women in society, and the political environment play a significant role in the utilization of these services (Rehman et al., 2017). Lack of physical access to healthcare facilities and the financial costs (both direct and

indirect) connected with treatment would also affect the maternal healthcare utilization in the country (Riaz, Zaidi, & Khowaja, 2015; Lama & Krishna, 2015; Mehari, 2013).

Despite the availability of maternal healthcare services free of cost at public health facilities, the population tends to utilize the services from the private health sector. The public healthcare facilities suffer from various deficiencies, which result in increasing dependence on the private health sector by the population. This tendency has resulted in expanding the unregulated private healthcare sector throughout the country. The poor who need easy access to affordable maternal healthcare are victims of this unregulated private healthcare. An understanding of maternal healthcare utilization and OOPE in rural areas may offer some policy responses to development of rural health strategy by health policymakers. Moreover, the findings may aid to draw a baseline for new health financing modalities including health insurance or community based health financing strategies to ensure access to maternal healthcare services.

1.7 Significance of the Study

Maternal health is fundamental to development, as reflected in MDGs. The goal of maternal health policy should improve the well-being of mothers and children. The well-being of both mother and children determines the health of future generations, and it can assist in predicting public health challenges for individuals, societies, and the healthcare system in the future. Most delivery-related mortalities and associated morbidities are highly preventable (Kilpatrick & Ecker, 2016). Availability and utilization of maternal healthcare services allow for identifying existing health risks during pregnancy in women. By identifying the risks during pregnancy, we can prevent future health problems for mothers and children. The research on the utilization of maternal care by the women will have profound policy implications on the extent to which various government programs for

improving access to and affordability of maternal health services have benefitted the rural women in Pakistan.

The present research in Pakistan is significant for several reasons. Firstly, estimating the utilization of delivery and postnatal services in public and private health sectors and various socio-demographic and economic factors affecting these services at the individual, household, and community levels is paramount for understanding various factors determining maternal health services utilization. The research findings would add a significant dimension in addressing the barriers and challenges affecting the utilization of maternal health services beyond individual and contextual perspectives.

Secondly, there is a need to understand OOPes incurred by women on the utilization of delivery and postnatal services in public and private healthcare facilities in Pakistan. The findings of the research in terms of choice of providers, the financial burden of households (both direct medical costs and direct non-medical costs) in seeking delivery and postnatal care, and source of funds for meeting these expenditures would provide some direction in direct and indirect interventions aimed at scaling up the existing maternal health care programs at the district, provincial and national levels. Finally, the findings and recommendations drawn from the research would provide insights to health policymakers and planners in developing an integrated and viable maternal health care program in Pakistan.

1.8 Research Questions

The present research seeks to address the following research questions:

1. What is the delivery and postnatal services utilization pattern among women who had institutional deliveries in district Rajan Pur, Punjab, Pakistan?

2. What are the major socio-economic factors affecting the choice of healthcare institutions for delivery and postnatal services in district Rajan Pur, Punjab, Pakistan?
3. What is the average OOPE incurred by families in utilizing delivery services in public and private healthcare facilities in district Rajan Pur, Punjab, Pakistan?
4. What is the average OOPE incurred by families in utilizing postnatal services in public and private healthcare facilities in district Rajan Pur, Punjab, Pakistan?
5. What are the significant sources of financing OOPE on utilizing delivery and postnatal services by families in public and private healthcare facilities in district Rajan Pur, Punjab, Pakistan?

1.9 Research Objectives

1.9.1 General Objectives

To determine the women's choice of healthcare institutions for delivery and postnatal care, resulting out-of-pocket expenditures, and source of funds used to meet these expenditures in Rajan Pur district, Pakistan.

1.9.2 Specific Objectives

1. To describe the utilization pattern of delivery and postnatal care among women who had institutional deliveries in district Rajan Pur.
2. To identify significant socio-economic factors determining the choice of healthcare facilities for delivery and postnatal care in district Rajan Pur.
3. To estimate the OOPE incurred by families on delivery care in public and private healthcare facilities in district Rajan Pur.
4. To estimate the OOPE incurred by families on postnatal care in public and private healthcare facilities in district Rajan Pur.

5. To identify the sources of funds to meet the OOPE on delivery and postnatal care by the families in district Rajan Pur.

1.10 Limitations

This study was conducted among the women in Rajan Pur district of Pakistan as a part of Ph.D. research, and the findings of this study cannot be generalized as a whole. Secondly, apart from socio-economic factors, the choice of healthcare institutions for delivery and postnatal care may be affected by several factors. For instance, this study did not include supply-side factors such as access to healthcare institutions and quality of care; and demand-side factors such as culture, customs, and community health awareness. Finally, the length of the recall period might influence the estimation of OOPE in the study, and the probability of over-reporting or underreporting could not be overruled.

1.11 Theoretical Framework

In the past, various theoretical models have been formulated to determine the variables influencing healthcare utilization. Among these theories, the contribution of health services utilization theory (1968) by Anderson, the three-delay theory (1998) by Barnes-Josiah et al., and the Ecological Theory (1979) of Bronfenbrenner has been recognized by researchers in the context of healthcare utilization studies. Andersen's health service utilization theory assumes that utilization of maternal healthcare can be seen as a kind of personal behavior affected by socio-economic, demographic, and health-related factors of the women in question (Andersen., 1995). Based on this theoretical framework (Figure 1.1), the conceptual framework for this research has been developed.

Anderson's Health Service Utilization Model

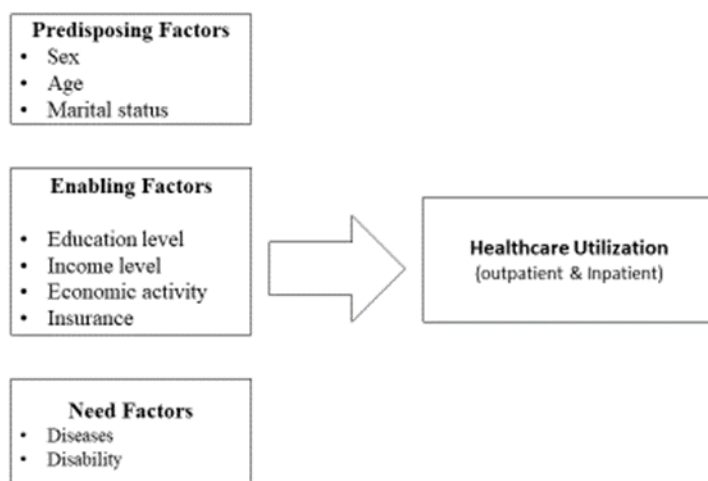


Figure 1.1: Andersons' Health Service Utilization Model

1.12 Conceptual Framework

The conceptual framework adopted for this research is presented in Figure 1.2.

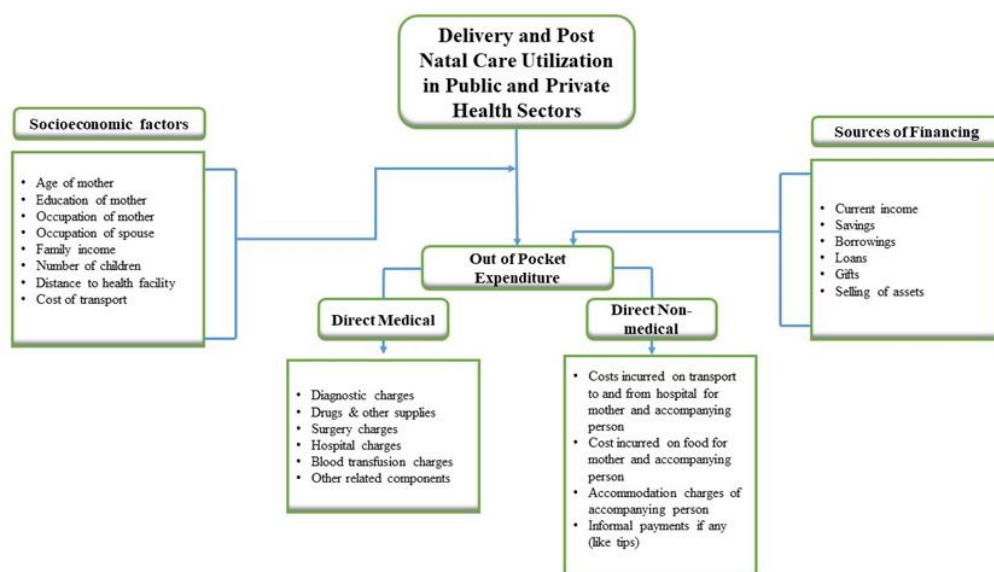


Figure 1.2: Conceptual Framework

The conceptual framework for this research is based on Andersons' health service utilization framework. Conceptual framework shows that the choice of seeking delivery and

postnatal care in public vs private health sectors is influenced by various socio-economic factors such as age, education, and occupation of mothers, occupation of spouses, family income, number of children, distance to health facility and cost of transport. The utilization of delivery and postnatal care by mothers' result in out-of-pocket expenditure (OOPE) in the form of direct medical and direct non-medical expenditures. Direct medical expenditure includes charges on diagnostic tests, drugs, surgery, hospital facilities, blood transfusion and other charges, whereas direct non medical expenditure comprises of cost incurred on transport and food by mothers and accompanying persons. OOPEs incurred on delivery and postnatal care in public vs private health are met by the families through different sources such as current income, savings, borrowings, loans, gifts and sale of household assets.

1.13 Chapter Summary

This chapter described the current healthcare delivery system in Pakistan. It provided an overview of the maternal health care system and government initiatives to improve maternal health care delivery in the country. The chapter also provided an account of the utilization of maternal health services, including OOPEs incurred by the families while seeking maternal health care services in the country. The chapter highlighted the problem statement, justification of the study, significance of the study, research questions, study objectives, and study's limitations. The last part of this chapter summarized the research and conceptual frameworks of the study.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Overview

This chapter provides a review of various studies that address the utilization of delivery and postnatal services by the mothers, factors determining utilization of delivery and postnatal services from public vs. private health facilities, OOPE incurred by the families on utilizing these services, and sources of meeting these expenditures in different countries. The fundamental principle is to recognize the gaps in studies associated with Pakistan, which are addressed by the present study. The literature review has mainly focused on studies on utilization of maternal health services, especially delivery and postnatal services, factors determining utilization of these services in public and private health facilities, OOPE on utilizing delivery and postnatal services from public and private health facilities and sources of financing used by the households to meet OOPE in developing countries, with special reference to Pakistan.

2.2 Review Methodology

Literature search has mainly included search engines like PubMed, Google Scholar, Springer link, Science Direct for the published literature search with the keywords – utilization of maternal and child health services, barriers in utilizing health services, delivery care, and postpartum care, out of pocket expenditure on maternal health care, cost of delivery, Pakistan and South Asia, developing countries. Websites of international agencies like World Health Organization, World Bank, Asian Development Bank, publications of Government of Pakistan and Ministry of Health including demographic and health surveys, Pakistan Bureau of Statistics, district-level health statistics as well as other unpublished research works including working papers are reviewed for the research work.

2.3 Utilization of Delivery and Postpartum Services

Maternal mortality is considered a huge public health problem in the countries of Sub-Saharan Africa and South Asia, which together account for about 86% of the global maternal deaths in 2017 (WHO, 2021). Shortage of access to healthcare facilities and poor utilization of maternal health services are among the main reasons for the disproportionate maternal mortality rates in these countries (Alvarez et al., 2009). Although maternal death can occur at any time during pregnancy, the period of childbirth is by far the most dangerous time for both mother and newborn. Despite the significance of institutional delivery in preventing maternal deaths, non-institutional delivery constitutes a major share in some low-income countries (UNICEF, 2012). Good quality maternal health care services, whether from a government or private facility, is crucial to the reduction in maternal mortality and morbidity in most countries (Hogan et al., 2010). Existing evidence shows that multiple factors prevent women from seeking health services during pregnancy and childbirth. These factors include inadequate services, poverty, Distance to a health facility, lack of information, and cultural practices (WHO, 2018). Many studies in Asian and African countries have shown that women's education, household income, and geographical locations had the most significant effects on the utilization of maternal health services (Agha & Carton, 2011; Jat et al., 2011; Zere et al., 2011). These factors together contribute to poor utilization of maternal health services in many developing countries.

Access to maternal health services is considered as one of the significant health system factors affecting utilization. Levesque et al. (2013) outlined five aspects of access to care such as availability, appropriateness, affordability, approachability, and acceptability. Availability reflects the geographical location, distribution, and several health care facilities, opening hours, as well as the services and healthcare providers that the users can choose

from (Levesque et al., 2013). In many countries, there is low access to maternal healthcare services in certain geographical regions due to the unavailability of services, lack of health providers, health institutions, or certain practices (Miteniece et al., 2018). Availability can be impacted by the distance between the service users and the healthcare facility and the time spent traveling or waiting (Berki & Ashcraft, 1980).

In low-income countries, maternal healthcare utilization has been significant public health challenge, especially among the vulnerable groups and underserved societies. Researches undertaken in developing countries have shown that there are apparent barriers that prevent populations in the vulnerable and underserved communities from using maternal healthcare services. These barriers can be grouped into community-related, cultural, socioeconomic, and healthcare systems-related. Reviews on barriers to access maternal care in sub-Saharan African countries (Nimakoh et al., 2017) revealed there are several demand-side barriers such as poor household income, non-availability of transports, high transport costs, poor information related to healthcare providers, cultural belief, ignorance about required obstetric services, stigma and self-esteem affected maternal healthcare utilization. However, the review also acknowledged several supply-side barriers such as OOPE, Distance to health facilities, long waiting time in hospitals, inadequate knowledge and competency of healthcare providers, poor interpersonal relationship with healthcare providers and poor referrals to higher-level healthcare institutions, are adversely influencing utilization maternal healthcare utilization in public healthcare facilities. A study in Georgia by Miteniece et al. (2018) revealed that poor quality of care, lack of staff skills, poor communication between health staff and women, poor road, weak transportation facilities, and lack of income were the major barriers in accessing maternal health care services. A few

studies have also identified various factors determining the choice of delivery and postnatal care in public or private healthcare facilities.

2.4 Factors affecting the Choice of Public /Private Health Facilities

2.4.1 Age of Mothers

Several pieces of research have shown that the age of women is linked with the choice and use of maternal healthcare services in healthcare institutions. Young women are more exposed to education and health awareness, and they are more likely to use modern maternal healthcare services than their older counterparts (Daniels et al., 2013). A recent study in Nepal (Adhikari et al., 2021) based on various demographic and health surveys revealed that women with more education delivered at a private healthcare facility in all surveys. A study based on national family health surveys in India has shown that women in the lower age groups are more likely to choose the public healthcare facility over the private sector for delivery and postnatal services (Thakur et al., 2019). However, this may not always hold, as a study in Bangladesh showed that irrespective of age groups, women visited the same type of healthcare facilities during childbirth (Paul & Rumsey, 2002). Another study in Nepal by Sharma et al. (2007) found no variation in delivery and postnatal care utilization for mothers over 35 years of age. Another study in Bangladesh also showed that the age of women influenced healthcare facility utilization (Paul & Rumsey, 2002).

2.4.2 Mother's Education

Studies have shown that the mother's education is one of the critical factors determining the decision to use a healthcare facility for delivery and postnatal care. Numerous studies have revealed that women's education influences their choice of healthcare providers (You & Boyle, 2012; Smith, Tawiah, & Badasu, 2012; Mehari, 2013; Hagos et al., 2014; Paneru, 2014). Women with a low level of education are less expected

to seek modern maternal healthcare services (Sheik & Kwaak, 2015; Hazarika, 2010). Ahmed et al. (2010) showed that educated mothers are more likely to utilize modern healthcare institutions during their pregnancies than their less-educated counterparts. It is recognized that education exposes women to information and improves their understanding of all health-related issues, including reproductive health lifestyle and choice of healthcare facilities (Singh et al., 2012). A study in India (Jat, 2014) found that a mother's level of education positively influences the use of delivery and postnatal care as higher educated and high-income women were 2.3 times more likely to use these services than illiterate and the poor. Govil et al. (2016) showed that high income and educational status are significant factors affecting the utilization and OOPE on delivery care from the private healthcare facilities. Mohanty and Kastor (2017) also revealed that mothers' educational level is positively associated with the delivery care utilization and OOPE in private healthcare facilities. An analysis of three consecutive national surveys has shown that mothers with more than ten years of schooling are more likely to seek the private sector for delivery and postnatal services (Thakur et al., 2019).

Contrary to the above findings, a study in Thailand showed that women with a low level of schooling were more likely to use maternal care from the healthcare facilities, both public and private healthcare facilities (Abosse et al., 2010). A study in Ethiopia showed that the education of women and their spouses and the woman's knowledge about the availability of postnatal services positively predicts postnatal care utilization in private healthcare facilities (Aregay et al., 2014).

A few studies conducted in Pakistan showed a positive relationship between the mothers' education and maternal health care utilization. Mothers with a higher level of schooling were more likely to use maternal care services from healthcare institutions because

education made the mothers more responsible for themselves and their children. It is generally understood that educated mothers have better opportunities to avail maternal care from private healthcare facilities due to their higher preferences for educated and wealthier spouses (Schultz, 1984; Govindasami and Ramesh, 1997). However, in rural areas, where health care facilities are not plenty and inaccessible, mothers' education does not influence maternal health care utilization (Khan et al., 1994). Javed et al. (2013) documented that woman with lower years of schooling, rural residents, agricultural workers, and relatively younger age groups are less likely to give birth at healthcare institutions.

Health awareness and education of couples play a significant role in utilizing hospital facilities for delivery and postpartum care. Khan and Noreen (2016) also revealed that the utilization of maternal health services from private healthcare institutions increases with the increasing education level of women, including their socio-economic status. Tellis et al. (2018) also showed that the years of schooling of mothers and their spouses affect the choice of healthcare providers. It is recognized that education improves woman's knowledge and awareness about the quality of healthcare services and the use of healthcare institutions for delivery care. In Pakistan, a study on the choice of health facilities for maternal healthcare clearly showed the impact of mothers' education on the utilization of private hospitals for maternal care, particularly for delivery (Khan, 2016).

2.4.3 Occupation of Mothers

The income status of the households represents their capability to afford the OOPE on delivery and postnatal care. It is assumed that the occupation of the women affects the choice of healthcare facilities as women having better occupations have more probability of using the private sector. It is also recognized that working woman is likely to have more knowledge and awareness about access to maternal care, including quality and source of

care, and she is likely to prefer private healthcare facilities for delivery and postnatal care. Moreover, working women usually have physical and social mobility; hence, private healthcare facilities will be preferred.

In many developing societies, spouses are the nucleus of household's economic activities, and wives are depending on them for existence which is considered as the key barrier to the maternal healthcare utilization. In such societies, the empowerment of women with more control on economic decisions at the household level can increase control on utilizing modern maternal health services. It is considered that women who have economic independence are more aware of maternal health services due to increased interaction with their colleagues and the public (Sharma et al., 2007). A study in Kenya reported that women having employment utilized maternal health services more frequently than others, and they had updated knowledge about the type and availability of mother and child health services due to more interaction with outside people (Magadi et al., 2000). However, studies have also shown that mother's occupation is not always associated with the more use of maternal health services because, in developing countries, women employment is mostly associated with poverty, with women at home were quite well off than the women at work (Sharma et al., 2007). A study in Pakistan showed that women working in the agriculture sector had the lowest percentage (27%) of those who chose to deliver their babies at a health facility, whereas the largest proportion (54%) belonged to the women who served in the service sector (Husnain et al., 2018).

2.4.4 Occupation of Husband

Occupation of the husband indicates the level of education and wealth of the family. Women whose husbands were holding high-status jobs had better opportunities to use private health services. Daniels et al. (2018) found an association between the husband's

occupation and utilization of maternal health services, and women whose husbands were farmers are more likely to utilize institutional delivery services, including postnatal services. However, in Turkey, Celik and Hotchkiss (2000) reported no relationship between the husband's occupation and utilization of delivery services, but when the husband had a health insurance facility, then delivery was more likely at a private health facility. In Nepal, Chhetri et al. (2020), while examining the factors associated with the utilization of postnatal care services, found that women whose husbands are working in government or private jobs are more likely to avail postnatal care services from the private sector. A study in Pakistan showed that husbands with higher education had a positive role in using institutional maternal services. A high percentage of mothers (73%) with secondary schooling delivered at a healthcare institution than those with no schooling (36%). Likewise, mothers whose spouses were highly educated (57%) were more likely to deliver at a private healthcare institution, contrary to those whose husbands were not educated (34%) (Husnain et al., 2018).

2.4.5 Family Income

Studies have shown that economic factors play a significant role in the household's decision to choose healthcare institutions for maternal care (Bazant et al., 2009; Kestorten et al., 2010). A study in 57 low and middle-income countries revealed that only 20% of deliveries were conducted in private hospitals, ranging between 9% to 46% across different countries (Benova et al., 2015). Kesterton et al. (2010) revealed that household income influences an individual's choices between healthcare institutions, and the women from high-income households were more likely to opt for deliveries in private hospitals. Several studies have supported this argument (Hagos et al., 2014; Mehari, 2013). Das et al. (2016), in a study in four South Asian countries, showed that wealthy and highly educated women in

Bangladesh and urban India utilized private health facilities for delivery care, whereas the opposite was revealed in Nepal and rural India. Another study in India by Mohanty and Kastor (2017) showed that women's household income and educational levels are positively associated with the utilization of delivery care and OOPE. Adhikari et al. (2021), in their research based on analysis of national health surveys data in Nepal, showed that higher household income was significantly associated with maternal healthcare utilization in private hospitals. Similar findings were supported by Thakur et al. (2019) in their analysis of three consecutive national survey data in India.

A study based on national data from 16 countries in sub-Saharan African, Latin America, and Asia showed that household economic status was the key determinant associated with delivery at private facilities (Pomeroy et al., 2010). The selection of private health facilities was dependent on the economic status of the families. An analysis of demographic and health survey, 2012-13 by Zakar et al. (2017) showed that maternal health services utilization in the public and private sector was positively correlated with family income. A study based on a nationally representative cross-sectional survey in Bangladesh showed that household wealth determined health-seeking from private health facilities (Larson et al., 2006). A recent study based on India's national family health survey, Rayhan (2020), showed that the wealth index has a prominent place in making a decision to avail delivery services from the private sector. A study on determinants of the choice of public vs. private healthcare institutions for delivery services for six Asian countries, i.e., Bangladesh, Cambodia, India, Indonesia, Nepal, and the Philippines, showed that private-sector delivery care in three out of six countries is influenced by the wealth of the families (Pomeroy et al., 2014). In Pakistan, a higher percentage of women (73%) belonging to the high-income quintile preferred to deliver at a health facility (Iftikhar ul Husnain et al., 2018).

2.4.6 Number of Living Children

The utilization of maternal healthcare can be influenced by the number of living children in the family. Many studies have observed that mothers with more children are likely to utilize maternal care from the public or private sector. Similarly, mothers having more children are more confident, and their experiences are likely to affect the utilization of postnatal visits in health care facilities. Abosse et al. (2010) reported that mothers with few children were eight times more likely to receive maternal care from healthcare institutions than mothers with more children. Bhattacharjee et al. (2013) found that mothers having more children enhanced the decision for institutional delivery and postnatal care utilization in private healthcare facilities. In China, Chen et al. (2013) showed that mothers who had more than one child were more likely to go to a private hospital for delivery care. Hollowell et al. (2011) showed that women's perception of risk is likely to increase during the first pregnancy, and therefore they prefer to utilize maternal healthcare from private hospitals than in later pregnancies. In Pakistan, Khan and Noreen (2016) showed that high birth interval, high education of couples, more media exposure, women's autonomy, and high wealth index are likely to have a low probability of delivery at public health facilities.

