

**Determinants of Skilled Delivery Care utilization in Afghanistan:
A Secondary Analysis of National Household Survey and Health
Facility Survey**

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Afghanistan

**55th Master of Science in Public Health/International Course in Health
Development**

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Determinants of Skilled Delivery Care utilization in Afghanistan: A Secondary Analysis of National Household Survey and Health Facility Survey

A thesis submitted in partial fulfillment of the requirement for the degree of
Master of Public Health

by

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Declaration:

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Signature:

A handwritten signature in black ink, appearing to read 'Frogh Asadi', written over a horizontal line.

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List of Abbreviations:

AHS: Afghanistan Household Survey

BSC: Balanced Score Card

BPHS: Basic Package of Health Services

EPHS: Essential Package of Hospital Services

EmONC: Emergency Obstetric and Neonatal care

MoPH: Ministry of Public Health

HP: Health Post

BHC: Basic Health Center

CHC: Comprehensive Health Center

DH: District Hospital

PH: Provincial Hospital

NGOs: Non-Governmental Organization

TBAs: Traditional Birth Attendants

OR: Odds Ratio

SHC: Sub-Health Center

MMR: Maternal Mortality Ratio

WHO: World Health Organization

Glossary:

MMR (*Maternal Mortality Ratio*): Number of maternal deaths per 100 000 live births during a specified time period , usually one year (1)

Skilled Provider: The skilled provider also known as SBA (Skilled Birth Attendant) is a competent maternal and newborn health (MNH) professional who is educated, trained and regulated according to the national and international standards mainly responsible for;

- Provide and promote evidence-based, human-rights-based, quality, sociocultural sensitive and dignified care to women and newborns;
- Facilitate physiological processes during childbearing to provide the women with a positive childbirth experience.
- Identify and manage or refer to women and/or newborns with complications.

In addition to that as the team of MNH professional, the (midwives, nurses, obstetricians, pediatricians, and anesthetists) are responsible for performing all single functions of EmONC (2).

ANC (*Antenatal Care*): The ANC is the care that pregnant women receives before delivery from the health professionals to prevent, detect, or manage three main health problems during the pregnancy (3);

- complications of pregnancy
- pre-existing conditions that worsen during pregnancy
- effects of unhealthy lifestyles

EmONC (*Emergency Obstetric and Neonatal care*): There are two types of emergency obstetric care (4)

1. Basic Emergency Obstetric care, mainly contains:

- Administering antibiotics, oxytocic, and anticonvulsants
- Manually removing the placenta;
- Removing retained uterine products
- Assisting with vaginal delivery, with vacuum extractor or forceps
- Performing newborn resuscitation.

2. ***The Comprehensive Emergency Obstetric Care:*** contains all the above function plus obstetric surgery (Caesarean section, in particular), safe blood transfusion and care to sick and underweight newborn (4)

Abstract:

Introduction: Afghanistan is one of the countries with the highest Maternal Mortality Ratio of (365/100,000 live births) globally. Majority of deaths can be prevented if all deliveries are assessed by skilled providers. Nonetheless, still almost half of the Afghan women (41%) have nonskilled delivery. *Therefore, this study aimed to explore the factors influencing the skilled delivery care utilization in Afghanistan.*

Method: This study consists of a secondary data analysis and literature review. In this study, the two nationally representative datasets of AHS (Afghanistan Household Survey 2018) and health system assessment BSC (Balance Score Card 2018) were used for further analysis. The literature review mainly contains evidence concerning the utilization of skilled delivery care in Afghanistan.

Study sample: From the AHS dataset, total (8,950) of 15-49-year-old women who had a livebirth two years preceding to the survey, and from the BSC information related to the quality of all 34 provinces included for further analysis.

Findings: The result of quantitative analysis suggests, the women's education, wealth, and residence area are associated with the utilization of skilled delivery care. Additionally, the role of the person who decides the location of delivery found to be crucial. The health system performance also had a strong association with the utilization of skilled delivery care compared to the socioeconomic factors.

Conclusion: The utilization of delivery care is influenced by different factors which should be addressed in an integrated manner by introducing evidence-based policies and implementing context-specific interventions.

Key Words: Skilled, Delivery care, Birth Attendance, Determinant, Utilization, Afghanistan

World Count: 12,890 (From Background to Recommendation, excluding tables and figures)

Introduction:

I received my Bachelor degree in Public Health