2.4.7 Distance to Health Facilities

The distance from women's residences to healthcare institutions can also influence the decision to utilize maternal healthcare, particularly in rural and remote areas of low-income countries. Studies have revealed that the location of healthcare facilities and distance can negatively influence maternal healthcare utilization. Findings from countries such as Uganda, Zimbabwe, Vietnam, Thailand, and India have reported that barriers like distance to healthcare facilities and availability of transport are the barriers to institutional delivery (Ghaffar et al., 2012, Bhattacharjee et al., 2013; Fillipi, 2006; Ensor and Cooper 2004;

Memom et al., 2015). Further poor road infrastructure and transportation facilities in a few countries are also challenges for healthcare systems to ensure universal access to maternal healthcare. In countries such as Afghanistan, basic infrastructures such as roads, and bridges, including security issues, communities in few areas lack access to basic maternal healthcare (Trani et al., 2010).

Access to healthcare institutions is associated with the utilization of services, but accessibility to maternal healthcare institutions is a major challenge in many developing countries. Inadequate road infrastructure, long distances to healthcare facilities, and lack of transportation facilities make it hard for the mothers to visit healthcare facilities, and often they need to walk long distances to reach maternal healthcare facilities even during labor pain. Studies have shown that better availability of transport facilities was associated with maternal healthcare utilization (Kaufmann & Hauwa, 2014). Abosse et al. (2010) found that pregnant women living near a healthcare institution were four times more likely to receive maternal healthcare services than women living at a far distance.

Physical accessibility to healthcare is often defined in terms of the time taken to reach healthcare facilities. In Bhutan, physical accessibility is defined as the percentage of the population within 3 hours of walking distance to a healthcare facility, with some people unable to walk the distance or cannot afford the cost of transport (WHO, 2014). In the Maldives, the population spreads across 187 islands, and travel by boat or air to reach healthcare facilities is expensive and time-consuming (WHO, 2018). In the Philippines, Yanagisawa et al. (2006) found that location and place of residence were found to be significantly associated with postnatal care utilization. A study in a hilly state of India (Joshi et al., 2016) also showed that long-distance to healthcare facilities is one of the factors for the lower use of delivery and postnatal care in public healthcare institutions. A Nepal study

found that utilization of maternal healthcare services was more in urban areas than in rural areas mainly because of the better availability of the transport facilities and shorter distance to the public healthcare facilities (Ovaskainen et al., 2015). Another review in Nepal showed that distance to healthcare facilities also affected the utilization of maternal health services from the public sector (Karki, Lee & Binns, 2013). In Pakistan, women living more than 5 km away from healthcare facilities were reported to spend a higher amount on transport, and almost 70% of the respondents chose to visit a private facility (Zakar et al., 2017).

2.4.8 Cost of Transportation

Few studies have revealed a negative association between the costs of transport utilization from government healthcare facilities. Shreds of evidence from Asian and African countries have shown that transportation cost is one barrier that restricts deliveries in public healthcare facilities (Ghaffar et al., 2015, Bhattacharjee et al., 2013; Fillipi, 2006; Ensor and Cooper, 2004). Sahoo et al. (2017) showed that high transportation costs and poor roads were the significant barriers to accessing maternal care from the public healthcare facilities. The study found that the cost of transportation is the key barrier faced by about 50% of women in rural areas for institutional delivery.

2.4.9 Out-of-pocket Expenditure (OOPE)

OOPE is one of the crucial factors associated with the delivery and postnatal care utilization. In most studies, OOPE component includes costs incurred on drugs and supplies, surgery, diagnostic tests, and other hospital charges. It also includes other costs such as transportation, food for patients and accompanying persons, accommodation, and informal payments made to the hospital staff while availing healthcare services (Paruzzolo et al., 2010). Studies in most developing countries have shown that OOPE is the key barrier to not availing maternal healthcare services from hospitals. There are cases where hospital charges

are negligent, but costs of medicines, diagnosis and transportation hinder the women from availing maternal healthcare (Gertler et al., 1988). A study in China also concluded that cost was the crucial factor influencing delivery and postnatal care utilization (Harris et al., 2010). Khan et al. (2013) showed that 49% of the mothers had home deliveries because it was expensive to deliver at any healthcare institution, public or private. Bhattacharjee et al. (2013) showed that even if healthcare services are freely available in public hospitals, costs of medicine, accommodation, food and transport acted as barriers to maternal healthcare utilization.

Many studies have pointed out the role of informal payments in the health systems in low-income countries. Many studies in South Asian countries have revealed that OOPe, including informal payment for services, is a crucial factor determining the utilization of maternal healthcare services (Sahoo et al., 2017; Masiye & Kaonga, 2016; Lama & Krishna, 2014). A systematic survey of studies in sub-Saharan Africa showed that OOPe on maternal care services, including transport expenses and informal payment, is the major determinants of using maternal health care (Nimakoh et al., 2017). A systematic review in Iran estimated the overall share of informal payments was found to be 35%. Most of the informal payments were in the form of cash, and the main reasons for informal payments appreciated the staff and medical team as well as requests made by the hospital staff (Mirabedini et al., 2017). A study in Pakistan also brought out the fact that utilization of maternal health services is affected by physical Distance and cost of services (Riaz et al., 2015). Kohli et al. (2018), in a study in Tanzania, found that financial costs are one of the key determinants of the use of public vs. private hospitals for delivery services. Masiye & Kaonga (2016) showed that the use of maternal health services from public vs. private facilities largely influenced by economic considerations. The socioeconomic status of the household plays an important

role in the choice of public vs. private sector health institutions for maternal health care. Due to perception of low quality of healthcare at public sector health institutions, it is speculated that public sector health institution is inferior good. The socioeconomic status of the household measured by the wealth index in the current study is one of the principal variables of the current study (Khan, 2016).

2.5 OOPE on Delivery and Postnatal Care

International organizations have defined the concept of OOPE. The World Bank defines OOPHE as “any direct outlay by households, including gratuities and in-kind payments to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. It is a part of the private health expenditure.” (World Bank, 2014).

World Health Organization defines OOPE as “payments made by households at the point they receive health services. Typically, these include doctor’s consultation fees, purchases of medications and hospital bills. Although spending on alternatives and/ or traditional medicine is included in out-of-pocket payments, expenditure on health-related transportations and special nutrition are excluded. It is also important to note that OOPE is net of any insurance reimbursement” (Xu et al., 2003).

Applying the above definition on OOPE, many researchers attempted to estimate OOPE on healthcare utilization including maternal health care by including different components of expenditure. Existing studies categorized OOPE into various categories such as direct medical and direct non-medical expenses (Dalinjong et al., 2018; Mohanty & Kastor, 2017; Isacc et al., 2016), direct and indirect expenditure (Tripathy et al., 2017).

2.5.1 Direct and Indirect Expenditures – Components

2.5.1.1 Direct Expenditure Components

The concept of OOPE has been defined by researchers and institutions in different contexts. In the health sector, the World Bank defines OOPE as "any direct outlay by households, including gratuities and in-kind payments to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. It is a part of the private health expenditure" (World Bank, 2014). Despite policies by developing countries to provide free access to maternity care, it seems that households often have to pay out of pocket, whether formally or informally (Berer, 2012). Particularly in maternal healthcare, it is even more significant (Srivastava et al., 2009). Many studies in India (Goli et al., 2018; Tellis et al., 2018; Mohanti et al., 2017; Govil et al., 2016; Isac et al., 2016) showed that OOPE of women availing maternal health care from the public sector has increased over a period of time. Mirabedini et al. (2017), through their systematic review in Iran, showed the predominance of OOPE and informal payments in the health system. Bangladesh Patient Exit Survey (2011) revealed that almost 75% of outpatients, and more than 90% of inpatients associated with maternal and child health care, reported spending a major share of OOPE on travel costs to the facility. In Pakistan, a study in Sindh province by Ansari et al. (2015) showed that 82% of women who utilized maternal health care in public health facilities and 96% who used the private facilities incurred OOPE. The study found that almost 55% of users of public facilities and 71% of private health facilities could not afford this expenditure.

2.5.1.2 Indirect Expenditure Components

Many studies have shown that indirect expenditures of hospital-based delivery care are much higher than direct costs. Evidence shows that even in many countries where maternal health services are free to women, indirect costs such as transportation become an important factor influencing the utilization of these services (Nimakho, 2017). The major constraints are related to poorly located health facilities and an inadequate number of facilities delivering maternal health care. As a result, the women in rural areas have to incur huge indirect costs, including transport expenses. A study in Nepal (Acharya et al., 2016) showed that indirect costs are seven times (\$268) higher than that of the hospital costs (\$38). In this study, indirect expenditure of delivery services included expenses on transportation, food, communication, laundry services, and fuel. It also includes expenditure incurred on childcare, clothes/women, and accessories like a thermos flask, buckets, mug, soap, mat, toothpaste, oil, and toilet papers. This also includes loss of wages during the hospital stay (Acharya et al., 2016). A study in Ethiopia revealed the median direct medical cost of institutional delivery was \$ 10.80, while the direct nonmedical cost was \$10.31. From the direct medical costs, the median cost of a drug during institutional delivery was \$10.94. The study also revealed that the median loss of wages was about \$39.82, while the median loss of wages for caregivers except husband was around \$2007.29 during the institutional deliveries in Ethiopia (Merga et al., 2019).

Sharma et al. (2018), in a study of OOPE on maternal care in urban slums of India, used both direct and indirect expenditures. Direct expenditure comprised of expenditures incurred on registration, medicines, consumables, hospital bed, laboratory investigations, anaesthesia and surgery if any, food, gifts to attendants, drugs, and supplies, and transportation; whereas indirect expenditure included the cost of the mother and caretakers

in terms of loss of daily wages. However, a study based on the Bangladesh Demographic and Health Survey 2014 did not demarcate the direct and indirect expenditures separately (Sarkar et al., 2018). The study included, along with all expenditures incurred in the hospital as direct medical cost, also included expenditures on travel, food, lodging, hiring of an "aya," and even tip-giving were all major components of child delivery costs. An earlier study on OOPE in Bangladesh (Rahman et al., 2013) also did not differentiate between direct and indirect expenditures. The study included charges incurred on registration, doctor's consultation, medicines, diagnostic tests, transportation, and other associated costs. Another study on OOPE on delivery care in Bangladesh by Naznin (2014) demarcated direct and indirect expenditures. In this study, direct expenditure consists of travel costs, consultation fees, hospitalization charges, and purchases of drugs and supplies, whereas indirect costs included the opportunity costs of time lost due to caesarean section delivery, which accounted for a substantial proportion of total caesarean section delivery costs.

A study based on the national family health survey 2015-16 of India did not provide the details of items included in direct and indirect expenditures (Krishnamurthy et al., 2019). In a study in Myanmar, Myint et al. (2018) included expenses on all related healthcare services received during delivery care, namely hospital costs, investigation fees, drugs, consultation fees, food, living, transportation, and other related costs in estimating OOPE, but no differentiation of direct and indirect expenditures was provided. Malik and Syed (2012) in Pakistan, using national survey data, did not make any demarcation between direct and indirect OOPE. The authors included expenditures on medicines, equipment supplies, fees paid to doctors, traditional healers, etc. Hospitalization including doctors' fees, laboratory tests, X-ray charges, etc. Dental/optical care and all other expenses on healthcare not classified elsewhere were also included. Another study in Pakistan by Khan and Zaman

(2010) estimated OOPE on delivery care in tertiary hospitals, included both direct and indirect expenditure components together. The components of OOPE included expenditure incurred on food, transport, drugs, tests, blood transfusion, informal caregiver's time cost, hospital charges, and informal payments like tips and bribes.

A study by Tellis et al. (2018) in India collected both direct and indirect expenditures. Direct expenditure included expenses incurred on registration, consultation, bed charges, investigations, medication, and blood transfusion, whereas indirect expenditure includes food, transport, and wage loss faced by the respondents. However, expenditures incurred on companions in terms of food, transport, accommodation, and wage loss were calculated separately. Few studies conducted in India showed that informal payments for getting delivery care services consisting of gifts and tips for services to form a major share of indirect expenditures (Isac et al., 2016; Gopalan and Durai raj, 2012; Mohanty & Srivastava, 2013). One such study shows that tips for getting services, which 86% of women had to incur, included tips to avail government ambulance and bribes either in cash or kind (distributing sweets) to facility staff for their services (Isac et al., 2016).

2.5.1.3 OOPE Components in Recent Studies

The following table (Table 2.1) provides a brief of OOPE components used by select studies on maternal care services.

Table 2.1: Components of OOPE used by various studies on maternal care services.

Definition of OOPE	Components included	Source
OOPE is defined as the direct payments made by women or their	Direct medical expenses - antenatal record charges, lab tests, consultation, medicine,	Dalinjong et al., PLOS ONE (2018)

Definition of OOPE	Components included	Source
spouses/members of the family for the use of healthcare services	Hospitalization (Inpatient) direct medical expenses - lab test, medicines, bedding, blood transfusion, direct nonmedical expenses - Feeding and transport charges	
OOPE is defined as all the direct costs incurred by the household during delivery care at the healthcare facility, including cost of transport.	Direct medical – transportation, drugs and supplies, diagnostic services, blood transfusion, tips to ambulance driver and facility staff for their services. Direct nonmedical –Food and transport of bystanders	Isaac et al., Reproductive Health (2016)
Costs incurred during childbearing (pregnancy and delivery) were termed as out-of-pocket expenditures (OOPE).	The OOPE included registration fees, doctor's fees, medicine, diagnostic tests, transportation, bed, and food.	Govil et al., Journal of Health, Population, and Nutrition (2016)
OOPE was defined as all the direct and indirect costs incurred by the women or their families while staying	Direct expenditure components – Drugs, diagnostic tests, doctors' fee, hospital charges, others like charges on medical appliances,	Tripathy et al., BMC Res Notes (2017)

Definition of OOPE	Components included	Source
in the hospital for delivery care.	blood transfusion, oxygen, attendant charges, etc. Indirect costs Components – Transport cost for patients and accompanying persons, food expenses, lodging charges, etc.	
The OOPE is defined as the expenditure incurred by the women in healthcare institutions during pre-natal, delivery, and postnatal care net of reimbursement.	Direct medical – antenatal care services, medicine, doctor's fee, laboratory tests, cost of surgery, blood transfusion Direct nonmedical – food for bystanders, lodging	Mohanty and Kastor, Health Economics Review (2017)

2.5.2 OOPE in Public and Private Health Facilities

Most of the researches undertaken in developing countries reveals that women incurred a higher OOPE while using maternal health services in private health facilities as compared to public facilities. Sharma et al. (2018) showed the average OOPE on delivery care in private institutions in India was 2-3 times higher than that of government hospitals. Further, 75% of those women who had delivered in private institutions incurred OOPE more than 10% of their total annual family income. In total, around 59% of deliveries among all sites were catastrophic health events in terms of OOPE. Another study in India by Kerketta (2015) showed that OOPE for delivery care in private health facilities is almost two times that of public health facilities, and it also showed that OOPE is the main barrier for mothers

having institutional delivery. Yet another study in India by Krishnamurthy et al. (2020) showed that women delivering in private health facilities spent a significantly higher amount on delivery care (\$155.9) compared to those delivering in public health facilities (\$0.31).

Mohanty et al. (2019) showed that the OOPE of a cesarean delivery conducted in a private health hospital was at least ten times that of a normal delivery. A study in Bangladesh (Sarkar et al., 2018) showed that the average OOPE on cesarean deliveries in private hospitals was \$274.24 compared to \$176.71 in public health facilities. Another study in Bangladesh (Mahmoud et al et al., 2017) showed that women incurred about 150% more for normal delivery at a private health facility compared to a public health facility. It also showed that expenditure on medicine accounted for the largest component of OOPE in both public and private health facilities. In Nigeria, Umeh et al. (2013) showed that OOPE accounts for 73.3% of maternal health care in rural families, and on average, families spent \$3 for normal deliveries and \$93 for complicated deliveries requiring cesarean section. Cost of medications and transportation accounted for about 45% of OOPE. In the Punjab province of Pakistan, Rehman et al. (2017) showed that almost one-half of women utilized public facilities for childbirth. On average, US\$ 38.16 was spent in public health facilities as against US\$ 152.65 in private health facilities.

2.6 Sources of Financing Maternal Health Services by Families

OOPE absorbs a significant proportion of family income in countries where public-funded health services are inadequate or ineffective, and there is limited access to such services. A major share of OOPE, particularly in Asia, has been on the purchase of medicines and supplies. Households also incur a significant share of indirect costs from the time spent on traveling and receiving maternal care, as well as restriction of productive activity caused by the care of the family member. Generally, households use their savings and sell off family

assets to pay for delivery and postnatal care and also borrow at high-interest rates from money lenders. In many Asian countries, borrowing to pay for health care often leads families to reduced food consumption and even education of children (ADB, 2012).

High OOPE is one of the key public health challenges in most developing countries. With the continuous increase in OOPE on health care, a significant share of the population in these countries are impoverished, leading to indebtedness and poverty (Garg & Karan 2009; Roy & Howard 2007; Van Damme et al., 2004). About 808 million people belonging to 133 counties are considered to have incurred catastrophic health spending (Wagstaff, 2018). Evidence from many countries has shown that families resort to different coping strategies with the increase in OOPE on health care, such as current household income, household savings, borrowing from money lenders, selling of assets, and reducing expenditure on household consumption (Krishna, 2006; Dercon, 2002; Flores et al., 2008; Kastor 2014; Joe, 2015). Studies have also shown that people sell their livestock and harvest crops to finance their health expenditures (Husoy et al., 2018; Sauerborn et al., 1996; Kabir et al., 2000).

Although several studies attempted to collect information on the source of OOPE on health care, only a few studies have examined the coping strategies adopted by the families to meet expenditures on maternal health services. Coping strategies are defined as "measures used by households to alleviate the out-of-pocket expenses that could not be managed from their regular income or savings" (Daivadanam et al., 2012). The commonest coping strategies are savings, borrowing, asset sales, and an informal loan from money lenders with high-interest rates. If the cost of care is sufficiently low relative to the household's income, then payments will be made from current income. This may involve the sacrifice of current consumptions like education, social events but not of basic needs like food, cloth, and

shelter. It is poorer households that resort to borrowing and the sale of assets, suggesting that economic constraint is so severe that it is not possible to accommodate health payments through the sacrifice of current consumption (Flores et al., 2008).

Hoque et al. (2015) measured the economic costs of maternal complications and to understand household coping strategies for financing maternal healthcare in Bangladesh found that one-third of households spent more than 20% of their annual household expenditure on maternal health care and managed to pay through informal credit, donations from relatives and selling assets. Another study of care-seeking of under-five children in Bangladesh (Tahsina et al., 2018) found that different financing mechanisms were adopted to meet OOPE, which includes loans with interest (6%), a loan without interest (9%), and financial help from relatives (6%). A similar type of findings was also reported in African countries (Onarheim et al., 2018). Studies conducted in India have shown that the high OOPE during complicated and cesarean deliveries force poor mothers to resort to alternative sources of financing in meeting the OOPE on institutional delivery. A national-level study in India (Mishra & Mohanty, 2019) showed that a higher proportion between 23% -29% of mothers who incurred OOPE on institutional delivery, including postnatal care in the public and private sector, met the OOPE through borrowing or selling assets. The overall result of the study showed that about two-fifths of the mothers utilized their savings, one-fifth of them resorted to selling and borrowing, while one in seven mothers borrowed or sold assets in addition to using their savings to meet the OOPE on institutional delivery.

Leive & Xu (2008), in a study in 15 African countries, showed that borrowing and selling assets were the major strategy followed by households in meeting OOPE in delivery care which ranged from 23% in Zambia to 68% in Burkino Faso. The study also found that households with higher OOPE during hospitalization were significantly more likely to

borrow and deplete assets compared to those paying OOPE as outpatients. A study in northern Ghana (Dalingong et al., 2017) showed that 75% of the women used savings, but 19% had to sell assets to finance the OOPE maternal care. A community-based study in India showed that 3/4th of mothers benefited from both central and state schemes to cover OOPE partially or completely. At the same time, 28.7% of mothers incurred OOPE for using maternal and neonatal care, which were met by borrowings and household savings (Sahu and Bharati, 2017).

2.7 Chapter Summary

The review of studies highlighted that the choice of utilizing public or private health facilities for delivery and postnatal care depends on various socio-economic and demographic factors. However, health system factors are major determinants. There is ample literature available in developing countries on the pattern of utilization of maternal health services, determinants and choice of use of public vs. private facilities by the women, OOPE incurred on using maternal health services from both public and private health care facilities. Few studies in Pakistan have focused on the utilization pattern of maternal health services by women and various determinants of using modern maternal health services. Studies have shown that several socioeconomic and demographic determinants of utilization of modern maternal health services. However, no such studies have ever attempted to identify major factors determining the utilization of delivery and postnatal services in public and private sector hospitals. The above review suggests that factors such as maternal age, maternal occupation, spouse's occupation, number of living children, family income, Distance to health facilities, transportation costs, OOPE could be the major determinants of use of public vs. private health facilities for delivery and postnatal care. A few studies in Pakistan used macro, and micro-level data attempted to assess OOPE on maternal health services by the

families in urban and rural areas. However, the review of these studies indicates that a comprehensive estimate of OOPE incurred by women during delivery and postnatal care is unavailable. Likewise, no attempt has ever been made to identify the source of financing of OOPE by rural women while availing delivery and postnatal care from public and private health facilities. Hence, the present research tries to bridge this knowledge gap.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Overview

Research methodology is the process through which researchers carry out their studies. This chapter outlines details of the research methodology adopted to collect and analyze data to answer the research questions. The chapter contains information on the study settings, study design, sample selection, data sources, data collection procedure, data management, methods and techniques used to analyze data, variables adopted in the study, data quality, and ethical considerations. It also provides objective-wise analysis of data collected from the participants through interview schedules.

3.2 Study Settings

The research was conducted in Rajanpur district (Figure 3.1) in Pakistan, which is predominantly a rural district and considered as least developed district among all 36 districts of the province of Punjab. The district is in the far south-west part of Punjab and lies entirely West of the Indus River. It is the last district of Punjab. The district borders with Dera Bugti of Baluchistan Province in the West and Kashmoor of Sindh province in the South West. The district is famous for cotton and sugarcane crops, although they are also cultivating wheat and rice. The frequent floods badly affect the about-to-ripe cotton crop.

inadequate budget, and high political interference. Due to insufficient specialist doctors in the DHQ and THQ hospitals, most of the patients seek private sector hospitals for specialist consultations in the neighboring districts. Although there are vacancies for consultant doctors in the DHQ and THQ hospitals, they remain vacant most of the time due to the unavailability of doctors. There is one hospital bed available per 6486 population in the district compared to 1851 in the province and one hospital per 406,000 population compared to 282,000 population in the province (PHS, 2020). Specialist doctors avoid the district due to inadequate facilities and a non-conducive work environment. The district has private service providers in the form of individual clinics.

3.3 Study Design

This was a cross-sectional study conducted in a predominantly rural district of Pakistan, and the research applied descriptive and analytical techniques. The research flow diagram is shown in Figure 3.2.

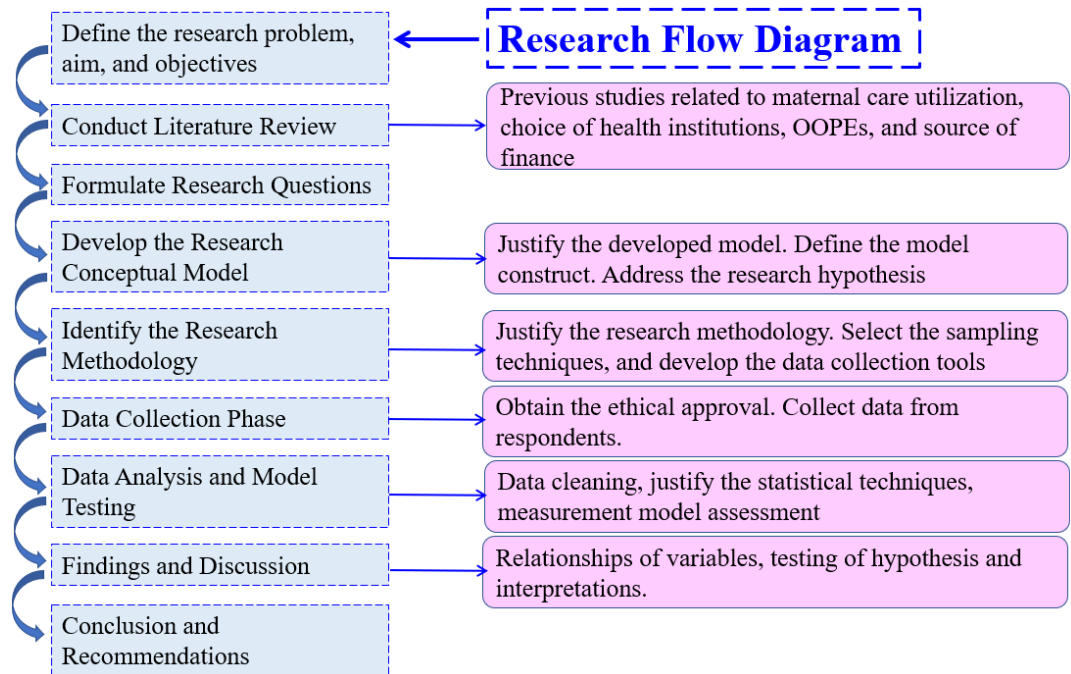


Figure 3.2: Research Flow Diagram

3.4 Study Population

Study population in the study refers to all mothers aged 15-49 years, who had childbirth in healthcare facilities (public and private) in Rajanpur district in one year. According to the record of District Health Office, Rajan Pur, a total number of 24523 institutional deliveries reported in the district during the year 2020, which constitutes the study population.

3.5 Study Period

The study period and activities are presented in Gantt Chart (Table 3.1). Primary data collection for the study was conducted by the researcher and the LHWs.

Table 3.1: Gantt chart to reflect study activities through the study period

Study Steps	2019	2020	2021	2022	2023
Study Registration					
Research Proposal Submission					
Research Methodology Workshop					
Data Collection					
Data Analysis					
Thesis Write-Up					
Thesis Submission					
Defense					

3.6 Sample Size Calculation

The sample size for the study was calculated using the following formula:

$$n = z^2 \times p \times q / d^2$$

where $z = 1.96$ at 95% confidence interval and $p = 0.59$ (this is the proportion of institutional delivery in rural areas as per Pakistan Demographic and Health Survey 2017-2018).

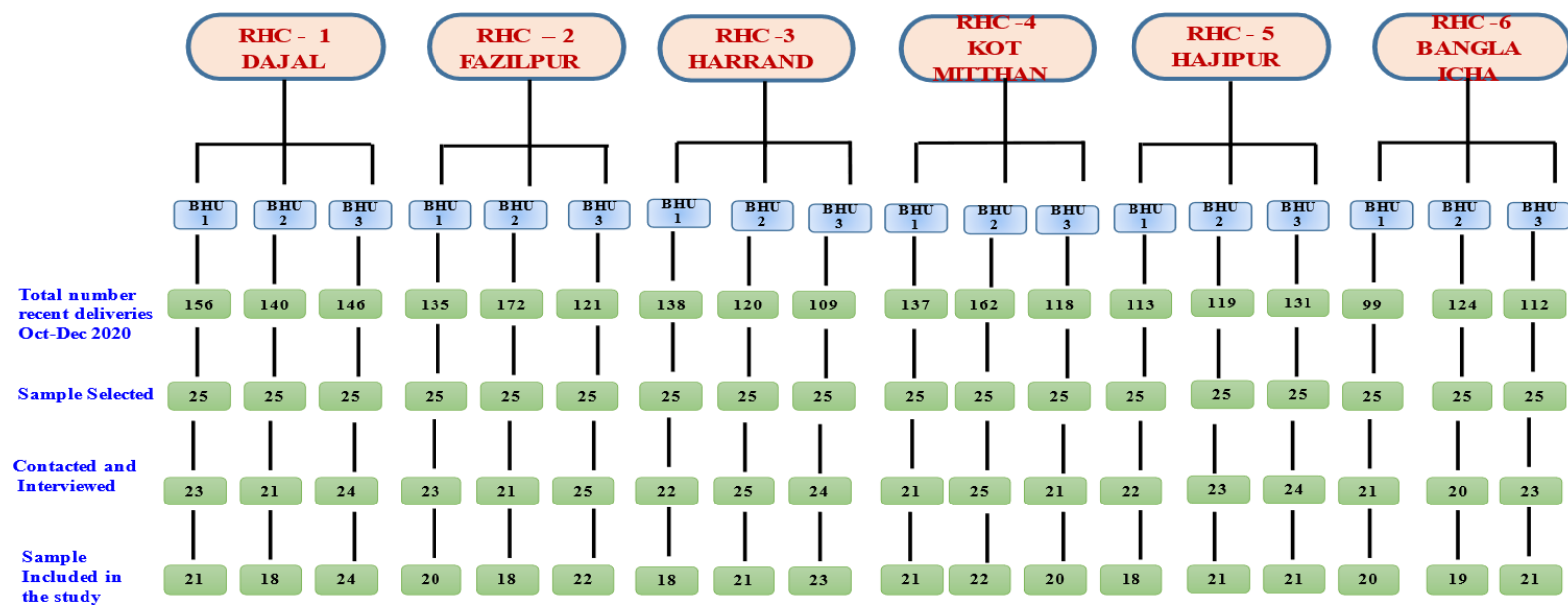
$$q - (1-p) = 0.41 \text{ [d = acceptable error 5\% = 0.05]}$$

$$\text{Therefore } n = 1.96^2 \times 0.59 \times 0.41/0.05^2$$

$$= 3.8416 \times 0.241/0.0025, n = 386 \text{ (approximately).}$$

3.7 Sampling Procedure

A multi-stage random sampling technique was followed to select the participants in the study. The sampling procedure adopted in the study is presented in Figure 3.2. The district has six Rural Health Centres (RHCs), namely Dajal, Fazilpur, Harrand, Kot Mithan, Hajipur, and Bangla Icha. The study covered all the six RHCs in the district. From each RHC, three Basic Health Units (BHUs) were randomly selected. Thus, a total number of 18 BHUs were selected from all six RHCs for this study. A discussion was held with the Chief Executive Officer (CEO), District Health Authority, Rajan Pur, regarding the present Health Information System (DHIS). The researcher was informed that LHWs posted in each BHU compile and submit the detailed data on maternal and child health services, including deliveries (both institutional and home deliveries), to the District Health Authority (DHA) every month. Accordingly, the number of mothers who had institutional deliveries in each of the selected BHU areas during three months, i.e., 1st October – 31st December 2020, was collected from the CEO (Health), Rajan Pur. As per the list, there were 2362 institutional deliveries reported during three months in all the 18 BHUs selected for the study. BHU- wise list of mothers with their names and addresses were collected with the assistance of the LHWs in the concerned BHUs.



RHCs	DAJAL	FAZILPUR	HARRAND	KOT MITTHAN	HAJIPUR	BANGLA ICHA
BHU-1	Tatar Wala	Talshumali	Kotla Nazir	Bukhara	Islam Pur	Murghai
BHU-2	Kotla Mughlan	Saleem Abad	Kotla Eason	Burrey Wala	Jahan Pur	Sahan Wala
BHU-3	Fateh Pur	Noor Pur	Kotla Dewan	Hazrat Wala	Kot Tahir	Shikar Pur

Figure 3.3: A multi-stage random sampling technique to select the participants

It was decided to select 25 mothers randomly from the list received from each BHU, making a total number of 450 mothers from 18 BHUs. This was done keeping in view the non-availability of household members or incomplete responses. Interviews were conducted with the selected participants with the assistance of LHWs who were in charge of the selected village areas. Efforts were made to contact 450 mothers due to the non-availability of male members in the family and non-cooperation or non-response from the participants; only 408 mothers from 18 BHUs were contacted and interviewed in the study. After scrutiny of all data collected through the interview schedules, it was found that 368 interview schedules were fully completed in all respects, and they were used in the analysis yielding a response rate of 82% approximately.

3.8 Inclusion Criteria

Women residents of the selected BHU area, aged 15-49 years, who had delivered within three months, i.e. 1st October – 31st December 2021 in a healthcare facility in the district and were willing to participate in the study. They should be present at the study area during data collection.

3.8.1 Exclusion Criteria

Women residents below 15 years or above 49 years, who had delivered before 1st October 2020 or after 31st December 2021 in a healthcare facility in the district were excluded from the study. Women who had home deliveries during the reference period was also excluded from the study.

3.9 Data for the Study

It was decided to divide this study into two parts that enabled the researcher to collect and analyze data in a better way. Part -1 was related to the socio-economic factors affecting utilization of delivery and postnatal care in public and private healthcare facilities.

Part -2 was associated with the estimation of OOPE on utilization of delivery and postnatal care in public and private healthcare facilities. Primary data collected from the participants was the major source used to fulfill the objectives of the study. Data collection is extremely challenging work that needs thorough planning, diligent work, understanding, determination, and collecting the data effectively.

Part -1 of this research included first and second objectives. To fulfil the first objective on the pattern of utilization of delivery and postnatal care by the women in the district, primary data was collected on delivery care, the outcome of delivery, place of delivery, normal vs. cesarean deliveries, utilization of postnatal care, reasons for choosing the private healthcare facilities for delivery and postnatal care, and perception among the mothers about public healthcare facilities.

In order to achieve the second objective on socio-economic factors determining the choice of healthcare facilities for delivery and postnatal care, socio-economic characteristic of households such as age, education, and occupation of mothers, occupation of the spouse, number of children, monthly household income, distance to health facility and cost incurred on transport were collected.

Part -2 of this research included third, fourth and fifth objectives. In order to fulfil the third objective on estimating OOPE on delivery care in public and private health facilities, the researcher collected data on direct medical and direct non-medical expenditures. Direct medical expenditure includes costs incurred on diagnostic procedures, medicines and supplies, surgery charges, hospital charges, and blood transfusions. Direct non-medical expenditure on delivery care comprises costs incurred on transport to and from the hospital for mother and accompanying persons, cost incurred on food for mother and accompanying person, accommodation charges of accompanying person, and informal payments if any (like tips).

To estimate the OOPE incurred by families on postnatal care in public and private healthcare facilities, information related to direct medical and direct non-medical expenditures were collected. Direct medical expenditure on postnatal care mainly includes diagnostic procedures, medicines and supplies, and consultation charges. Direct non-medical expenditure on postnatal care includes costs incurred on transport to and from the hospital for the mother and costs incurred on food for the mother and the accompanying person.

In order to fulfil the fifth objective on sources of funds used to meet OOPE on delivery and postnatal care, detailed information related to sources such as current income, savings, borrowing, gift from relatives and friends, and sales of assets were collected.

3.10 Data Collection Technique

Primary data for the study was collected using a structured interview schedule which was initially developed in English and then translated into the Urdu language (see annexure). The time taken for the interview was approximately 30 minutes per participant.

3.11 Data Collection Instrument

The interview schedule is entirely based on relevant information related to the study, ie., the pattern of utilization of delivery and postnatal care; factors affecting the choice of healthcare institutions for delivery and postnatal care; OOPE on delivery and postnatal care; and sources of financing OOPE.

The interview schedule is prepared based on the validated study instruments used by earlier studies on maternal healthcare utilization in Pakistan (Noreen, 2017) and similar studies in other countries (Chhetri et al., 2020; Isac et al., 2016; Rahman et al., 2012).

The study instrument is divided into different sections. The first section contains the general information about the participants. The second section deals with individual and household characteristics, in which the following socio-economic characteristics of the participants were collected.

- Age of mother
- Education of mother
- Occupation of mother
- Occupation of spouse
- Number of children
- Monthly household income
- Distance to health facility
- Cost of transport
- Health insurance status.

The third section dealt with details of delivery care questions related to recent delivery such as

- Mode of delivery
- Outcome of delivery
- Place of delivery
- Distance to the healthcare facility
- Reasons for seeking care from the private healthcare facilities and
- Perception about public healthcare facilities.

The fourth section of the study instrument contained details of OOPE incurred on delivery care by the mothers under direct medical expenditure and direct non-medical expenditure, respectively. Disaggregated information on each category of expenditure was included in this section. Under the direct medical expenditure, the following information were included.

- Costs incurred on diagnostic procedures

- Cost on medicines and supplies
- Cost incurred on surgery
- Hospital charges and
- Other costs such as blood transfusions.

Under direct non-medical expenditure, the following information was collected.

- Costs incurred on transport including accompanying persons
- Cost on referral transport
- Food expenditure for mother and accompanying person
- Accommodation of accompanying person, and
- Informal payments if any.

The fifth section of the study instrument included details of OOPE incurred on postnatal care by the mothers by direct medical and non-medical expenditure components.

Direct medical expenditure components include:

- Cost on diagnostic tests
- Cost on medicines and supplies, and
- Consultation charges.

Direct non-medical expenditure component included the following:

- Costs incurred on transport for mother and accompanying person
- Cost on food for mother and accompanying person.

The last section in the study instrument was about the source of financing OOPE on delivery and postnatal care by the families. This section included the information on the ways funds were arranged to meet OOPE by the households, such as:

- Current income
- Savings
- Borrowings
- Loans
- Gift from relatives and friends and
- Selling of assets.

3.12 Pilot Study

Draft study instrument for the research was pilot tested among 20 respondents to ensure that it was performing as intended. After the pilot testing, a few questions were modified, and a few were deleted as complete information could not be obtained through such questions. The interview schedule for the research was finalized after making necessary modifications in consultation with the experts in the field and the research supervisor.

3.13 Data Collection Procedures

Before planning for the data collection, a letter of recommendation for data collection and research work addressed to Chief Executive Officer (CEO), District Health Authority, Rajan Pur was obtained from the study supervisor dated 14 September 2020 (UNIMAS/NC-21/09-01 Jld.2 (57)). The letter was submitted to the Office of CEO, District Health Authority, Rajan Pur, requesting permission to undertake the study in the district and provide all guidance and support to collect the necessary data for the study. The permission for conducting the research work was granted by the CEO vide letter.13341 dated 27 October 2020.

Primary data collection was conducted from 3rd January 2021 to 28th March 2021 by the researcher and the LHWs of the concerned BHUs at the residence of the study participants. Every effort was made to contact all selected samples of 450 mothers in the

study. However, due to the non-availability of the head of household during the interview and incomplete responses received from a few respondents, only 368 filled-in interview schedules were considered for data analysis. Adequate care was taken to ensure the privacy and confidentiality of the participants and members of families. Data collection was carried out only after obtaining informed consent from the respondents. Data was collected at the household level by interviewing the participants by contact with door-to-door movement at their homes. Information was collected with the help of study instrument. The interviews were conducted in Urdu and Saraiki languages.

3.14 Data Management and Quality Control

The researcher conducted the entire primary data collection with the assistance of LHWs from the BHUs selected for the study. All data collected was scrutinized on the same day to avoid further discrepancies.

3.15 Data Analysis

Primary data collected through the interview schedule was entered into SPSS software version-25 and was analysed using quantitative technique. Both descriptive and analytical techniques were conducted using SPSS software. Objective-wise analysis of data has been presented below:

Objective 1: To describe the utilization pattern of delivery and postnatal care among women who had institutional deliveries in district Rajan Pur.

To achieve the first objective related to the utilization pattern of delivery and postnatal services among women, the following statistical analyses were used:

- Descriptive statistics were used to analyse the socio-economic and demographic characteristics of mothers.

- Percentages were used to measure the sources of delivery and postnatal care services, normal vs. cesarean deliveries, reasons for choosing the private healthcare facilities for delivery, and perception among the mothers about public healthcare facilities.
- The findings of the descriptive analysis are presented in tables and charts.

Objective 2: To identify significant socio-economic factors determining the choice of healthcare facilities for delivery and postnatal care in district Rajan Pur

To fulfil the second objective, the researcher has chosen regression analysis. Regression analysis is used to investigate the influence of predictors over criterion variables. It is applied to know how much variance and unit change occurs in regress and due to repressor variables.

In the present study, it is hypothesized that the choice of healthcare facilities (public or private), which is a dependent variable, is affected by a set of independent variables such as the age of mother, education of mother, occupation of mother, occupation of the spouse, family income, number of children, distance to health facility and cost of transport (Table 3.2). The general equation for binary logistic regression is as follows:

$$\ln(ODDS) = \ln\left(\frac{y}{1-y}\right) = \alpha + \beta X$$

The following regression equation was used as the initial model

Log (Place) = $\alpha_0 + \alpha_1$ Age of mother + α_2 Education of mother + α_3 Occupation of mother + α_4 Occupation of Spouse + α_5 Family Income + α_6 No of children living + α_7 distance to health facility + α_8 cost of transport.

Different models were run in backward logistic regression model to arrive at the optimal model for the choice of delivery and postnatal care.

Table 3.2: Components of OOPE used by various studies on maternal care services

S#	Variables	Values
Dependent Variables		
1	Where Log (place) = Place of the delivery	Public vs. Private healthcare facility 1= public health facility, 0= private health facility
Independent Variables		
2	Age of mother	1= <19, 2=20-30, 3=31-40, 4= above 40 years
3	Education of mother	1=no schooling, 2=primary, 3=secondary, 4=higher secondary and above
4	Occupation of mother	1=house wife, 2=private job, 3 = government job
5	Occupation spouse	1= daily wage earner, self-employed, 3= private job, 4= government job
6	Family income (in PKR)	1= <10000, 2=10000-20000, 3= 20000-40000, 4= 40000 & above
7	Number of children	1=1-3, 2=4-6. 3= 7-10 4= above 10
8	Distance to health facility	1= below 10 km, 2= 10-20km, 3= 20-30km, 4= 30 -40 km, 5=40 and above
9	Cost of transport (in PKR)	1= below 1000, 2= 1000-2000, 3=2000-3000, 4= 3000 & above

Objective 3: To estimate the OOPE incurred by families on delivery care in public and private healthcare facilities in district Rajan Pur

To achieve the third objective, component-wise expenditure details on delivery care were collected from the respondents. OOPE, as defined in this study, included both direct medical and direct non-medical components. Based on the literature review on OOPE on

maternal healthcare and the outcome of the discussion with the subject experts, the following definitions were adopted in this study.

“OOPE refers to direct payments made by women or their partners/ family members for the use of delivery and postnatal services in public and private healthcare facilities, which are categorized as: (i) direct medical expenditures and (ii) direct non-medical expenditures with the following components (Table 3.3):

Table 3.3: Components of direct medical and non-medical expenditures

Direct medical expenses	Direct non-medical expenses
Diagnostic charges	Costs incurred on transport to and from hospital
Drugs & other supplies	for mother and accompanying person.
Surgery charges	Cost incurred on food for mother and
Hospital charges	accompanying person.
Blood transfusion charges	Accommodation charges of accompanying
Other related components	person
	Informal payments if any (like tips)

Total OOPE for the delivery care was calculated by summing up all direct medical and non-medical expenses incurred on delivery care. Average OOPE incurred on delivery care in public and private healthcare institutions were estimated separately. The study also estimated the average OOPE incurred on normal and cesarean deliveries by mothers in public and private healthcare facilities.

Objective 4: To estimate the OOPE incurred by families on postnatal care in public and private healthcare facilities in district Rajan Pur.

To achieve this objective, component-wise expenditure details on postnatal care were collected from the respondents. Total OOPE for the postnatal care was calculated by summing up all direct medical and non-medical expenses incurred on postnatal care. Average OOPE incurred on postnatal care in public and private healthcare institutions were estimated separately. Direct medical costs for postnatal care include diagnostic charges, drugs & other supplies, and consultation charges. Direct non-medical costs include the cost of transportation and food incurred by the mother and accompanying persons.

Objective 5: To identify the sources of funds to meet the OOPE on delivery and postnatal care by the families in district Rajan Pur.

The last objective of the study relates to sources of funds available to women meet OOPE incurred by mothers. A descriptive analysis of responses received from participants on sources such as current income, savings, borrowings, sale of assets/property and a descriptive summary was presented in tables and charts.

3.16 Ethical Approval

The ethical clearance for this study was obtained from the Medical Ethics Committee, Faculty of Medicine and Health Sciences, UNIMAS (Ref. UNIMAS/NC-21.02/03-02 Jld.4 (35)). Further, a consent statement was either submitted or read to the participants before the commencement of the data collection process. The participants were assured that the data collected through the study instrument would be used only for academic purposes, and in no way would their privacy be affected. The officials at the District Health Office, Rajan Pur were very supportive and provided all necessary assistance to facilitate the data collection process at the selected BHU areas in the district.

3.17 Chapter Summary

This chapter explained the methodology followed in the study. It included information on the study settings, study design, sample selection procedure, data sources,

data collection procedure, data management, methods and techniques used to analyze data, variables adopted in the study, data quality, and ethical considerations. The chapter also provided objective-wise analysis of data collected through the interview schedule from the respondents.

CHAPTER 4

RESULTS

4.1 Overview

This chapter focuses on analysis and findings of the primary data collected through data instrument from selected mothers, who had delivered within three months, i.e. 1st October – December 2020. The chapter is presented in seven sections. The first section deals with socio-economic and demographic profile of respondents in the study. Second section gives the details of utilization pattern of delivery and postnatal care services by mothers. Third section deals with significant socio-economic and demographic factors influencing the choice of healthcare institutions for delivery and postnatal care. Fourth section gives description of direct medical and non-medical expenses incurred by mothers while seeking delivery. Fifth section provides the estimates of direct medical and non-medical expenses incurred by the mothers while seeking postnatal care in public and private healthcare facilities. Sixth section deals with sources of financing OOPE on delivery and post-natal care. Discussion of results emerged in data analysis has been presented in the last section.

4.2 Socio-Demographic Information of the Mothers

This section provides an overall view of the socio-economic and demographic characteristics of mothers included in the study. Table 4.1a presents information on individual characteristics of mothers of the selected BHU area, aged 15-49 years, who had delivered within three months, i.e. 1st October – 31st December 2020.

The mean age of mothers in the study was approximately 28.3 years, with more than 60% of them between 20 to 30 years' age group. While 59.5% did not have any schooling, 16% had primary schooling, 16.6% had secondary level schooling, and 7.9% had higher secondary and above qualification. A majority of mothers (85.6%) were housewives (Table

4.1b). Within the work profile of spouses, most of them were daily wage earners (51%) and self-employed (25.8%). The household income of the respondents revealed that almost 54% of them had lower than 10000 PKR. Only a negligible number of households (3 nos.) was covered by any health insurance scheme.

Table 4.1a: Socio-demographic characteristics of mothers (n = 368).

Variable	Number (n)	%
Age group of mothers		
<19 years	20	5.4
20 - 25 year	121	32.8
26-30 years	109	29.6
31-35 years	65	17.6
36-40 years	30	8.2
>40 years	23	6.3
Education of mothers		
No schooling	219	59.5
Primary (1-5 years)	59	16.0
Secondary (6-10 years)	61	16.6
Higher secondary (11-12 years)	13	3.5
Above 12 th standard	16	4.3

Table 4.2b: Economic characteristics of mothers (n = 368).

Variable	Number (n)	%
Occupation of mothers		
Housewife	315	85.6
Working in government	25	6.8
Daily wage earner	11	3.0
Self employed	10	2.7
Working in private sector	4	1.1
Contract employee	3	0.8
Occupation of Spouses		
Daily wage earner	188	51.0
Self employed	95	25.8
Working in government	38	10.3
Unemployed	18	4.9
Contract employee	15	4.0
Working in private sector	12	3.4
Retired from service	2	0.5
Household monthly income		
below 10000	200	54.3
10001 – 20000	74	20.1
20001 – 30000	45	12.2
30001 – 40000	17	4.7
40001 – 50000	20	5.4
Above 50001	12	3.2
Insurance coverage to any member of the household		
Yes	3	0.8
No	365	99.2

Average household earning members = (1.27 $\pm$ 0.54)

Average number of family members = (3.40 $\pm$ 2.11)

The results show that a majority of 230 (62.5%) out of 368 mothers were between 20 to 30 years' age group, 95 (25.8%) of them were between 31 to 40 years' age group, and 23 (6.25%) were above 40 years of age. About 20 (5.4%) mothers were below 19 years of age.

With reference to the details of educational attainment of mothers included in the study, 219 (56.8%) of the mothers did not attend schools; while 59 (16%) of them had primary schooling, 61 (16.6%) had secondary educations, 13 (3.5%) had higher secondary education and 16 (4.3%) had education above higher secondary level. A majority of mothers (85%) in the study were housewives; whereas 7% of them were employed in the government sector, 3% of them each were daily wage earners and self-employed, while 1% of them each were employed in the private sector and as contract workers.

Distribution of spouses according to their occupation shows that 188 of them (51%) were daily wage earners, 95 (25.8%) were self-employed, 38 (10.3%) were working in the government, 15 (4%) were contract workers, and 12 (3.3%) were working in the private sector. While 18 (4.9%) of them were unemployed, 2 of the spouses were retired from service. It was also revealed that for the monthly household income of the study participants, 200 (54.3%) out of 368 mothers included in the study had a monthly household income below 10000 PKR; whereas 74 (20%) of them had a monthly household income in between 10001 to 20000 PKR; 45 (12.2%) of them had income between 20001 to 30000 PKR; 17 (4.6%) of them had income between 30001 to 40000 PKR; 20 of them (5.4%) had monthly household income in between 40001 to 50000 PKR; whereas 12 of them (3.3%) of mothers had a monthly household income above 50000 PKR.

4.3 Pattern of Utilization of Delivery and Postnatal Care

4.3.1 Utilization of Delivery Care

The detailed description on utilization of delivery care by mothers included in the study is presented in Table 4.2. The analysis of data shows that normal deliveries constituted

79.3%, while deliveries done through cesarean section constituted 20.7% of deliveries. Eight stillbirths (2.2%) occurred within the sample. Most (99.5%) of mothers delivered a single baby, while less than 1% had twins. While 67% of mothers preferred the public healthcare facilities for most recent delivery, 33% preferred private healthcare facilities.

Table 4.3 presents the details of normal and caesarean deliveries conducted in both public and private health care institutions. Cross tabulation results show that out of 247 deliveries conducted at the public healthcare facilities, 224 deliveries (90.68%) were normal and 23 deliveries (9.32%) were conducted through cesarean procedures.

Table 4.3: Delivery profile of mothers included in the study.

Delivery details	Responses	Numbers	%
Mode of the recent delivery	Normal	292	79.3
	Caesarean	76	20.7
The outcome of recent delivery? (In terms of number of children)	Single	366	99.5
	Twins	2	0.5
The outcome of recent delivery? (in terms of alive or dead)	Live birth (currently alive)	360	97.8
	Stillbirth	8	2.2
Place of most recent delivery?	Public health facilities	247	67.0
	Private health facilities	121	33.0

Table 4.4: Normal and caesarean deliveries in public and private hospitals.

Place of Delivery		Normal	Caesarean	Total
Public Sector	No.	224	23	247
	%	90.68%	9.32%	(100%)
Private Sector	No	68	53	121
	%	56.20%	43.80%	(100%)
Total	No	292	76	368
	%	100%	100%	(100%)

However, out of 121 deliveries conducted at private healthcare facilities, only 68 deliveries (56.2%) were performed normally and 53 deliveries (43.80%) were conducted through caesarean procedures. Thus, the percentage of caesarean deliveries conducted in the private healthcare facilities is almost 4.7 times higher than the percentage of caesarean deliveries conducted in public healthcare facilities (Figure 4.1). Results revealed that out 76 caesarean deliveries reported in the study, 53 (69.7%) were conducted in the private hospitals; whereas, among 292 normal deliveries, 224 (76.7%) were performed in public hospitals.

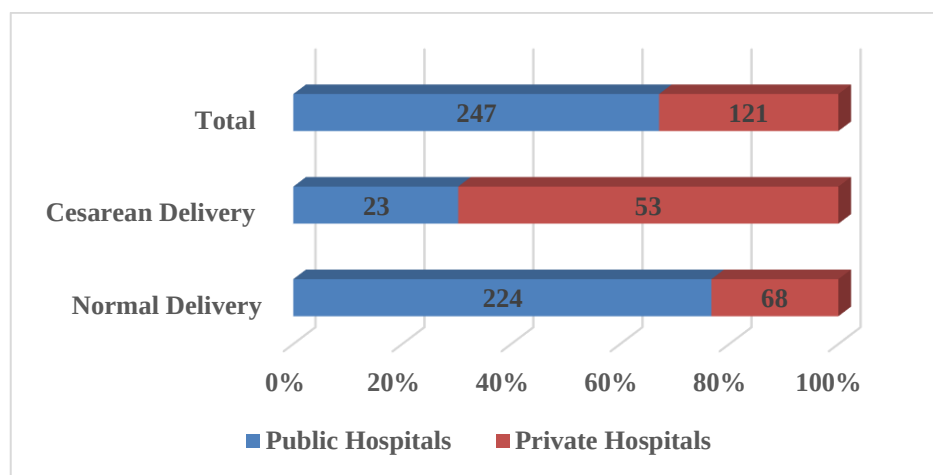


Figure 4.1: Normal versus cesarean deliveries in public & private hospitals.

4.3.2 Utilization of Postnatal Care

The study revealed that out of 368 mothers who had their child birth in different healthcare facilities, 225 mothers (61.14%) sought postnatal care. Of the total number of 247 deliveries conducted at public healthcare facilities, 140 mothers (56.68%) opted for postnatal care, and in contrast, out of 121 deliveries in private healthcare facilities, 85 (70.24%) mothers sought postnatal care services. This means, mothers who had their child birth in private hospitals were motivated to visit for postnatal care check-up by the respective hospitals.

4.3.3 Reasons for Choosing Private Healthcare Facility

In the study, respondents who utilized private healthcare facilities (121 mothers) for delivery care were asked to give the reasons for choosing the private healthcare facility for delivery care. The results of the analysis are shown in Figure 4.2.

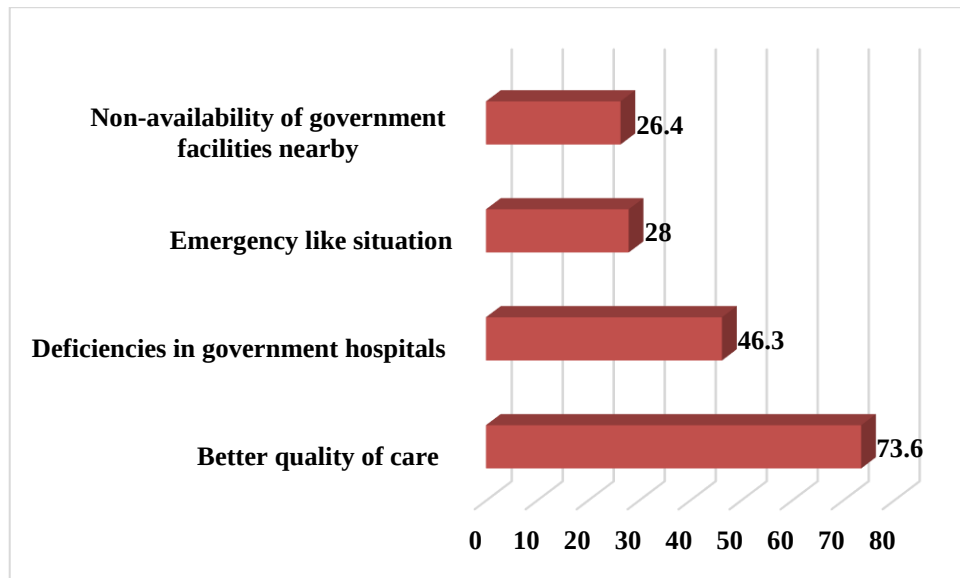


Figure 4.2: Reasons for choosing private healthcare facilities.

Figure 4.2 reveals that a majority of the participants (73.6%) have chosen private healthcare facilities mainly due to better quality of care delivered by them. Deficiencies in government healthcare facilities such as non-availability of medicines, diagnostic procedures were reported by 46.3% of them. While 28% of them reported emergency like situation as the main reason, another 26.4% of them reported non-availability of government healthcare facilities nearby as the reason for visiting private healthcare facilities for delivery care.

4.3.4 Mothers Satisfaction about Public Healthcare Facilities

In the study, mothers who had their last child birth in government healthcare facilities (247) were asked whether they were satisfied with the services provided in those facilities. The results of the analysis is shown in Figure 4.3.

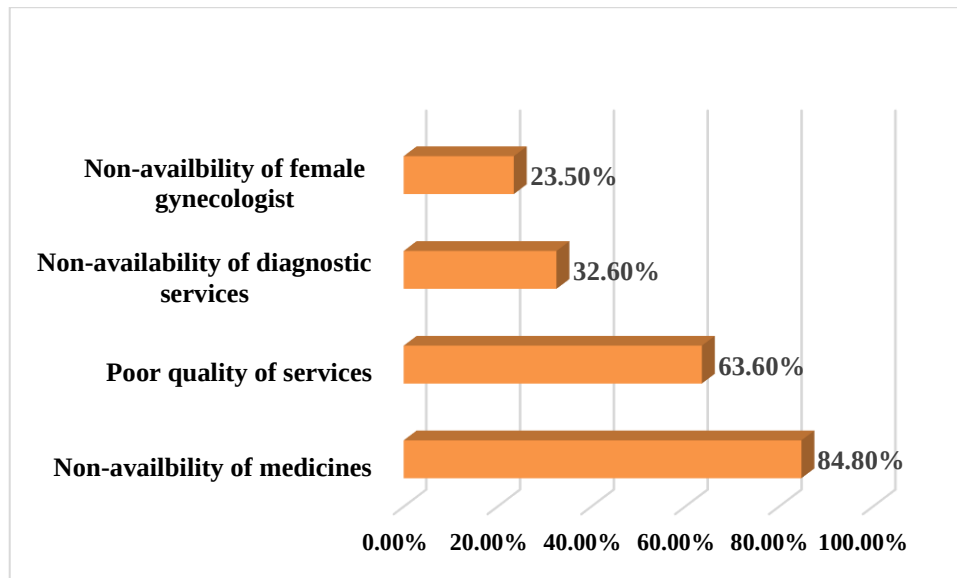


Figure 4.3: Respondents opinion about services in public healthcare facilities.

Figure 4.3 shows that out of 247 mothers, 132 of them (53.4%) did not satisfy with the services available in the government healthcare facilities. According to majority of them (84.8%) non-availability of necessary medicines was the major reason for their dissatisfaction. Another major reason highlighted by 63.6% of them was poor quality of services delivered in public healthcare facilities. While non-availability of diagnostic tests was highlighted by 32.6% of the participants, 23.5% of them reported non-availability of female gynaecologist as the major reason for their dissatisfaction.

4.4 Determinants of the Choice of Healthcare Facilities

4.4.1 Socio-economic Factors Influencing Choice of Healthcare Facilities for Delivery Care

The following alternative hypotheses have been adopted for this objective:

H_{1a}: Socio-economic factors significantly influence selection/choice of healthcare facility for delivery services

4.4.1.1. Backward Logistic Regression for Delivery Care

Model-1

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Age of mother} + \alpha_2 \text{Education of mother} + \alpha_3 \text{Occupation of mother} + \alpha_4 \text{Occupation of Spouse} + \alpha_5 \text{Family Income} + \alpha_6 \text{No of children living} + \alpha_7 \text{distance to health facility} + \alpha_8 \text{cost of transport} \text{----- (1)}$$

In model 1- age of mother, education of mother, occupation of mother and spouse, family income, number of children living, distance to health facility and cost of transport are included. The omnibus coefficients provided us with chi-square of 65.139, $p < 0.05$, -2log likelihood Model 1=390.446 with $R^2=0.230$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 23% (Table 4.4).

Model-2

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Education of mother} + \alpha_2 \text{Occupation of mother} + \alpha_3 \text{Occupation of Spouse} + \alpha_4 \text{Family Income} + \alpha_5 \text{No of children living} + \alpha_6 \text{distance to health facility} + \alpha_7 \text{cost of transport} \text{----- (2)}$$

In model 2- age of mother was excluded because of highest insignificant p value, while education of mother, occupation of mother and spouse, family income, number of children living, distance to health facility and cost of transport are included. The omnibus coefficients provided us with chi-square of 65.118, $p < 0.05$, -2log likelihood Model 2=390.467 with $R^2=0.230$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 23% (Table 4.5).

G statistics = (-2 Log likelihood of Model 1) - (-2 Log likelihood of Model 2)

(390.446 -390.467) = - 0.021

Table 4.5: Backward logistic regression analysis for delivery care – Model-1.

Variables	Age of mother	Education of mother	Occupation of mother	Occupation of spouse	Family income	No. of children	Distance to health facility	Cost of transport	Constant
B ¹	0.02	0.35	0.13	0.07	0.18	-0.23	0.57	0.00	-2.97
S.E. ²	0.12	0.12	0.12	0.09	0.10	0.11	0.11	0.00	0.74
Wald	0.02	8.23	1.31	0.70	3.24	4.37	26.7	6.03	16.0
Df ³	1	1	1	1	1	1	1	1	1
Sig. ⁴	0.88	0.00	0.25	0.40	0.07	0.04	0.00	0.01	0.00
Exp(B)	1.02	1.42	1.14	1.08	1.20	0.79	1.77	1.00	0.05
Upper ⁵	0.80	1.12	0.91	0.91	0.98	0.64	1.43	1.00	
Lower ⁶	1.29	1.81	1.43	1.28	1.47	0.99	2.20	1.00	
Omnibus				65.1					
-2Log likelihood				390					
R ²				0.23					

¹ Basic and comprehensive emergency obstetric and newborn care; ² standard error; ³ degree of freedom, ⁴ significance level; ⁵ Upper limit of 95% confidence intervals for EXP(B); ⁶ Lower limit of 95% confidence intervals for EXP(B); and R² coefficient of regression.

Model-3

Log (Place) = $\alpha_0 + \alpha_1$ Education of mother + α_2 Occupation of mother+ + α_3 Family Income+ α_4 No of children living+ α_5 distance to health facility+ α_6 cost of transport----- (3)

In model 3- occupations of head was excluded because of highest insignificant p value, while education of mother, occupation of mother, family income, number of children living, distance to health facility and cost of transport are added. The omnibus coefficients provided us with chi-square of 64.425, p<0.05, -2log likelihood Model 3=391.161 with R²=0.228, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 22.8% (Table 4.6).

$$\begin{aligned} \text{G statistics} &= (-2 \text{ Log likelihood of Model 2}) - (-2 \text{ Log likelihood of Model 3}) \\ (390.467-391.161) &= - 0.694 \end{aligned}$$

Model-4

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Education of mother} + \alpha_2 \text{Family Income} + \alpha_3 \text{No of children living} + \alpha_4 \text{distance to health facility} + \alpha_6 \text{cost of transport} \text{---- (4)}$$

In model-4, occupation of mother was excluded because of highest insignificant p value, while education of mother, family income, number of children living, distance to health facility and cost of transport are included. The omnibus coefficients provided with chi-square of 63.148, $p < 0.05$, -2log likelihood Model 4=392.438 with $R^2=0.224$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 22.4% (Table 4.7).

$$\begin{aligned} \text{G statistics} &= (-2 \text{ Log likelihood of Model 3}) - (-2 \text{ Log likelihood of Model 4}) \\ (391.161-392.438) &= - 1.277 \end{aligned}$$

In Tables 4.4-4.7, four models are produced by backward logistic regression. In the first model age has scored highest insignificant p value that is why it is excluded in model 2. In model 2 occupation of head scored highest insignificant p value that is why it is excluded in model 3 and further analysis of results revealed that in model 3 job of mother scored highest insignificant p value and excluded from model 4. In model 4 which is also a best fit optimal model i.e., education of mother $\beta=0.367$, $p < 0.05$, ODD ratio 1.444, family income $\beta= 0.200$, $p < 0.05$, Odd Ratio=1.222, moreover, number of children $\beta= - 0.206$, $p < 0.05$, Odd Ratio=0.814, distance to health facility $\beta=0.553$, $p < 0.05$ Odd Ratio=1.407, and cost of transport $\beta=0.000$, $p < 0.05$, Odd Ratio=1.000 are found significant. Thus the model shows that socioeconomic factors such as education of mothers, family income, number of children, distance to health facilities, and cost of transport significantly influence the selection/choice of healthcare facility for delivery care. Thus the hypothesis has been proved.

Table 4.6: Backward logistic regression analysis for delivery care – Model-2.

Variables	Education of mother	Occupation of mother	Occupation of spouse	Family income	No. of children	Distance to health facility	Cost of transport	Constant
B ¹	0.02	0.35	0.13	0.07	0.18	-0.23	0.57	0.00
S.E. ²	0.12	0.12	0.12	0.09	0.10	0.11	0.11	0.00
Wald	0.02	8.23	1.31	0.70	3.24	4.37	26.7	6.03
Df ³	1	1	1	1	1	1	1	1
Sig. ⁴	0.88	0.00	0.25	0.40	0.07	0.04	0.00	0.01
Exp(B)	1.02	1.42	1.14	1.08	1.20	0.79	1.77	1.00
Upper ⁵	0.80	1.12	0.91	0.91	0.98	0.64	1.43	1.00
Lower ⁶	1.29	1.81	1.43	1.28	1.47	0.99	2.20	1.00
Omnibus				65.1				
-2Log likelihood				390				
R ²				0.23				

Table 4.7: Backward logistic regression analysis for delivery care – Model-3.

Variables	Education of mother	Occupation of mother	Family income	No. of children	Distance to health facility	Cost of transport	Constant
B ¹	0.35	0.13	0.18	-0.22	0.57	0.00	-2.51
S.E. ²	0.12	0.11	0.10	0.09	0.11	0.00	0.47
Wald	8.04	1.32	3.32	5.53	26.7	5.98	29.0
Df ³	1	1	1	1	1	1	1
Sig. ⁴	0.01	0.25	0.07	0.02	0.00	0.01	0.00
Exp(B)	1.42	1.14	1.20	0.80	1.76	1.00	0.08
Upper ⁵	1.11	0.91	0.99	0.67	1.42	1.00	
Lower ⁶	1.80	1.42	1.47	0.96	2.19	1.00	
Omnibus				64.4			
-2Log likelihood				391			
R ²				0.23			

Table 4.8: Backward logistic regression analysis for delivery care – Model-4.

Variables	Education of mother	Family income	No. of children	Distance to health facility	Cost of transport	Constant
B ¹	0.37	0.20	-0.21	0.55	0.00	-2.41
S.E. ²	0.12	0.10	0.09	0.11	0.00	0.46
Wald	9.20	4.01	4.93	26.3	5.67	27.8
Df ³	1	1	1	1	1	1
Sig. ⁴	0.00	0.05	0.03	0.00	0.02	0.00
Exp(B)	1.44	1.22	0.81	1.74	1.00	0.09
Upper ⁵	1.14	1.00	0.68	1.41	1.00	
Lower ⁶	1.83	1.49	0.98	2.15	1.00	
Omnibus		63.1				
-2Log likelihood		392				
R ²		0.22				

4.4.2. Socio-economic Factors Influencing Choice of Healthcare Institutions for Postnatal Care

4.4.2.1. Backward Logistic Regression for Postnatal Care

The following alternative hypotheses have been adopted for this objective:

H_{2a}: Socio-economic factors significantly influence the selection/choice of healthcare facility for post-natal services

Model-1

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Age of mother} + \alpha_2 \text{Education of mother} + \alpha_3 \text{Occupation of mother} + \alpha_4 \text{Occupation of Spouse} + \alpha_5 \text{Family Income} + \alpha_6 \text{No of children living} + \alpha_7 \text{distance to health facility} + \alpha_8 \text{cost of transport} \text{---- (1)}$$

In model 1- age of mother, education of mother, occupation of mother and spouse, family income, number of children living, distance to health facility and cost of transport are included. The omnibus coefficients provided us with chi-square of 53.639, $p < 0.05$, -2log

likelihood Model 1=244.696, with $R^2=0.289$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 28.9% (Table 4.8).

Table 4.9: Backward logistic regression analysis for postnatal care – Model-1.

Variables	Age of mother	Education of mother	Occupation of mother	Occupation of spouse	Family income	No. of children	Distance to health facility	Cost of transport	Constant
B ¹	0.10	0.04	0.35	0.13	0.13	-0.05	0.93	-0.94	-1.41
S.E. ²	0.16	0.16	0.18	0.11	0.15	0.14	0.18	0.28	0.94
Wald	0.40	0.05	3.81	1.40	0.75	0.11	26.8	11.7	2.26
Df ³	1	1	1	1	1	1	1	1	1
Sig. ⁴	0.53	0.83	0.05	0.24	0.39	0.74	0.00	0.00	0.13
Exp(B)	1.10	1.04	1.42	1.14	1.14	0.96	2.54	0.39	0.24
Upper ⁵	0.81	0.75	1.00	0.92	0.85	0.73	1.79	0.23	
Lower ⁶	1.50	1.43	2.03	1.43	1.51	1.26	3.62	0.67	
Omnibus				53.6					
-2Log likelihood				245					
R ²				0.29					

Model-2

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Age of mother} + \alpha_2 \text{Occupation of mother} + \alpha_3 \text{Occupation of Spouse} + \alpha_4 \text{Family Income} + \alpha_5 \text{No of children living} + \alpha_6 \text{distance to health facility} + \alpha_7 \text{cost of transport} \text{---- (2)}$$

In model 2- education of mother has been excluded because of highest insignificant p value, while all other variables are included. The omnibus coefficients provided us with chi-square of 53.593, $p < 0.05$, -2log likelihood Model 2=244.742, with $R^2=0.289$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 28.9% (Table 4.9).

$$\begin{aligned} \text{G statistics} &= (-2 \text{ Log likelihood of Model 1} - (-2 \text{ Log likelihood of Model 2})) \\ &= (244.696 - 244.742) = -0.046 \end{aligned}$$

Table 4.10: Backward logistic regression analysis for postnatal care – Model-2.

Variables	Age of mother	Occupation of mother	Occupation head	Family income	No. of children	Distance to health facility	Cost of transport	Constant
B ¹	0.10	0.36	0.13	0.14	-0.05	0.93	-0.94	-1.37
S.E. ²	0.16	0.18	0.11	0.13	0.14	0.18	0.27	0.92
Wald	0.42	3.96	1.38	1.10	0.13	26.8	11.8	2.24
Df ³	1	1	1	1	1	1	1	1
Sig. ⁴	0.52	0.05	0.24	0.29	0.72	0.00	0.00	0.14
Exp(B)	1.11	1.43	1.14	1.15	0.95	2.54	0.39	0.25
Upper ⁵	0.82	1.01	0.92	0.89	0.73	1.79	0.23	
Lower ⁶	1.50	2.04	1.43	1.50	1.25	3.62	0.67	
Omnibus			53.6					
-2Log likelihood			245					
R ²			0.29					

Model-3

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Age of mother} + \alpha_2 \text{Occupation of mother} + \alpha_3 \text{Occupation of Spouse} + \alpha_4 \text{Family Income} + \alpha_5 \text{distance to health facility} + \alpha_6 \text{cost of transport} \text{----- (3)}$$

In model 3- number of children has been excluded because of highest insignificant p value, while age of mother, occupation of mother and spouse, family income, distance to health facility and cost of transport are included. The omnibus coefficients provided us with chi-square of 53.466, $p < 0.05$, -2log likelihood Model 3=244.869, with $R^2=0.288$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 28.8% (Table 4.10).

$$\begin{aligned} \text{G statistics} &= (-2 \text{ Log likelihood of Model 2} - (-2 \text{ Log likelihood of Model 3})) \\ &= (244.742 - 244.869) = -0.127 \end{aligned}$$

Table 4.11: Backward logistic regression analysis for postnatal care – Model-3.

Variables	Age of mother	Occupation of mother	Occupation of spouse	Family income	Distance to health facility	Cost of transport	Constant
B ¹	0.07	0.36	0.13	0.15	0.93	-0.93	-1.43
S.E. ²	0.13	0.18	0.11	0.13	0.18	0.27	0.90
Wald	0.29	3.92	1.33	1.22	26.7	11.7	2.54
Df ³	1	1	1	1	1	1	1
Sig. ⁴	0.59	0.05	0.25	0.27	0.00	0.00	0.11
Exp(B)	1.07	1.43	1.14	1.16	2.54	0.40	0.24
Upper ⁵	0.83	1.00	0.91	0.89	1.78	0.23	
Lower ⁶	1.39	2.03	1.42	1.50	3.62	0.67	
Omnibus			53.5				
-2Log likelihood			245				
R ²			0.288				

Model-4

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Occupation of mother} + \alpha_2 \text{Occupation of Spouse} + \alpha_3 \text{Family Income} + \alpha_4 \text{distance to health facility} + \alpha_5 \text{cost of transport} \text{---- (4)}$$

In model 4- age of mother is excluded because of highest insignificant p value, while occupation of mother and spouse, family income, distance to health facility and cost of transport are added. The omnibus coefficients provided us with chi-square of 53.175, $p < 0.05$, -2log likelihood Model 4=245.160, with $R^2=0.287$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 28.7% (Table 4.11).

$$\text{G statistics} = (-2 \text{ Log likelihood of Model 3} - (-2 \text{ Log likelihood of Model 4}))$$

$$(244.869 - 245.160) = -0.291$$

Table 4.12: Backward logistic regression analysis for postnatal care – Model-4.

Variables	Occupation of mother	Occupation of spouse	Income	Distance to health facility	Cost of transport	Constant
B ¹	0.36	0.13	0.15	0.93	-0.94	-1.21
S.E. ²	0.18	0.11	0.13	0.18	0.27	0.79
Wald	4.02	1.29	1.33	26.6	12.2	2.33
Df ³	1	1	1	1	1	1
Sig. ⁴	0.05	0.26	0.25	0.00	0.00	0.13
Exp(B)	1.44	1.14	1.17	2.53	0.39	0.30
Upper ⁵	1.01	0.91	0.90	1.78	0.23	
Lower ⁶	2.05	1.42	1.51	3.60	0.66	
Omnibus		53.2				
-2Log likelihood		245				
R ²		0.29				

Model-5

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Occupation of mother} + \alpha_2 \text{Family Income} + \alpha_3 \text{distance to health facility} + \alpha_4 \text{cost of transport} \text{---- (5)}$$

In model 5- occupation of spouse is excluded because of highest insignificant p value, while occupation of mother, family income, distance to health facility and cost of transport are added. The omnibus coefficients provided us with chi-square of 51.891, $p < 0.05$, -2log likelihood Model 5=246.444, with $R^2=0.280$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 28.0% (Table 4.12).

$$\text{G statistics} = (-2 \text{ Log likelihood of Model 4} - (-2 \text{ Log likelihood of Model 5}))$$

$$(245.160 - 246.444) = -1.284$$

Table 4.13: Backward logistic regression analysis for postnatal care – Model-5.

Variables	Occupation of mother	Family income	Distance to health facility	Cost of transport	Constant
B ¹	0.35	0.14	0.93	-0.97	-0.43
S.E. ²	0.18	0.13	0.18	0.27	0.38
Wald	3.81	1.16	26.9	13.0	1.27
Df ³	1	1	1	1	1
Sig. ⁴	0.05	0.28	0.00	0.00	0.26
Exp(B)	1.42	1.15	2.53	0.38	0.65
Upper ⁵	1.00	0.89	1.78	0.23	
Lower ⁶	2.03	1.49	3.60	0.64	
Omnibus		51.9			
-2Log likelihood		246			
R ²		0.28			

Model-6

$$\text{Log (Place)} = \alpha_0 + \alpha_1 \text{Occupation of mother} + \alpha_2 \text{distance to health facility} + \alpha_3 \text{cost of transport} \dots \text{-- (6)}$$

In model 6- family income is excluded because of highest insignificant p value, while occupation of mother, distance to health facility and cost of transport are added. The omnibus coefficients provided us with chi-square of 50.688, $p < 0.05$, -2log likelihood Model 6=247.646, with $R^2=0.275$, provided that all predictors explained variance upon place of delivery i.e. selection of healthcare facility up to 27.5% (Table 4.13).

$$\text{G statistics} = (-2 \text{ Log likelihood of Model 5} - (-2 \text{ Log likelihood of Model 6}))$$

$$(246.444 - 247.646) = - 1.202.$$

Table 4.14: Backward logistic regression analysis for postnatal care – Model-6.

Variables	Occupation of mother	Distance to health facility	Cost of transport	Constant
B ¹	0.39	0.95	-0.95	-0.24
S.E. ²	0.18	0.18	0.27	0.34
Wald	4.68	28.1	12.8	0.50
Df ³	1	1	1	1
Sig. ⁴	0.03	0.00	0.00	0.48
Exp(B)	1.48	2.59	0.39	0.79
Upper ⁵	1.04	1.82	0.23	
Lower ⁶	2.11	3.68	0.65	
Omnibus		50.7		
-2Log likelihood		248		
R ²		0.28		

Tables 4.8-4.13 shows the output of six models have been generated in backward logistic regression. In model 1- education of mother is found highly insignificant and therefore in model 2 it has been excluded. Number of children scored highest insignificant p value and therefore excluded from analysis. In model 3- age has been found highly insignificant and therefore excluded in model 4. While in model 4, occupation of spouse is found insignificant and in model 5- family income scored highest insignificant p value and in model 6 occupation of mother, distance form health facility and transport cost are found significant at p value 0.05 level (0.391*, 0.951*, -0.954*) respectively. Therefore our hypotheses that socio-economic factors significantly influence the selection/choice of healthcare facility for post-natal services has been proved.

4.5 Direct Medical & Non-Medical Expenditures on Delivery Care

4.5.1 Direct Medical Expenditures on Delivery Care

4.5.1.1 Direct Medical Expenditures on Delivery Care in Public Healthcare Facilities

In the study, 247 (67.12%) out of 368 mothers availed delivery care from the public healthcare facilities. Table 4.14 gives a detailed break-up of direct medical expenditures incurred by mothers who had their deliveries in public healthcare facilities. Expenditure incurred in public healthcare facilities broadly includes costs incurred on diagnostic tests, drugs & supplies and surgery charges.

The analysis revealed that 211 (85.42%) mothers out of 247 who had deliveries at public healthcare facilities incurred some amount as OOPE. Out of these 211 mothers who had incurred OOPE, 86 (40.8%) of them paid for diagnostic tests, 201 (95.2%) incurred expenditure on purchase of drugs and other supplies from private pharmacies, and 8 of them (3.8%) had incurred charges on surgery performed in the hospitals, mostly on blood tranfusion charges. Group specific blood is often cross-matched ready for mothers scheduled for caesarean section in anticipation of haemorrhage during the surgery. Many times, families have to arrange blood or make payment for arranging specific blood group by the hospitals. A majority of mothers (94.2%) incurred OOPE below PKR 2000 for diagnostic tests (94.2%) and drugs/supplies (84%).

Table 4.15: Direct medical expenditures on delivery care (public healthcare facilities).

Expenditure Head	N (211)	2000 & below	2001-4000	4001-6000	6001-8000	8001-10000	Above 10000	Mean
Diagnostic tests	86 (100%)	81 (94.2%)	4 (4.6%)	1 (1.2%)	0	0	0	394.0
Drugs & other supplies	201 (100%)	169 (84.0%)	11 (5.5%)	7 (3.5%)	1 (0.5%)	8 (3.9%)	5 (2.5%)	1269.6
Surgery	08 (100%)	0	0	0	1 (12.5%)	3 (37.5%)	4 (50%)	10777.8
Total OOPE	211 (100%)	176 (83.4%)	11 (5.2%)	6 (2.8%)	3 (1.4%)	1 (0.5%)	14 (6.6%)	2043.09

On an average, mothers incurred PKR 394 on diagnostic tests, PKR 1269.6 on purchase of drugs and supplies and PKR 10777.8 as surgery charges. Thus, the study showed that mothers had incurred PKR 2043.09 as direct medical expenditures while availing delivery care from the public healthcare facilities.

4.5.1.2 Direct Medical Expenditures on Delivery Care in Private Healthcare Facilities

In the present study, 121(32.9%) out of 368 mothers availed delivery care from private healthcare facilities. Table 4.15 provides a detailed break-up of direct medical expenditures incurred by the mothers who had availed delivery care in private healthcare facilities.

Table 4.16: Direct medical expenditures on delivery care(private healthcare facilities).

Expenditure Head	N = 121	< 2000	2001-4000	4001-6000	6001-8000	8001-10000	>10001	Mean
Diagnostic charges	121	111 (91.7%)	3 (2.5%)	7 (5.8%)	0	0	0	1707.4
Drugs & other supplies	121	32 (26.4%)	43 (35.5%)	26 (21.5%)	3 (2.5%)	13 (10.7%)	4 (3.3%)	4450.4
Surgery	53	0	0	1 (1.8%)	0	2 (3.50)	50 (87.7%)	18596.5
Hospital charges	121	1 (0.8%)	6 (5.0%)	36 (29.8%)	23 (19.0%)	24 (19.8%)	31 (25.6%)	9227.3
Total OOPE	121	0	2 (1.7%)	1 (0.8%)	12 (9.9%)	15 (12.4%)	91 (75.2%)	23471.9

The study showed that all mothers who had delivered at the private healthcare facilities (N=121) incurred OOPE on diagnostic tests, drugs & supplies, and hospital charges. However, 53 (43.8%) mothers incurred surgery charges. A majority of mothers (91.7%) who availed delivery care in private healthcare facilities incurred PKR 2000 or below for diagnostic procedures. Further analysis revealed that on an average, mothers

incurred PKR 1707.4 on diagnostic tests, PKR 4450.4 on purchase of drugs and supplies, PKR 18596.5 on surgery related expenditure, PKR 9227.3 as hospital charges. Thus, the study revealed that families of mothers who had their child birth at private healthcare facilities incurred a mean direct OOPE of PKR 23471.9.

4.5.2 Direct Non- Medical Expenditure on Delivery Care

4.5.2.1 Direct Non- Medical Expenditure on Delivery Care in Public Healthcare Facilities

Table 4.16 gives a detailed break-up of direct non-medical expenditures incurred by the families on delivery care in public healthcare facilities. The categories of non-medical expenditures include transport costs from home to hospitals, back to home from the hospitals, and expenditures incurred on food for mothers and accompanied persons during the stay in hospital.

The results revealed that 211 mothers (85.4%) who sought delivery care in public healthcare facilities reported that they incurred direct non-medical expenditure in the form of costs on transport from home to hospitals, from hospital to home, and purchase of food items for mothers and accompanying persons. Of the 211 mothers who reported of incurring OOPE on non-medical expenditure, 90 (42.6%) mothers incurred expenditure on arranging transport from home to hospital and they incurred OOPE up to 2000 PKR. This means a majority of mothers had availed ambulance services provided by health department in the district, although a few of them travelled by other means of transportation. Whereas, most of the mothers i.e., 210 mothers (99.5%) have reported that their family had to arrange transport facilities to go back home and, in the process, they incurred a significant amount. Only 3 mothers have reported of incurring additional costs of transport owing to referral of the case to higher facility. Expenditure on food is another component of direct non-medical expenditure as 192 mothers (91%) who had their child birth at public health facilities

incurred costs on food purchased for mothers, and another 57 mothers (27%) reported of incurring additional costs of food purchased for bystanders in the hospital.

Table 4.17: Non- medical expenditure on delivery care(public healthcare facilities).

Expenditure Head	N = 211	< 2000	2001- 4000	>4001	Mean
Transport costs from home to hospital (pregnant woman for delivery)	90	90 (100%)	0	0	197.1
Transport costs from hospital to home (mother and neonate after delivery)	211	210 (99.6%)	1 (0.4%)	0	470.1
Referral transport cost	03	2(66.7)	0	1 (33.3)	3000
Continued from previous page					
Transport costs of accompanying persons	06	0	5 (83.3%)	1 (16.6%)	866.7
Food expenditure for mothers	192	183 (95.3%)	8 (4.7%)		737.0
Food expenditure for accompanying persons	57	52 (91.2%)	5 (8.8%)	0	593.7
Total OOPE (Mean)	211	202 (95.7%)	7 (3.3%)	2 (0.9)	821.4

Further analysis revealed that on an average, mothers had incurred PKR197.10 as cost of transport from home to hospital, PKR 470 as cost of transport from hospital to home, PKR 3000 for arranging referral transport, PKR 866.7 as transport costs of accompanying persons in the hospital, PKR 737 and PKR 593.7 as cost of food for mother and accompanied persons respectively. Thus, the study revealed that mothers who had delivered at public healthcare facilities have incurred a mean OOPE of 821.4 PKR.

4.5.2.2 Direct Non- Medical Expenditure on Delivery Care in Private Healthcare Facilities

Table 4.17 gives a detailed break-up of direct non-medical expenditures incurred by the mothers on delivery care in the private sector health facilities. The categories of non-

medical expenditures include transport costs from home to hospitals, cost of transport from the hospitals to home, food expenditures on mothers and accompanied persons in the hospital.

Results in Table 4.17 reveals that all mothers (N=121) who sought delivery care in private healthcare facilities reported of incurring direct non-medical expenditures in the form of costs on transport from home to hospitals, from hospital to home, and purchase of food items for mothers and accompanying persons. Out of 121 mothers who reported of incurring OOPE on non-medical expenditure, 120 (99.2%) mothers incurred below PKR 2000 as cost of transport to reach hospital. Whereas, all mothers incurred costs on arranging transport facilities to go back home. Only 2 mothers incurred additional costs for transport due to emergency referral to higher facility. While 120 respondents (99.2%) reported that they incurred expenditure on purchase of food items for mothers, and 90 mothers (74.4%) reported of incurring additional costs for purchasing food for accompanying persons in the hospital. The study revealed that on an average mother incurred PKR 981.8 as cost of transport from home to hospital, PKR 1024 as cost of transport from hospital to home, PKR 2650 for arranging referral transport, PKR 866.7 as cost of transport for accompanying persons, PKR 1504.5 and PKR 1211.9 as cost of food items for mother and accompanying persons respectively. Overall, the study revealed that mothers who had delivered at private healthcare facilities have incurred a mean OOPE of PKR 2124.4 as direct non-medical expenditure, which is quite higher compared to the non-medical OOPE of mothers (PKR.821.4) who had delivered at public healthcare facilities.

Table 4.18: Non- medical expenditures on delivery care in private healthcare facilities.

Expenditure Head	N = 121	1-2000	2001-4000	>400 1	Mean
Transport costs from home to hospital (pregnant woman for delivery)	120	116 (96.6)	4 (3.3)	0	981.8
Transport costs from hospital to home (mother and neonate after delivery)	121	117 (96.7)	4 (3.3)	0	1024.0
Referral transport costs	02	1(50%)	1(50%)	0	2650.0
Transport costs of accompanying persons	15	15(100)	0	0	866.7
Food expenditure for mothers	120	97 (80.8%)	23 19.2%)	0	1504.5
Food expenditure for accompanied	90	66 (73.3%)	24 (26.6%)	0	1211.9
Total OOPE (Mean)	121	86(71.1)	28(23.1)	7(5.8)	2124.4

4.5.3 Average OOPE on Delivery Care in Public vs. Private Healthcare Facilities

A comparison of average OOPE incurred by the mothers who had delivered in public and private hospitals are presented in Table 4.18. Mean direct medical expenses incurred by mothers who delivered in public healthcare facilities (which includes diagnostic tests, drugs, and surgery charges) was PKR 2013.09, and mothers who delivered at private healthcare facilities (which includes diagnostic tests, drugs, surgery and other hospital charges) was PKR 23471.9. Mean direct non-medical expenses incurred by the mothers who delivered at public healthcare facilities (which includes transport expenses to the hospital and back home, expenses on food items purchased for mothers and bystanders) was PKR 821.4, whereas mean direct non-medical expenses for mothers who delivered at private healthcare facilities was PKR 2124.1. The study findings reveal that mean average OOPE for mothers who availed delivery care from the public healthcare facilities was PKR 2834.50, whereas OOPE incurred by mothers who sought delivery care in the private healthcare facilities was PKR 25596.3. Thus, the study shows that OOPE on delivery care at private hospitals is almost 9 times higher compared to public hospitals.

Table 4.19: Average OOPE on delivery care in public and private healthcare facilities.

Expenditure Head	Public Sector	Private Sector
Direct Medical Expenditures		
Diagnostic charges	394.0	1707.4
Drugs & other supplies	1269.6	4450.4
Surgery	10777.8	18596.5
Hospital charges	0	9227.3
Total (Mean)	2013.09 (71.02%)	23471.9 (91.70%)
Direct Non-Medical Expenditures		
Home-Hospital	197.10	981.80
Hospital-Home	470.10	1024.0
Referral	3000.0	2650.0
Transport for accompanying persons	866.7	866.7
Food items for mothers	737.0	1504.5
Food items for accompanied	593.7	1211.9
Total (Mean)	821.4 (28.97%)	2124.4 (8.29%)
Grand Total	2834.50	25596.3

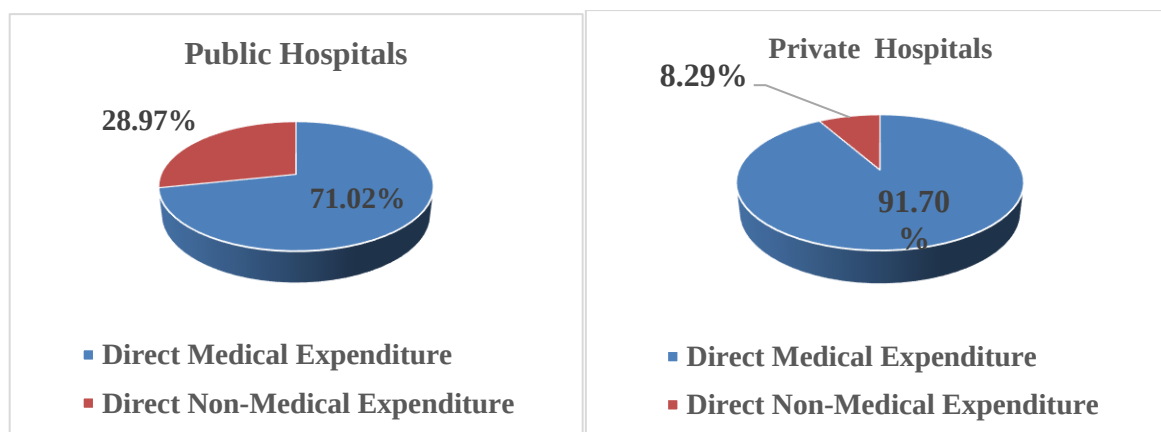


Figure 4.4: Mean Direct Medical Expenditure Vs. Non-medical Expenditure.

Figure 4.4 indicates that mean direct medical expenditure for delivery care in the public healthcare facilities comprises 71.02% of total OOPE; whereas this component constitutes 91.70% of total OOPE on delivery care in the private healthcare facilities. While

direct non-medical expenditure comprises 28.97% of delivery care in the public healthcare facilities, this component forms only 8.29% of delivery care in the private healthcare facilities.

Table 4.19 shows the result of charges paid on diagnostic tests by mothers according to mode of delivery. The analysis reveals that out of 292 normal deliveries reported, 167 mothers (all delivered in public healthcare facilities) had not incurred any charges on diagnostic tests. However, 47 (16%) mothers had to pay charges up to PKR 2000 and 56 (18.2%) incurred between PKR 2001-5000 and another 22 mothers (7.2%) had incurred above PKR 5001. On the other hand, only 9 mothers (11.8%) who had caesarean delivery in public healthcare facilities did not incur any charge on diagnostic tests, whereas 67 mothers (88.2%) had incurred charges on diagnostic tests. It is significant to note that 37 mothers (48.6%) of who had caesarean delivery incurred more than PKR15001 for diagnostic tests.

Table 4.20 provides the details of charges on drugs and supplies according to mode of delivery in public and private healthcare facilities. There were 57 normal deliveries, which reported not incurring charges on drugs and supplies in the hospitals, whereas 95 mothers paid up to PKR 2000 for drugs and supplies, 94 mothers paid in between PKR 2001-5000, 25 mothers paid in between PKR 5001-15000 and 21 of them incurred more than PKR 15000 for drugs and supplies in normal delivery. On the other hand, except one caesarean delivery, all mothers reported of incurring charges on purchase of drugs and supplies. While 20 mothers who had caesarean delivery paid below PKR 5000, and a majority of mothers (72.4%) incurred more than PKR 5000 on purchase of drugs and supplies from private pharmacies.

Table 4.21 gives details of surgery charges according to mode of delivery conducted in different healthcare facilities. Almost 97.9% of normal delivery cases did not incur any charges on surgery related events, while 2.4% of mothers had incurred more than PKR 1000

for surgery. Out of total number of 76 caesarean deliveries, 15 cases (19.7%) did not incur charges on surgeries conducted at the hospitals, as these were performed at public health facilities. While 11 mothers (14.5%) have spent below PKR 20000 for surgery, a whopping 65.7% of mothers who had caesarean delivery incurred above PKR 20000 as surgery charges.

Table 4.22 reveals that 221 normal deliveries were conducted without any hospital charges, while 30 mothers (10.3%) who had normal deliveries paid up to PKR 2000, 32 mothers (11.0%) paid in between PKR 2001-5000 and 9 mothers (3%) paid more than PKR 5000 as hospital charges. On the other hand, a majority of mothers (73.6%) who had caesarean delivery incurred hospital charges. While 34 mothers (44.7%) had incurred up to PKR 5000 as hospital charges, 22 mothers (28.9%) who had caesarean delivery paid more than PKR 5000 as hospital charges.

Table 4.23 gives details of expenses incurred on transport to reach healthcare facilities for delivery care. Out of 292 normal deliveries reported in the study, for 152 deliveries (52.1%) no expenses were incurred for transport, as these deliveries were conducted in public health facilities and government ambulance facilities were made available to mothers. However, 85 mothers (29.1%) had incurred up to PKR 1000, whereas 55 mothers (18.8%) had incurred more than PKR 1000 as transport costs to reach the hospital. On the other hand, only 6 mothers (7.9%) who had caesarean delivery did not incur any cost to reach the hospital for delivery care, whereas 20 mothers (26.3%) had to spend PKR 1000, while a majority of mothers (65.8%) had incurred above PKR 1000 as transport cost to reach the hospital.

Table 4.24 reveals the responses about the transportation expenses incurred by mothers to reach home from hospital. Out of the 292 normal deliveries, 35 mothers (12%) did not pay any transportation cost, whereas 173 mothers (59.2%) paid up to PKR 1000 and

64 mothers have paid in between PKR 1001-2000 and 20 mothers (6.8%) had paid more than PKR 2000 for transportation expenses from hospital to reach home. On the other hand, all mothers who had caesarean delivery incurred costs on transport from hospital to home. While 51 mothers (67.1%) who had caesarean delivery spent up to PKR 2000 for arranging transport to reach home, 25 mothers (31.1%) who had caesarean delivery incurred more than PKR 2000 as cost of transport.

Table 4.20: Charges on diagnostic tests and mode of delivery.

Variables			No charges	<2000	2001-5000	5001-15000	15001 <	Total
Mode of recent delivery	Normal	N	167	47	56	3	19	292
		%	57.2%	16.1%	19.2%	1.0%	6.5%	100.0%
	Caesarean	N	9	4	18	8	37	76
		%	11.8%	5.3%	23.6%	10.5%	48.6%	100.0%
	Total	N	176	51	74	11	56	368
		%	47.8%	13.9%	20.1%	3.0%	15.2%	100.0%

Table 4.21: Charges on drugs& supplies and mode of delivery.

Variables			No charges	<2000	2001-5000	5001-15000	15000<	Total
Mode of recent delivery	Normal	N	57	95	94	25	21	292
		%	19.5%	32.5%	32.2%	8.6%	7.2%	100.0%
	Cesarean	N	1	1	19	21	34	76
		%	1.3%	1.3%	25.0%	27.6%	44.7%	100.0%
	Total	N	58	96	114	46	55	368
		%	16.0%	26.1%	31.0%	12.5%	14.9%	100.0%

Table 4.22: Surgery charges and mode of delivery.

Variables			No charges	<10000	10001-20000	20001-30000	30000<	Total
Mode of recent delivery	Normal	N	286	0	2	3	1	292
		%	97.9%	0.0%	0.7%	1.0%	0.3%	100.0%
	Cesarean	N	15	1	10	32	18	76
		%	19.7%	1.3%	13.2%	42.0%	23.7%	100.0%
	Total	N	301	1	12	35	19	368
		%	81.7%	0.3%	3.3%	9.5%	5.2%	100.0%

Table 4.23: Mode of delivery and hospital charges.

Variables			No charges	<2000	2001-5000	5001-15000	15001-25000	Total
Mode of recent delivery	Normal	N	221	30	32	8	1	292
		%	75.7%	10.3%	11.0%	2.7%	0.3%	100.0%
	Cesarean	N	20	14	20	15	7	76
		%	26.3%	18.4%	26.3%	19.7%	9.2%	100.0%
	Total	N	241	44	52	23	8	368
		%	65.0%	12.0%	14.1%	6.3%	2.2%	100.0%

Table 4.24: Mode of delivery and expenses on home to hospital transport.

			No cost	<1000	1001-2000	2001-3000	3001-4000	Total
Mode recent delivery	Normal	N	152	85	38	9	8	292
		%	52.1%	29.1%	13.0%	3.1%	2.7%	100.0%
	Cesarean	N	6	20	30	10	10	76
		%	7.9%	26.3%	39.4%	13.2%	13.2%	100.0%
	Total	N	158	105	67	19	18	368
		%	42.9%	28.5%	18.2%	5.2%	4.9%	100.0%

Table 4.25: Mode of Delivery and Expenses on hospital to home transport.

Variables			No cost	<1000	1001-2000	2001-3000	3001-4000	Total
Mode recent delivery	Normal	N	35	173	64	12	8	292
		%	12.0%	59.2%	21.9%	4.1%	2.7%	100.0%
	Cesarean	N	0	15	36	10	15	76
		%	0.0%	20.3%	48.6%	10.8%	20.3%	100.0%
	Total	N	35	188	100	22	23	368
		%	9.5%	51.0%	27.2%	6.0%	6.3%	100.0%

Table 4.25 provides the details of expenditure incurred on purchase of food for mothers during normal and cesarean deliveries. Of the total 292 mothers who had gone through the normal mode of delivery, 56 (19.2%) did not spend any money on food items; while 218 mothers (74.7%) paid up to PKR 1000 on purchasing food items, 18 mothers (6.2%) paid more than PKR 2000 for food items. However, all mothers who had caesarean delivery incurred expenses on purchase of food during their stay in the hospitals. While 49 mothers (64.4%) who had caesarean delivery paid up to PKR 2000 for food items, 27 mothers (35.5%) paid more than PKR 2000 for food items.

Table 4.26 gives the details of expenditure incurred on food for accompanying persons during normal and Cesarean deliveries. Of the total 292 normal mode of delivery reported, 216 cases (74%), did not spend any money on food items for accompanying persons; while 67 mothers (22.9%) paid up to PKR 1000 on purchasing food for these persons, 9 mothers (3.0%) paid more than PKR 1000 for arranging food for them. However, only 3 out of 76 caesarean delivery cases did not incur expenses on purchase of food for accompanied persons during their stay in the hospital. While 48 mothers (63.2%) who had caesarean delivery reported of paying up to PKR 2000 for arranging food items for accompanying persons, 25 mothers (35.5%) paid more than PKR 2000 for arranging food for these persons.

Table 4.26: Mode of delivery and expenses on mother's food.

Variables			No expense	<1000	1001-2000	2001-3000	3001-5000	Total
Mode of recent delivery	Normal	N	56	218	13	2	3	292
		%	19.2%	74.7%	4.5%	0.7%	1.0%	100.0%
	Cesarean	N	0	6	43	9	18	76
		%	0.0%	8.1%	55.4%	12.2%	24.3%	100.0%
	Total	N	56	224	56	11	21	368
		%	15.2%	60.9%	15.2%	3.0%	5.7%	100.0%

Table 4.27: Mode of Delivery and Expenses on Food for Accompanying Person.

Variables			No expense	<1000	1001-2000	2001-3000	3001-5000	Total
Mode of recent delivery	Normal	N	216	67	5	3	1	292
		%	74.0%	22.9%	1.7%	1.0%	0.3%	100.0%
	Cesarean	N	3	17	31	10	15	76
		%	4.1%	23.0%	39.2%	13.5%	20.3%	100.0%
	Total	N	219	84	36	13	16	368
		%	56.8%	22.8%	9.8%	3.5%	4.3%	100.0%

4.5.4 Average OOPE on Normal and Caesarean Deliveries

Average (Mean) OOPE on normal and caesarean deliveries in public and private sector hospitals are presented in Table 4.27. Mean direct medical expenditure on delivery care included mean expenses incurred on diagnostics, drugs& supplies, surgery and hospital charges. Mean direct non-medical expenditure includes travel expense from home to hospital and back to home, transportation charges for mothers, accompanying persons including referrals. It also includes costs of food items purchased for mothers and accompanying persons. It is evident from the results in table-4.19 that average direct medical expense on diagnostic tests conducted in public sector hospitals for normal delivery is PKR. 242.1 while in private sector it is PKR 1508.8, which is almost 6 times higher than that of public sector hospitals. However, much difference is not observed in average diagnostic charge for mothers who had cesarean deliveries in public healthcare facilities (PKR 1957.9), and private health facilities (PKR 1962.3).

Average expenditure incurred on drugs and other supplies for normal deliveries in public hospitals is PKR 700 while in private healthcare facilities it is PKR 3139.7, which is almost 4.5 times higher than public hospitals. However, mean expense for cesarean deliveries in public hospital of PKR 7228.6 is higher than mean expense for cesarean deliveries in private hospitals (PKR 6132.1). Surgery charges constitutes a major share of OOPE for cesarean deliveries, especially in the private hospitals. While only a small fraction of mothers who had cesarean deliveries at public hospitals incurred surgery charges, all mothers who delivered at private hospitals had incurred surgery charges. Mean charges incurred for surgery during cesarean deliveries are PKR10777.8 in public hospitals and PKR 18882.4 in private hospitals. While there were no hospital charges in public healthcare facilities, mothers who had delivered in private hospitals incurred a mean hospital charge of PKR 7845.6 for normal deliveries and PKR 11000.0 for cesarean deliveries. The analysis

also showed that mean direct medical expenditure for normal delivery in private hospitals (PKR 12825.0) is about 14 times higher than mean direct medical expenditure for normal delivery in public hospitals (PKR 922). However, mean direct medical expenditure for cesarean deliveries in private hospital (PKR 37132.1) is only about 2.6 times higher than mean direct medical expenditure for cesarean deliveries in public hospital (PKR 14047.6).

Table 4.28: Average OOPE on normal and caesarean deliveries.

Expenditure Head	Public Sector		Private Sector	
	Normal	Caesarean	Normal	Caesarean
Direct Medical Expenditures				
Diagnostic charges	242.1	1957.9	1508.8	1962.3
Drugs & other supplies	700.0	7228.6	3139.7	6132.1
Surgery	0	10777.8	16166.7	18882.4
Hospital charges	0	0	7845.6	11000.0
Total OOPE (Mean)	922.0	14047.6	12825.0	37132.1
Direct Non-Medical Expenditures				
Transport cost from home to hospital	166.7	459.5	843.4	1159.4
Transport cost to home	402.9	1095.2	904.4	1178.3
Referral transport cost	1500.0	7000.0	300.0	5000.0
Transport cost of accompanying persons	750.0	925.0	600.0	1100.0
	280.6	1280.4	824.8	2260.4
Cost of food for accompanying persons	340.2	623.5	637.6	1816.7
Total OOPE (Mean)	579.4	2064.3	1814.0	2522.6
Grand Total (Mean)	1501.4	16111.9	14339.0	39654.7

With regard to direct non-medical expenses, mean expenditure for travelling from home to hospital for normal delivery is PKR166.7 in public hospitals and PKR 843.4 in

private hospital; mothers who reported cesarean section in public hospitals incurred an average expense on travelling PKR 459.5 and PKR 1159.4 in private hospitals respectively. Mean transport charges incurred by families while going back to home from hospitals were higher for both normal and caesarean deliveries in both public and private sectors. For normal deliveries, mean expense incurred by families for going back home is PKR 402.9 in public hospital and PKR 904.4 in private hospital; and for caesarean deliveries mean averages are PKR 1095.2 and PKR 1178.3 in public and private sector hospitals respectively. Mean expense on arranging referral transport from public hospital is higher than that of private hospital for both normal and caesarean deliveries. On an average, an amount of PKR 1500 and PKR 7000 were incurred on referral transport by mothers who had normal and cesarean deliveries respectively in public hospitals. However, mean expenses on referral transport in private hospitals are PKR 300.0 for normal delivery and PKR 5000 for cesarean deliveries, both are lower compared to public hospitals. Transportation of accompanying persons in public sector is PKR 750, while in private hospitals it is PKR 600; and for cesarean deliveries mean amount of PKR 925 and PKR 1100 were incurred in public and private hospitals respectively.

A considerable amount was also incurred on purchase of food for both mothers and accompanying persons in hospitals. Expenditure on food increases with increase in number of days of hospital admission and families had to spent a higher amount in the event of cesarean deliveries. Food expenditure for mothers and bystanders were higher in private hospitals probably due to a greater number of stays compared to public hospitals. The analysis showed that mean direct non-medical expenditure for normal delivery in private hospital (PKR 1814) is almost 3 times higher than mean direct non-medical expenditure for normal delivery in public hospital (PKR 579.4). However, mean direct non-medical expenditure for cesarean delivery in private hospital (PKR 2522.6) is only PKR 500 higher

than direct non-medical expenditure for cesarean delivery in public hospital (PKR 2064.3). The overall analysis in Table 4.27 shows that OOPE incurred on normal delivery care in private hospitals is almost 9.5 times higher than OOPE incurred on normal delivery care in public hospitals; whereas OOPE incurred on cesarean delivery care in private hospitals is almost 2.5 times higher than OOPE incurred on cesarean delivery care in public hospitals.

4.6 Direct Medical & Non-Medical Expenditures on Postnatal Care

4.6.1 Direct Medical Expenditures on Postnatal Care

The study revealed that out of 368 mothers who had their child birth in different healthcare facilities, 225 mothers (61.14%) sought postnatal care from both public and private healthcare facilities. Of the total number of 247 deliveries conducted at the public health facilities, 140 mothers (56.68%) opted for postnatal care, whereas out of 121 deliveries conducted in the private health facilities, 85 (70.24%) mothers sought postnatal care services. This means, mothers who had delivered in the private hospitals were motivated to visit for postnatal check-up by the hospitals.

Table 4.28 gives a detailed break-up of direct medical expenditures incurred by mothers who sought postnatal care in public healthcare facilities. Expenditure incurred broadly consists of costs incurred on drugs & supplies and diagnostic charges. Table 4.28 reveals that 43.31% of mothers who had their child births in government healthcare facilities (public hospitals) did not seek postnatal care from any facility. Out of 140 mothers who had postnatal care in public healthcare facilities, 68 (48.57%) of them incurred expenses on diagnostic tests. A majority of mothers (87.5%) incurred expenditure on drugs and supplies, who paid up to PKR 500, whereas a majority of mothers (74.11%) who reported of paying on diagnostic tests had incurred up to PKR 1000.

On an average, mothers incurred PKR 328.2 on purchase of drugs and supplies and PKR 144.30 on diagnostic tests. Thus, the study showed on an average, mothers incurred

PKR 408.70 as direct medical expenditures while availing postnatal care in public healthcare facilities.

Table 4.29: Direct medical expenditures on postnatal care in public hospitals.

Expenditure Head	N = 140	1-500	501-1000	Above 1000	Mean
Drugs & other supplies	112	98	12	2	328.2
		87.5%	10.7%	1.9%	
Diagnostic charges	68	39	25	4	144.30
		57.3%	36.7%	5.9%	
OOPE (Mean)	140	85	41	9	408.7
		60.7%	29.3%	6.4%	

Table 4.29 reveals that out of 121 mothers who had their child births in private hospitals, only 85 mothers (70.24%) sought postnatal services and all of them incurred direct medical expenditures on postnatal care. While all of them incurred expenses on drugs & supplies and consultation charges, 47 of them (55.3%) paid for diagnostic tests. A majority of 42 mothers (89.4%) who incurred expenditure on diagnostic tests paid below PKR 500, whereas a majority of 66 mothers (77.6%) who reported of paying on drugs and supplies incurred up to PKR 1000. A majority of mothers (80%) had incurred below PKR 500 as consultation charges for postnatal care in private healthcare facilities.

On an average, mothers incurred PKR 176.58 on diagnostic tests, PKR 365.87 on purchase of drugs and supplies and PKR 178.79 on consultation charges. Thus, the study showed that mothers incurred PKR 642.30 as direct medical expenditures while availing postnatal services in private healthcare facilities.

Table 4.30: Direct medical expenditures on postnatal care in the private sector.

Expenditure Head	N=85	1-500	501-1000	1001-2000	Above 2000	Mean
Diagnostic charges	47	42	4	1	0	176.58
		89.4%	8.5%	2.1%	0	
Drugs & other supplies	85	44	32	6	3	365.87
		51.8%	37.6%	7.1%	3.5%	
Consultation charges	85	68	14	3	0	178.79
		80%	16.5%	3.5%	0	
Total OOPE (Mean)	85	35	38	9	3	642.3
		41.2%	44.7%	10.6%	3.5%	

4.6.2 Direct Non-Medical Expenditures on Postnatal Care

The results in Table 4.30 reveal that out 140 mothers who sought postnatal care in public healthcare facilities have incurred direct non-medical expenditure in the form of costs on transport from home to hospitals, from hospital to home, and purchase of food items for mothers and accompanying persons during visit to hospital for postnatal care. Of these mothers, 121 (86.4%) reported of incurring expenditure on arranging transport from home to hospital and they incurred up to PKR 500, whereas, 132 mothers (94.3%) have reported of paying up to PKR 500 for transport to go back home. Expenditure on food for mothers and accompanying persons is another component of direct non-medical expenditure incurred by 118 mothers (84.2%). On an average, the mothers paid PKR 282.50 as transport charges to go to hospital, PKR 287.50 to go back home and PKR 148.20 for purchase of food items for them and accompanied persons. Thus, the study showed that mothers have incurred PKR 613.50 as direct non-medical expenditures while availing postnatal services in the public healthcare facilities.

Table 4.31: Direct non- medical expenditure on postnatal care (public hospital).

Expenditure Head	N=140	1-500	501-1000	1001-1500	1501-2000	Mean
Transport to hospital	140	121	17	2	0	282.5
		86.4%	12.1%	1.2%	0	
Transport cost to home	140	132	6	1	1	287.5
		94.3%	4.3%	0.7%	0.7%	
Food for mothers & accompanying persons	118	118	0	0	0	148.2
		100%	0	0	0	
OOPE (Mean)	140	19 (13.6%)	113 (80.7%)	5 (3.6%)	1 (0.7%)	613.5

Table 4.31 shows that 85 mothers who sought postnatal care in the private healthcare facilities have incurred direct non-medical expenditure in the form of costs on transport from home to hospitals, from hospital to home, and purchase of food items for mothers and accompanied persons during visit to hospital for postnatal care.

A majority (82.4%) mothers who reported of incurring expenditure on arranging transport from home to hospital incurred up to PKR 500. Whereas, 85.9% mothers reported of paying up to PKR 500 for transport to go back home from hospital. Out of 85 mothers, 76 mothers (89.4%) reported of incurring expenses for purchase of food for mother and accompanied person and a majority of them (93.4%) incurred up to PKR 500. The results indicate that mothers incurred on an average PKR 4876.47 on transportation from home to hospital, PKR 434.12 to go back home and PKR 194.70 for purchase of food items for them and accompanied persons. Thus, the study showed that mothers incurred PKR 1049.80 as direct non-medical expenditure while availing postnatal services in the private health facilities in the district.

Table 4.32: Direct non- medical expenditures on postnatal care (private hospitals).

Expenditure	N	1-500	501-1000	1001-1500	1501-2000	2001-2500	Mean
Transport to hospital	85	70	12	1	2	0	486.47
		82.4%	14.1%	1.2%	2.4%	0	
Transport cost to home	85	73	10	1	1	0	434.12
		85.9%	11.8%	1.2%	1.2%		
Food for mothers & accompanied person	76	71	4	1	0	0	194.70
		93.4%	5.3%	1.3%	0	0	
Total OOPE	85	18 (21.2%)	46 (54.1%)	16 (18.8%)	3 (3.5%)	2 (2.4%)	1049.80

Table 4.32 gives a comparison of average OOPE incurred by mothers who have sought postnatal care in both public and private sector hospitals. Mean direct medical expenses incurred by mothers who availed postnatal services in the public sector hospitals (which includes diagnostic and drugs& supplies) was PKR 408.70, and mothers who availed postnatal care at the private sector hospital was PKR 642.30. Mean direct non-medical expenses incurred by the mothers who sought postnatal care at the public hospitals (which includes transport expenses to the hospital and back home, expenses on food items purchased for mothers and accompanied persons) was PKR 613.50, whereas the mean direct non-medical expenses for mothers who availed postnatal care at the private healthcare facilities was PKR 1049.80.

The study findings reveal that mothers who availed postnatal care from the public healthcare facilities incurred on an average PKR 1022.20 (SD 270.76) whereas OOPE incurred by mothers in the private healthcare facilities was PKR 1692.10 (SD 552.75). Thus,

the study shows that OOPE on postnatal care in private hospitals is almost 1.5 times as compared to public hospitals.

Table 4.33 shows the average (Mean) OOPE on postnatal care by type of deliveries in public and private sectors hospitals. Mean direct medical expenditure on postnatal care included mean expenses incurred on diagnostic tests, drugs& supplies and consultation. Mean direct non-medical expenditure includes travel expense from home to hospital and back to home, and costs of food items purchased for mothers and accompanying persons.

Table 4.33: Average OOPE on postnatal care in public/private facilities.

Expenditure Head	Public Sector	Private Sector
Direct Medical Expenditures		
Diagnostic charges	328.20	176.58
Drugs & other supplies	144.30	365.87
Consultation	0	178.79
Total (Mean)	408.70 (40%)	642.30 (38%)
Standard Deviation	47.33	96.63
Direct Non-Medical Expenditures		
Home to Hospital	282.50	486.47
Hospital to Home	287.50	434.12
Food for mother & accompanied person	148.20	194.70
Total (Mean)	613.50 (60%)	1049.80 (62%)
Grand Total	1022.20 (100%)	1692.10 (100%)
Standard Deviation	270.76	552.72

It is evident from the results in Table 4.33 that OOPE on all components of direct medical expense and direct non-medical expenses on postnatal care are higher for mothers who had caesarean deliveries in both public and private hospitals. Further, the analysis also showed that OOPE on all components of medical and non-medical expenses are higher for

mothers who preferred private sector hospitals for delivery care. With regard to direct medical expenditure in public hospitals, mothers who had caesarean deliveries incurred almost 4 times higher for postnatal care; where as in private sector hospital, mothers who had caesarean deliveries incurred 3.7 times more expenses for postnatal care. With regard to direct non-medical expenditure, the analysis showed that mothers who had caesarean deliveries in public hospital incurred almost 3 times more for postnatal care; where as in private sector hospital, mothers who had caesarean deliveries incurred almost 2 times higher for postnatal care.

Table 4.34: Average out-of-pocket expenditure on postnatal care.

Expenditure Head	Public Sector		Private Sector	
	Normal	Caesarean	Normal	Caesarean
Direct Medical Expenditures				
Diagnostic charges	232.80	687.45	162.86	240.60
Drugs & other supplies	117.64	257.82	246.70	428.35
Consultation	0	0	158.24	238.46
Total (Mean)	110.65 (29.23%)	542.45 (36.98%)	230.28 (25.06%)	860.75 (39.10%)
Direct Non-Medical Expenditures				
Home to Hospital	230.03	550.64	345.24	629.10
Hospital to Home	248.77	560.40	340.48	638.40
Food charges	117.10	190.40	168.60	230.44
Total (Mean)	267.86 (70.76%)	924.10 (63.02%)	688.47 (74.94%)	1340.62 (60.90%)
Grand Total	378.51	1466.55	918.75	2201.37

Overall results indicate that mothers who had normal deliveries in public hospitals incurred mean OOPE of PKR 378.51 on postnatal care, whereas mother who had caesarean deliveries in public hospitals incurred mean OOPE of PKR 1466.55, which is almost 3 times

higher. On the other hand, mothers who had normal deliveries in private hospitals incurred mean OOPE of PKR 918.75 on postnatal care, whereas caesarean delivery cases incurred mean OOPE of PKR 2201.37, which is almost 2 times higher.

Further, the analysis also showed that mothers who had normal deliveries in private health facilities incurred almost 142% higher OOPE on postnatal care (PKR 918.75) compared to those who had normal deliveries in public hospitals (PKR 378.51). However, mothers who had caesarean deliveries in private healthcare facilities incurred 66.6% higher OOPE on postnatal care (PKR 2201.37) compared to mothers who had caesarean deliveries in public hospitals (PKR1466.55).

Table 4.34 presents the total OOPE incurred by mothers on delivery and postnatal care in both public and private hospitals. Results indicate that direct medical expenses incurred by mothers who sought delivery and postnatal care in private hospitals incurred PKR 24114.20, which is almost 10 times the direct medical expenses incurred by mothers who availed delivery and postnatal care in public hospitals. However, non-medical expenditure for delivery and postnatal care in private healthcare facilities (PKR 3174.20) is 2.2 times the direct non-medical expenditure incurred by mothers who availed delivery and postnatal care in public healthcare facilities.

Table 4.35: Average OOPE on delivery and postnatal care in public/private hospitals.

OOPE Heads	Delivery Care		Postnatal Care		Total	
	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector	Private Sector
Direct Medical	2013.09 (71.02%)	23471.90 (91.70%)	408.70 (40%)	642.30 (38%)	2421.79 (62.80%)	24114.20 (88.36%)
Direct Non-Medical	821.40 (28.97%)	2124.40 (8.29%)	613.50 (60%)	1049.80 (62%)	1434.90 (37.20%)	3174.20 (11.64%)
Grand total	2834.50	25596.30	1022.20	1692.10	3856.70	27288.40

Fig 4.5 shows the proportion of the mean direct medical vs. non-medical expenditure incurred by mothers on delivery and postnatal care. The figure reveals that mean direct medical expenditure for delivery and postnatal care in the public healthcare facilities comprises 62.80% of total OOPE; whereas this component constitutes 88.36% of total OOPE on delivery and postnatal care in the private healthcare facilities. While direct non-medical expenditure comprises 37.20% of delivery and postnatal care in the public healthcare facilities, this component forms only 11.64% in the private healthcare facilities.

Overall results showed that mean OOPE on delivery and postnatal care in private hospitals (PKR 27288.40) is almost 7 times higher than mean OOPE in public healthcare facilities (PKR 3856.70). This clearly implies the existing cost escalation in healthcare services delivered by private hospitals in Pakistan.

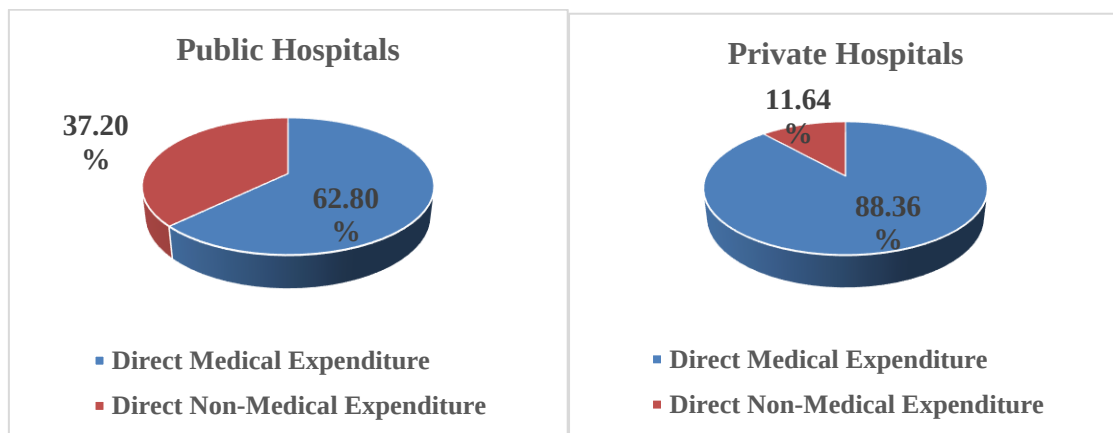


Figure 4.5: Direct Medical Expenditure Vs. Non-medical Expenditure.

4.7 Sources of Financing Delivery and Postnatal Care

OOPE on maternal healthcare absorbs a significant share of family income in countries where public-funded health services are inadequate or ineffective, and there is limited access to maternal health services. Generally, families use sources like savings, borrowings, asset sales, and informal loans from money lenders with high-interest rates to pay for delivery and postnatal care. If the cost of care is sufficiently low relative to the

household's income, then payments will be made from current income. The analysis revealed that 366 mothers (99.45%) out of 368 included in the study incurred OOPE on delivery and postnatal care, which includes both direct medical and non-medical expenditures. Two mothers who did not incur any expense on delivery or postnatal care sought delivery and postnatal care in public healthcare facilities.

Fig 4.6 shows the results of the analysis on source of financing OOPE on delivery and postnatal care in public and private sector hospitals. The figure shows that families used multiple sources of financing delivery and postnatal care. While savings and current incomes were the major source of financing OOPE for about 90% of families (329), 35% of these families (128) also borrowed from friends and relatives to meet the expenses, 20.5% families had to sell their assets to meet OOPE, 9.6% of families received some money as gift from friends and relatives and 5.2% had to borrow money from others on interest to meet expenses related to delivery and postnatal care.

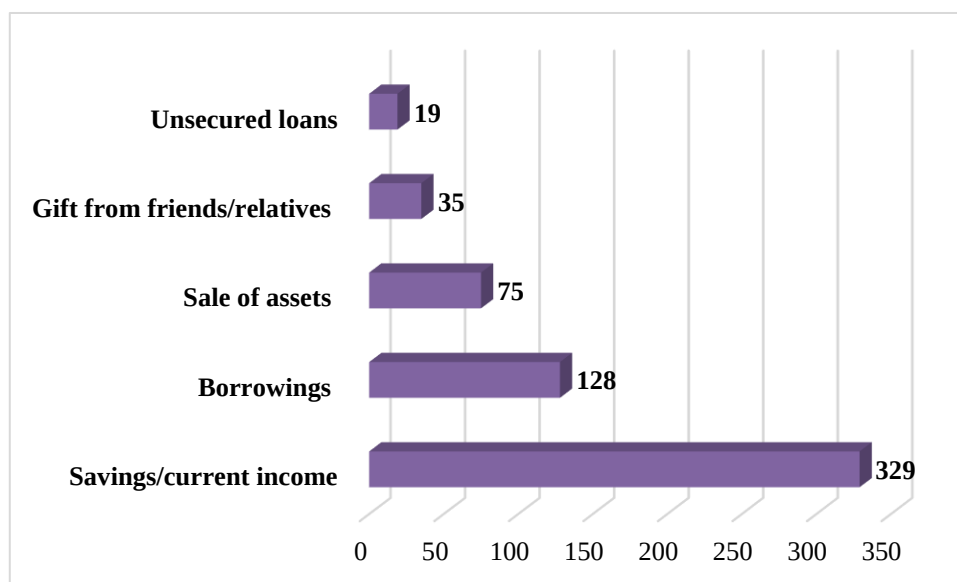


Figure 4.6: Source of Finance to Meet OOPE on Delivery and Postnatal Care.

Table 4.35 shows the details of sources used to finance OOPE by families who utilized public and private healthcare facilities by type of delivery. The analysis reveals that

mothers who had normal deliveries in public health facilities used savings and current incomes as major source of financing OOPE (95.5% of families), while 25.2% families also borrowed from friends and relatives to meet the expenses, 10.4% families had to sell their assets to meet OOPE, 3.2 % of families received some money as gift from friends and relatives to meet the expenses. For mothers who had cesarean deliveries the sources of finance were savings and current income (65.2%), borrowings (47.8%), sales of assets (56.5%), gifts (39%) and unsecured loans (26%).

Table 4.36: Source of financing OOPE on delivery and postnatal care.

Proportion of OOPE financing	Public sector (N= 245)		Private sector (N=121)	
	Normal Delivery (N= 222)	Cesarean delivery (N= 23)	Normal Delivery (N= 68)	Cesarean delivery (N= 53)
Savings/current income	212 (95.5%)	15(65.2%)	59(86.7%)	43(81.1%)
Borrowings	56 (25.2%)	11(47.8%)	29(42.6%)	32(60.4%)
Sale of assets	23 (10.4%)	13 (56.5%)	18 (26.4%)	21(39.6%)
Gift from friends/relatives	07 (3.2%)	09 (39.1%)	04 (5.9%)	15(28.3%)
Unsecured loans	02 (0.9%)	06 (26%)	02 (2.9%)	9 (16.9%)

OOPE: out-of-pocket expenditure (OOPE). * Multiple responses

The analysis shows that mothers who had normal deliveries in private healthcare facilities also used savings and current incomes as major source of financing OOPE (86.7% of families), while 42.6% families also borrowed from friends and relatives to meet the expenses, 26.4% families had to sell their assets to meet OOPE, 5.9% of families received some money as gift from friends/ relatives and 2.9% families had unsecured loans to meet the expenses. For mothers who had cesarean deliveries in private healthcare facilities the sources of finance were savings and current income (81.1%), borrowings (60.4%), sales of

assets (39.6%), gifts (28.3%) and unsecured loans (16.9%). A detailed analysis of sources of financing OOPE on delivery and postnatal care in public and private hospitals reveal that mothers who opted private healthcare facilities had to depend more on borrowing, sales of assets, gifts and unsecured loans compared to those opted public hospitals for delivery and postnatal care.

Figure 4.7 shows that savings and current income were the major source of financing OOPE on delivery care sought by mothers in public and private hospitals. The figure shows that 92.6% and 84.3% of mothers who availed delivery care from the public and private hospitals respectively used savings and current income to meet their OOPEs. While 51.2% of mothers who sought delivery care in private hospitals resorted to borrowings; this source was opted by 26.9% of mothers who had their child births in the public hospitals. Likewise, mothers who sought delivery care in the private hospitals had to sell their assets (32.2%) and took loans (9.10%) as compared to those sought delivery care in the public hospitals (14.7% and 3.30%).

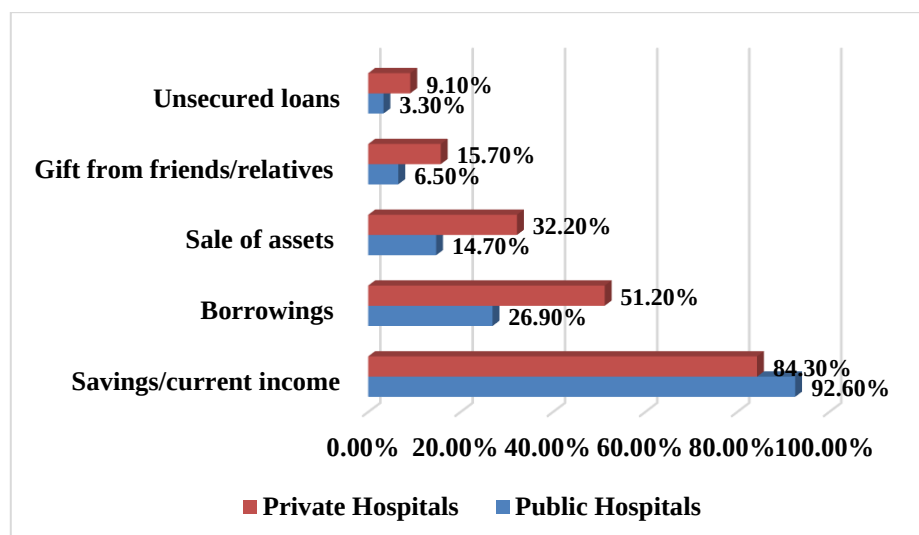


Figure 4.7: Sources of financing OOPE on delivery care in hospitals.

The details of sources used to finance OOPE on delivery and postnatal care by monthly household income of the respondents is shown in Table 4.36. The analysis reveals that majority of low-income families used multiple sources to meet the burden of OOPE on delivery and postnatal care in both public and private healthcare facilities. A significant proportion of low-income group had resorted to borrowing and sales of household assets to meet OOPE on delivery and postnatal care (Table 4.36).

Table 4.37: Sources of financing OOPE on delivery and postnatal care.

Sources of financing OOPE	household monthly income					
	Below 10,000 (n=200)	10,001 -20,000 (n=74)	20,001 -30,000 (n=45)	30000-40000 (n=17)	40001-50000 (n=20)	Above 50,000 (n=12)
Savings/current income	177 (88.5%)	62 (83.8%)	41 (91.1%)	17 (100%)	20 (100%)	12 (100%)
Borrowings	83 (41.5%)	25 (33.7%)	10 (22.2%)	8 (5.8%)	1 (5.0%)	0
Sale of assets	46 (23.0%)	22 (29.7%)	5 (11.1%)	2 (11.7%)	0	0
Gifts from friends/relatives	19 (9.5%)	11 (14.8%)	3 (7.3%)	2 (11.7%)	0	0
Unsecured loans	13 (6.5%)	6 (8.1%)	0	0	0	0

The overall analysis shows that savings/current income of the households were the primary source of funding for delivery and postnatal care by 89.8% of the rural families, and secondarily 35.2% of the families borrowed money from their friends and relatives to cope with the expenditure on delivery and postnatal delivery care. Besides, 20.5% of families had to sell their household assets, 9.6% of them received some money as gifts from relatives and friends and 5.2% of them had to borrow money on interest to pay for delivery and postnatal

care. The families received no direct financial incentives from the government for seeking care at the public health facilities. Despite various government initiatives to improve maternal healthcare services in Pakistan, a significant proportion of the rural families had incurred OOPE on delivery and postnatal care in the public and private healthcare facilities.

CHAPTER 5

DISCUSSION

5.1 Overview

This section provides a detailed discussion of the findings from the present study's data analysis. The section is divided into five sub-sections viz: (i) pattern of delivery and postnatal care utilization, (ii) factors affecting the choice of healthcare facilities, (iii) estimates of direct medical and non-medical expenditures on delivery care, (iv) estimates of direct medical and non-medical expenditures on postnatal care services and (v) sources of financing delivery and postnatal care by the households.

5.1.1 Pattern of Utilization of Delivery and Postnatal Care

The findings reveal that almost 60% of mothers who participated in the study did not have any schooling and 60% were young within the age group of 20-30 years, and more than four-fifths were housewives. About 50% of their families earned up to PKR 10,000 every month. While 79.3% of mothers included in the study had normal deliveries, the rest of the mothers had cesarean deliveries (20.6%). Out of 368 mothers included in the study, 247 (67.12%) opted for delivery care in public healthcare facilities. Among them, 9.3% of deliveries were conducted through cesarean section.

In contrast, 43.8% of mothers who sought delivery care in private hospitals had cesarean deliveries. Thus, the percentage of cesarean deliveries conducted in private hospitals was almost 4.7 times higher than that conducted at public healthcare facilities. This finding has enormous implications when viewed in light of current cesarean section rates of private hospitals in Pakistan, almost three times the WHO recommended limit of 10% to 15% (WHO, 2015).

The proportion of cesarean deliveries reported in the study is compatible with Pakistan's national average of 19.6% (2018). However, this proportion is 28.9% in Punjab province and 7% in Rajanpur district, according to MICS 2017-2018. The disparities found between the proportions of cesarean deliveries in the public and private sectors bring social inequity in healthcare to the core of the discussion. Several studies, particularly in developing countries, have shown that delivery in private hospitals is one of the most contributing factors in cesarean deliveries. The place of delivery is a proximate determinant of cesarean delivery or a mediator of other co-factors (Rayhan, 2019; Sarkar, 2020).

The study revealed that 61.14% of mothers in the study sought postnatal care from any healthcare facility. Only 56.68% of mothers who had childbirth in public healthcare facilities opted for postnatal care compared to 70.24% in private healthcare facilities. This clearly brings out the fact that mothers who had their childbirths in private hospitals were motivated to visit for postnatal care check-ups by the respective hospitals. These findings are closer to the MICS -2017-18 survey of the Government of Punjab. According to the survey, 70.7% of all mothers who delivered in the province's public or private healthcare facilities availed of postnatal check-ups. However, the survey found that only 40.3% of mothers in the district sought postnatal check-ups from public or private health care facilities.

5.1.2 Choice of Healthcare Facilities for Delivery and Postnatal Care

5.1.2.1 Choice of Healthcare Facilities for Delivery Care

Some of the findings of backward logistic regression analysis in table 4.4 in accordance with the theoretical implications. Model 4 in the analysis (which is the best fit model) shows that socio-economic factors such as the mother's educational status, family income, number of children, distance to a healthcare facility, and transport cost are related to the present study's assumptions. Together, these variables explain a 22.4% variation in

independent variables regarding selecting public vs. private healthcare facilities for delivery care. Many other factors not included in the present study, including several supply-side factors, may play a significant role in choosing a healthcare facility for delivery care by the households.

(i) Education of Mother

The analysis results show that the educational level of mothers positively influences the choice of public healthcare facilities for delivery care. This means women with more years of schooling are 1.4 times more likely to choose public healthcare facilities for delivery care. Several studies have pointed out that mothers' educational qualification influences their choice of care providers (Hagos et al., 2014; Mehari, 2013; Paneru, 2014; Smith, Tawiah, & Badasu, 2012; You & Boyle, 2012). However, the present study finding is in contrast to earlier studies. Pomeroy et al. (2010) concluded that mothers' education positively influences the utilization of private healthcare facilities for delivery care in eight developing countries such as Bangladesh, Indonesia, Nepal, Philippines, Mali, Zambia, Rwanda, and Bolivia. Studies in India have shown that a high educational level is a significant predictor of delivery care utilization from private hospitals (Govil et al., 2016; Mohanty and Kastor, 2017). Other studies in Pakistan also showed that private health facilities for maternal health services increase with increasing mothers' education (Khan & Noreen, 2016; Khan REA, 2016). This study showed that a woman's educational status enhances her awareness about the quality of healthcare services and improves quality consciousness, making them use the best available maternal care services in the district. Rajan Pur is a predominantly rural district, and there has been a lack of private healthcare facilities delivering comprehensive maternal health services. Although individual clinics are present, the district does not have nursing homes with specialist doctors. Therefore, educated women may like to seek maternal healthcare in

a district hospital, which has all facilities to provide comprehensive maternal healthcare services.

(ii) Family Income

Family income is an essential factor in determining the choice of public vs. private healthcare facilities for delivery care. The present study shows that public healthcare facility for delivery care is positively related to family income. This means women in the higher family income group are 1.2 times more likely to prefer a public healthcare facility for delivery care. This finding is supported by an earlier study (Do M, 2009) in Vietnam, which showed that increased access to public healthcare services was associated with an increased likelihood of deliveries in public hospitals by women. Das et al. (2016) showed that most women in rural Nepal preferred public healthcare facilities for delivery care regardless of their wealth position. However, this finding contradicts many other studies that explain that high-income category households consider maternal healthcare at government healthcare facilities as an inferior good with low quality of care, and low-income status restricts women's access to delivery care in private healthcare institutions. One can infer that the economic status of households dramatically influences the choice of public vs. private health facilities for delivery care. A systematic review by Banke-Thomas et al. (2017) in low and middle-income countries has shown that economic factors were the significant factors influencing the utilization of maternal health services. Many studies have found that women from the wealthiest households are more likely to choose private hospitals to deliver care (Adhikari et al., 2021; Rayhan, 2020; Zakar et al., 2017).

(iii) Number of Children

The number of children or number of previous pregnancies by the women may affect the choice of healthcare facilities for delivery care. The present study shows that the choice of public health care institutions for delivery care is negatively related to the number of

children in the family. It means women having more children or previous pregnancies are likely to choose private healthcare facilities for delivery care or have 19% lower chances of selecting a public healthcare institution for delivery care. With more pregnancies, women may have chances of complications and prefer private healthcare facilities due to better quality services, including the availability of female doctors. Bhattacharjee et al. (2013) found that mothers having more children enhanced the utilization of institutional delivery and postnatal care utilization in private healthcare facilities. A study in China (Chen et al., 2013) showed that mothers who had more than one child were more likely to go to a private hospital for delivery care. Contrary to this finding, Hollowell et al. (2011) concluded that in a first pregnancy, perception of risk increased the utilization of maternal health services in private healthcare facilities than in later pregnancies.

(iv) Distance to the Healthcare Facility

Distance from home to the healthcare facility is an essential factor influencing the choice of healthcare institutions for delivery care. The results indicate that the higher the distance to a health facility, the higher the likelihood of families choosing public healthcare facilities for delivery care. The odd ratio corresponding to this variable indicates that women whose residence is far from healthcare facilities are 1.7 times more likely to choose a public healthcare institution for delivery. The mothers living farther from the health facilities had greater odds of choosing public healthcare facilities for delivery care, which may be due to the availability of ambulance facilities arranged by the government in the district. Moreover, the women prefer to visit the district hospital, which has all facilities of comprehensive maternal healthcare services. Findings from countries like Vietnam, Zimbabwe, Uganda, India, and Thailand have shown that the location, and distance to health facilities cost are often observed to influence the utilization of maternal healthcare services (Ghaffar et al., 2012, Bhattacharjee et al., 2013; Fillipi, 2006; Ensor & Cooper 2004; Memom et al., 2015).

(v) Cost of Transport

Cost of transport is likely to affect choosing a health facility for seeking delivery care from different healthcare institutions. However, the result of logistic regression does not indicate the importance of this variable in choosing a particular healthcare facility for delivery care. This may be because most of the mothers who delivered their children in public healthcare facilities utilized ambulance services provided by the government.

5.1.2.2 Choice of Healthcare Facilities for Postnatal Care

The findings of backward logistic regression analysis in Tables (4.8-4.13) show that out of eight socio-economic variables included in the model, only three variables are the mother's occupation, distance to a healthcare facility, and transport expenses, which significantly influence the choice of healthcare institutions for postnatal care. Together, these variables explain a 27.5% variation in independent variables regarding selecting public vs. private healthcare facilities for postnatal care. This means many other factors not included in the present study, including supply-side factors, may play a significant role in choosing a healthcare facility for postnatal check-ups.

(i) Occupation of Mother

The analysis shows that working women had higher odds of utilizing public healthcare facilities for postnatal care. The odd ratio corresponding to this variable shows that women with jobs are 1.47 times more likely to prefer public health institutions for postnatal check-ups. Other studies have shown that working women have higher autonomy and hence have more decision-making power in maternal health care, including postnatal care (Kifleh et al., 2018; Husnain, Rashid & Shakoor, 2018). Moreover, they have more economic freedom, which helps them meet OOPE on maternal healthcare. Therefore, economic solvency is of significance in enhancing maternal health care from public or private healthcare facilities (Rahman et al., 2021)

(ii) Distance to Health Facility

Studies have found that distance to the healthcare facility is an essential factor influencing the choice of healthcare institutions for postnatal visits. The logistic regression analysis indicates that the higher the distance to a health facility, the higher the likelihood of families choosing public healthcare facilities for postnatal care. The odd ratio corresponding to this variable shows that women whose residences are far from health facilities are 2.58 times more likely to choose public healthcare facilities for postnatal care. Yanagisawa et al. (2006) hypothesized that location and place of residence were found to be strongly correlated to postnatal care utilization in public healthcare facilities in the Philippines. However, this finding is contradictory to other studies. A study in a hilly state of India (Joshi et al., 2016) showed that distance to health facilities is one of the reasons for the low utilization of delivery and postnatal services in public healthcare facilities. A study in Nepal showed that distance to healthcare facilities also affected the utilization of maternal health services from the public sector (Karki, Lee & Binns, 2013). A study in Pakistan also revealed that utilization of maternal health services in public healthcare facilities is affected by physical distance and cost of services (Riaz et al., 2015).

(iii) Cost of Transport

Transport cost to healthcare facility and back home influences the choice of healthcare institutions for postnatal care. In this study, the cost of transport is negatively associated with using a public healthcare facility for postnatal care. The odd ratio corresponding to this variable shows that with the increase in the cost of transport, women are 61% less likely to use public healthcare facilities for postnatal care. This means women who reported incurring higher costs on transport chose to visit a private healthcare facility for postnatal care. The finding from this study aligns with other studies in Pakistan, which showed that women who live more than 5 km were reported spending a higher amount, and

almost 70% of the respondents chose to visit a private healthcare facility (Zakar et al., 2017). Bhattacharjee et al. (2013) showed that even if health services are free in public hospitals, transport costs acted as barriers to the utilization of maternal health care services. Thus, keeping other factors constant, this study suggests that the mother's occupation, distance to a healthcare facility, and transport cost may influence the choice of healthcare institutions for postnatal care in the district.

5.2 Direct Medical and Non-Medical Expenditure on Delivery Care

Although many studies attempted to estimate OOPE on maternal healthcare utilization using both primary and secondary data at the international level, such studies are lacking in the context of Pakistan. One of the objectives of the present study was to estimate the OOPE (direct medical and non-medical costs) on delivery care by mothers in public and private hospitals in the Rajan Pur district.

The present study showed that 90.2% of mothers had incurred direct medical expenses for delivery care in public or private facilities. This finding is consistent with an earlier study in three districts of Sindh province, which showed that 82% and 96% of the women who utilized public or private health facilities for delivery care incurred OOPE (Ansari et al., 2015). It also showed a vast difference in OOPE incurred by mothers on delivery care in public vs. private healthcare facilities. The mean OOPE incurred for delivery in a public hospital is PKR 2840 compared to PKR 25596.3 in private hospitals. The present study's findings are consistent with earlier studies in Pakistan.

Humayun et al. (2017) in a rural district of Pakistan showed that women incurred on an average PKR 4000 for delivery care in the public hospital and PKR 16000 in the private hospital. Sughra et al. (2018) in the Punjab district of Pakistan showed that the mean OOPE on delivery care was PKR 7531 and for the lowest wealth quintile between PKR 7351 -855.

While the vast difference in OOPE was due to higher hospital charges, medicine, and surgery fees in private healthcare facilities, the cost of transportation contributed to the increased share of OOPE in public healthcare facilities. More than two-thirds of women incurred charges on medicine, cotton pads, syringes, and saline in public hospitals, which they bought from private pharmacies. Even countries with universal availability of maternal health services also incur huge OOPE, including informal payments (Sidney et al., 2016). Prinja et al. (2015), in a study in India, found that OOPE for delivery in the private sector is about 16 times higher than that of the public health sector. This is due to the government's universal availability of free delivery care facilities through public health facilities.

Overall, OOPE is higher for the mothers who have childbirth in private health care facilities and delivered through cesarean section. These women incurred high OOPE due to additional charges on medicine and supplies, diagnostic services, and blood transfusion in the private hospitals. Mohanty et al. (2019) showed that cesarean deliveries in the private sector are almost US\$ 296 higher than normal deliveries. In Nepal, cesarean delivery is almost 7.5 times higher than normal deliveries in the private sector. In Bangladesh, a cesarean section in the private sector is 3.2 times higher than normal deliveries (Sarkar et al., 2017). In this study, tips for getting services in public healthcare facilities were negligible, although earlier studies have reported informal payments made by mothers during delivery care utilization in public hospitals. For instance, Isacc et al. (2016) in India showed that 86% of the woman had incurred tips (median value of US\$5.25) to avail government ambulance and bribes in cash or kind to facility staff for their services such as obtaining a bed in the postnatal ward. A study by Khan and Zaman (2010) in a tertiary level public hospital in Islamabad, Pakistan, estimated that the average cost to mothers for normal delivery was PKR7528 and that cesarean delivery was PKR 13678.

The study showed that costs incurred on transportation account for a significant share of direct non-medical expenditure. Despite the availability of a public ambulance scheme in the district, this was not the vehicle of choice for many women due to long waiting times, poor road connectivity, and easy availability of other modes of transportation within the neighbourhood. However, a majority of the woman used ambulance facilities for returning home. A similar study in Pakistan by Ansari et al. (2015) reported that more than 55% of users in the public sector and 71% of private health sector users could not afford travel costs, and travel costs were higher among women who had to travel more than 5 km distance. Qureshi et al (2015) found that poor transportation and financial problem are significant barriers to seeking maternal health services in Pakistan.

The government of Pakistan focused on maternal and child health and created multiple policies to improve the availability of maternal and neonatal care services and address financial barriers related to their utilization. However, the target of universal health coverage for delivery care in Pakistan is not yet achieved. Similar findings have also been highlighted in a few studies discussing the high OoPE for institutional delivery in Pakistan.

5.2.1 Direct Medical and Non-Medical Expenditure on Postnatal Care

The study revealed that only 61% of mothers who had childbirth in different healthcare facilities sought postnatal care. While 70.24% of mothers who delivered in private hospitals sought postnatal care services, only 56.68% of their counterparts opted for postnatal care. This means that mothers who had their deliveries in private hospitals were motivated to visit these hospitals for follow-up /postnatal check-ups.

On average, mothers who sought postnatal care in public hospitals incurred a mean PKR of 408.70 as direct medical expenditures, whereas mothers who sought postnatal services in private hospitals incurred a PKR of 642.30. Regarding direct non-medical expenses on postnatal care, mothers who opted for public healthcare facilities incurred a

mean amount of PKR 613.50, whereas mothers who availed of postnatal care at private healthcare facilities incurred a mean amount of PKR 1049.80. Considering both direct medical and non-medical expenses, the study showed that the OOPE on postnatal care in private hospitals is almost 1.5 times that of public hospitals.

Finally, the results revealed that 99.45% of mothers included in the study incurred OOPE on delivery and postnatal care, including direct medical and non-medical expenditures. Overall, the mean OOPE on both delivery and postnatal care sought in public hospitals is PKR 3856.70, and in a private hospital, it is PKR 27288.40. This clearly shows that cost of delivery and postnatal care in private hospitals is almost seven times the cost in public hospitals.

5.2.2 Sources of Financing Delivery and Postnatal Care

Several studies in developing countries have shown that OOPE deters households from seeking health care and can also cause considerable hardship and financial impoverishment, particularly among the poor. The present research findings show that savings or current income of the households were the primary sources of financing OOPE on delivery and postnatal care (90%). The second source of finance is borrowing, as the study found that 35% of households had to borrow money from friends and relatives to cope with the current expenditure. This is followed by selling household assets, as the study showed that almost one-fifth of families sold some of their household assets to meet their expenditures.

Further, the analysis reveals that mothers who opted for private healthcare facilities for delivery and postnatal care had to depend more on borrowing, sales of assets, gifts, and unsecured loans than those who opted for public hospitals for delivery and postnatal care. A majority of low-income families used multiple sources to meet the burden of OOPE, and a significant proportion of them had resorted to borrowing and sale of household assets to meet

OOPE on delivery and postnatal care. Other studies in Pakistan support these findings. Ansari et al. (2015) found that 35% of public hospital users and 64% of private hospital users who could not afford travel costs took loans for meeting maternal healthcare expenses. The proportion of women who took loans was higher among those living more than 5 km from the healthcare facility than those living within 5 km. Another study in Pakistan (Rahman et al., 2014) found that most women who incurred OOPE borrowed money from their relatives and friends or sold household items. The present study also noted that none of the families received direct financial incentives from the government for seeking care at public healthcare facilities. Despite various government initiatives to improve maternal healthcare services in Pakistan, many rural families have incurred OOPE in seeking delivery and postnatal care.

5.3 Chapter Summary

This chapter discussed the results obtained after analysing the primary data collected from the respondents. The results were presented into six sub-sections viz; socio-economic characteristics of mothers; utilization pattern of delivery and postnatal care services; determinants of the choice of healthcare institutions for delivery and postnatal care; direct medical and non-medical expenses incurred on delivery care; direct medical and non-medical expenses incurred for postnatal care; and sources of financing OOPE on delivery and postnatal care. Discussion on the results was presented by comparing the results with earlier studies.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Overview

This chapter gives the conclusion of the study based on the results. The researcher concluded the findings based on the available data and comparison with the other studies. This chapter also includes the recommendation that emerged from the observations and conclusion of the study that may be helpful for further studies in the future. In this chapter, the researcher also pointed out certain limitations of the study.

6.2 Conclusion

The overall objective of this research is to study the utilization pattern, choice of healthcare institutions, OOPes, and sources of financing delivery and postnatal services in public and private healthcare facilities. The findings of this study make some significant contributions to understanding OOPes in utilizing delivery and postnatal care by women in a rural district of Pakistan.

6.2.1 Pattern of Delivery and Postnatal Care

The study showed that about two-thirds of mothers preferred public healthcare facilities for most recent delivery, while one-third of them chose private healthcare facilities. The percentage of cesarean deliveries conducted in private healthcare facilities (43.8%) was 4.7 times higher than cesarean deliveries performed in public healthcare facilities.

This finding of the study has enormous implications when viewed in the context of prevailing cesarean section rates in private hospitals in Pakistan, which is almost three times the World Health Organization suggested limit of 10% to 15%. Further, the study showed 61% of women received postnatal care. Postnatal care was sought by 70% of mothers who had their childbirths in private healthcare facilities, in contrast to 56% in public healthcare

facilities. The difference in the percentage of postnatal care might be because mothers were likely motivated by the private hospitals for postnatal check-ups.

6.2.2 Choice of Delivery and Postnatal Care

The study showed that use of public healthcare facilities for delivery care increases with increasing maternal education, monthly household income, and distance to healthcare facilities. However, mothers' occupation and distance to healthcare facilities positively influence the decision to utilize public hospitals for postnatal care. The results showed that a woman's education, occupational status, and household income enhance her awareness of healthcare services and improve quality consciousness, making her use the district's best available maternal care services. The study presented an opportunity for the public healthcare system to set up emergency transport facilities for women seeking maternal healthcare from the public healthcare facilities.

6.2.3 OOPE on Delivery Care

The study showed that 90.2% of all mothers in the study incurred direct medical expenditures, and 99.4% of them incurred direct non-medical expenditures. The mean OOPE incurred for delivery care in public hospitals was PKR 2840 compared to PKR 25596.3 in private hospitals. OOPE is higher for mothers who have childbirths in private healthcare facilities and delivered through cesarean section. Average OOPE on cesarean delivery in private hospitals is almost 2.5 times higher than public hospitals; whereas OOPE on normal delivery is 9.5 times higher.

6.2.4 OOPE on Postnatal Care

Mothers who sought postnatal care in public hospitals incurred a mean OOPE of PKR 408.70 as direct medical expenditures, whereas in private hospitals, the mean OOPE was PKR 642.30. The mothers who opted for public healthcare facilities incurred a mean

amount of PKR 613.50 as direct non-medical expenses, whereas in private healthcare facilities mean OOPE was PKR 1049.80. Overall, the study showed that the OOPE on postnatal care in private hospitals is almost 1.5 times that of public hospitals.

6.2.5 Source of Financing OOPE

Savings or current income were the primary sources of financing OOPE on delivery and postnatal care by 90% of participants, followed by borrowing (35%) from friends and relatives. Mothers who opted private healthcare facilities had to depend more on borrowing, sales of assets, gifts, and unsecured loans. Low-income households (41.5%) resorted to borrowings, and sales of household assets (23%) to meet OOPE on delivery and postnatal care.

6.3 Recommendations

- (i) A significant proportion of women incurred high OOPEs while utilizing private healthcare facilities. This calls for effective implementation of regulatory mechanism to control the costs and quality of care in private hospitals.
- (ii) A standard protocol on caesarean deliveries based on international norms needs to be introduced in public and private hospitals. The government should ensure that these guidelines are adhered to.
- (iii) Transport barriers make the maternal healthcare inaccessible to women. There is a need to establish an efficient transport system in rural areas and scale up existing models based on current experiences.
- (iv) To improve access to maternal healthcare, it is significant to build an effective referral linkage among different levels of healthcare facilities through an efficient transport system.
- (v) This study showed that more than 50% of women had a monthly family income below PKR 10000 and most of them experienced financial barriers to seeking

maternal healthcare services. Hence, the government may introduce appropriate schemes to subsidize costs of maternal healthcare incurred by the poor women in private hospitals.

- (vi) Health insurance program with maternal health coverage may be introduced, so that poor women can access services from the nearest private hospitals according to their choice without facing any financial barriers.
- (vii) LHWs may be empowered for community education, so that they can organize awareness programs related to pregnancy complications, risk factors of cesarean deliveries, and the childbirth process at community level.

6.4 Limitations

There are several limitations to this research:

1. This research was conducted among the women living in Rajan Pur district of Pakistan, and the findings of this study cannot be generalized.
2. While performing the logistic regression analysis for the choice of healthcare institutions for delivery and postnatal care, the study considered only the socio-economic factors. The choice of healthcare institutions is affected by both supply-side and demand-side factors. Supply-side factors may include availability of healthcare providers, medicines, diagnostic facilities and quality of care; and demand-side factors such as culture, customs, and community health awareness were not considered.
3. The length of the recall period might influence the estimation of OOPE in the study, and the probability of over-reporting or underreporting by the participants could not be overruled.
4. This study did not calculate income or wage loss to the family during delivery care in healthcare institutions. Measuring wage loss was a challenge given the high level

of informal sector workers with a substantial variation in their income. Future studies may look into seasonality and other factors influencing wage loss using large samples and collecting data in different seasons to reduce the effect of seasonality.

6.5 Chapter Summary

In this chapter, the researcher discussed the conclusion of the study based on the results. The conclusion was based on the results of the analysis of primary data and then compared the results with the other studies. The researcher also discussed recommendations that can benefit policy-makers and health administrators. This study had some limitations that were also discussed in detail in this chapter.

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APPENDICES

Appendix A: Questionnaire

Interview Schedule

1. General Information

Rural Health Centre (RHC) Basic Health Unit (BHU).....

Village : Date of Interview:

Sl. no.	Questions	Response
1	Mother's name	
2	Name of Spouse	
3	House Address	
4	Contact Number (mobile)	

In the next section I will be asking you some details regarding your individual and household characteristics. It will include anyone who has been living in your house for the past six months sharing your income and expenses of the household.

2. Individual/ Household Characteristics

Sl.No	Questions	Response
1	Religion of mother	1. Muslim 2. Non-Muslim
2	Age of the mother	1. Below 19 years 2. 20 – 25 years

		3. 26 – 30 years 4. 31-35 years 5. 36 -40 years 6. Above 40 years
3	Education level of the mother	1. No schooling 2. Primary (1-5 years) 3. Secondary (6-10 years) 4. Higher secondary (11-12 years) 5. Above 12 th Standard
4	Main occupation of mother	1. Housewife 2. Private employee 3. Government employee 4. Contract employee 5. Daily wage earner 6. Self-employed
5	Main occupation of spouse	1. Private sector employee 2. Government employee 3. Contract employee 4. Daily wage earner 5. Self-employed 6. Retired
6	Joint household monthly income	1. Below 10000 PKR 2. 10001 – 20000 PKR 3. 20001 – 30000 PKR 4. 30001 – 40000 PKR 5. 40001 – 50000 PKR 6. Above 50001 PKR
7	Is the family covered under health insurance?	0. No 1. Yes
8	If yes, does it cover maternity care?	0. No 1. Yes

From section 3 onwards I will ask you some details about the delivery and the expenses related to it. Please tell me as much as you can remember. I will give you some options which may help you to remember the various kinds of expenses you had to manage. I will also be asking you questions related to how you financed the expenditures related to delivery and post-delivery health care.

3. Details on Delivery Care

Sl. No.	Question	Response
1	How many children do you have?	 actual (in numbers)
2	Date of most recent delivery	.....
3	What was the mode of the recent delivery?	1. Normal 2. Caesarian
4	What was the outcome of recent delivery? (in terms of number of children)	1. Singleton 2. Twins 3. Triplets or above
5	What was the outcome of recent delivery? (in terms of alive or dead)	1. Live birth (currently alive) 2. Still birth 3. Neonatal death 4. Post neonatal death
6	Where did the recent delivery take place?	1. Public hospital 2. Private hospital
7	In case answer is 2 in above question What was the reason for choosing private hospital for delivery? (Multiple answers)	1. Emergency care 2. Near to home 3. Perceived quality difference as compared to public facility 4. Non-availability of public facility nearby 5. Referred from govt. hospitals 6. Any other reasons (please specify)
8	Are you satisfied with services received from the government hospitals	1- Yes 2- No

9	If the answer is 2 above, why were you not satisfied with services received from government facilities	1. Perceived quality difference compared to private facility 2. Proper care not received 3. Medicines not available 4. Non-availability of doctors 5. Indifferent attitude of staff 6. Any other reasons (please specify)
10	What is the approximate distance from home to the hospital where delivery was conducted	(in km)
11	What was the mode of transportation used?	1. Ambulance by government 2. Ambulance by private 3. Private taxi 4. Auto Rikshaw

4. Out-of-Pocket Expenditure on Delivery Care

4.1. Direct medical expenditure

Sl no.	Question	Response
1	What was the total cost incurred for child delivery on following heads?	
	1.Hospital charges  2.Diagnostics  3.Drugs and consumables  4.Surgery costs, if any  5.Blood (if any)  6.Other (Specify).	..... ..... ..... ..... ..... .....

4.2 Direct non-medical expenditure

Sl no.	Question	Response
2	What was the total costs incurred for child delivery on the following heads? 1. Home to hospital (Pregnant woman for delivery) 2. Hospital to home (mother and neonate after delivery) 3. Referral transport if any 4. Transportation of bystanders	..... ..... ..... .....
	1. Food for mother 2. Food for accompanying person 3. Accommodation charges of accompanying person, if any 4. Informal payment (tips, gifts..)	..... ..... ..... .....

5. Out-of-Pocket Expenditure on Postnatal Care

Sl no	Questions	Response
1	Did the mother consult a health care provider after discharge from hospital? (within the last six months)	1. Yes 2. No
	Continue if the answer is 'yes' above	

2	Place of health facility visited.	1. Public hospital 2. Private hospital
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5.1. Out-of-Pocket Expenditure on Postnatal Care

5.1.1. Direct medical expenditure

Sl no.	Question	Response
1	What was the total cost incurred for postnatal care on following heads?	
	• Consultation fees	.....
	• Drugs	.....
	• Investigations	.....

5.1.2. Direct non-medical expenditure

Sl no.	Question	Response
2	What was the total costs incurred for postnatal care on the following heads?	
	• Transport cost from home to hospital	.....
	• Transport cost back to home	.....
	• Food costs for mother and accompanied person	.....
	• Other charges if any	.....

6. Sources of Financing OOPE on delivery & Postnatal Care

Sl no	Questions	Response
1	Was any of your expenditure on the following services covered by any health insurance/reimbursement scheme?	1. Yes 2. No
	Continue if the answer is 'yes' above	
2	Which services are covered?	1. Only delivery services covered 2. Both services covered
3	How was the funds arranged to meet out-of-pocket expenditure on delivery and postnatal care?	1. Current income 2. Savings 3. Borrowing 4. Unsecured loans 5. Selling of property/assets 6. Gifts/assistance
4	Specify the percentage of OOPE arranged through the following sources: 1. Current income 2. Savings 3. Borrowing	..... ..... .....

	4. Unsecured loans	.....
	5. Selling of property/assets	.....
	6. Gifts/assistance	.....

Thank you for your participation in the study!!!

Appendix B: Ethical Approval for Research

Fakulti Perubatan dan Sains Kesihatan
Faculty of Medicine and Health Sciences



UNIMAS/NC-21.02/03-02 Jld.4 (35)

17 Januari 2020

Dr Sohail Akhtar
College of Public Health and Health Informatics, Qassim University
King Abdulaziz Road,Albukariya
52725,Saudi Arabia

Dr,

Ethical Approval for Research:

Estimation Of Out -Of-Pocket Expenditure on Utilization of Delivery and Postpartum Services in Public and Private Health Care Facilities – Study in A Rural District Of Pakistan

The above matter is referred.

I am pleased to inform you that the above research is supported and approved by Faculty Medical Ethics Meeting 01/2020 on the 7th January 2020.

The Faculty Medical Ethics Committee considers that the investigator has addressed all the issues that may arise in the project.

It is noted that the investigator shall obtain consent from individual participants / respondents / research subjects.

The committee also took note that the investigator has the necessary qualifications, experiences and facilities to conduct the research and to deal with any emergencies and contingencies that may arise.

It is hoped that the project can be conducted as planned.

Thank you with regards and well wishes.

Professor Dr Lela Hj Su'ut

**Chairman
Medical Ethics Committee
Faculty of Medicine and Health Sciences
UNIMAS.**



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Appendix C: Letter of Recommendation from Supervisor for Data Collection.

Fakulti Perubatan dan Sains Kesihatan
Faculty of Medicine and Health Sciences
Dekan /Dean



www.unimas.my

• UNIMAS/NC-21/09-01 Jld. 2 (57)

14th of September, 2020

Chief Executive Officer (CEO),
District Health Authority, District Rajan Pur
Punjab, Pakistan

Sir

Subject: Letter of Recommendation for Data Collection and Research Work

This is to certify that Dr. SOHAIL AKHTAR (Passport No. FS 1345002) University ID No. 18010086 is registered as a PhD (Public Health) scholar at the Faculty of Medicine & Health Sciences (FMHS), Universiti Malaysia Sarawak (UNIMAS), Malaysia. His supervisor is Associate Professor Dr. Zafar Ahmed. He is doing his research on the topic 'Estimation of Out-of-Pocket Expenditure on Utilization of Delivery and Postpartum Services in Public and Private Health Care Facilities-Study in a Rural District of Pakistan'. His research has obtained approval from UNIMAS Medical Ethics Committee (ref: UNIMAS/NC-21.02/03-02 Jld.4 (35)). His research work is based on a survey of mothers in the age group of 18-49 years in the district of Rajanpur besides basic information collected from the district health department.

On behalf of the faculty, we heartily express our gratitude to you for providing all necessary support to Dr. Sohail Akhtar for him to collect required data for his research work. We assure you that the sole purpose of this data collection is to complete his research requirement at Universiti Malaysia Sarawak (UNIMAS), Malaysia. If you have any questions or concerns, please contact Associate Prof Dr. Zafar Ahmed at azafar@unimas.my

Thank you.

Yours sincerely,

Prof. Dr Asri bin Said
Dean



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Appendix C: Continued...Letter of Recommendation from Supervisor.

c.c. Prof Dr. Chew Keng Sheng,
Deputy Dean (Graduate, Research and Commercialization),
Faculty of Medicine and Health Sciences, UNIMAS.

Associate Professor Dr Jeffery Stephen,
Head of Department of Community Medicine and Public Health,
Faculty of Medicine and Health Sciences, UNIMAS.

Associate Professor Dr Zafar Ahmed,
Department of Community Medicine and Public Health,
Faculty of Medicine and Health Sciences, UNIMAS.

Appendix D: Permission from CEO Office Punjab District Authority to Conduct Research.



OFFICE OF THE
CHIEF EXECUTIVE OFFICER
DISTRICT HEALTH AUTHORITY RAJANPUR

No. 1334/

Date. 27/10/2020

Subject: Permission to conduct Ph.D research work.

This is with reference to letter no. UNIMAS/NC-21/09-01 Jld.2 (57) dated 14-10-2020 from Prof. Dr Asri Bin Sad (Dean) that requested permission is granted in favour of Dr.Sohail Akhtar for his Ph.D research work in district Rajanpur.


Chief Executive Officer
District Health Authority Rajanpur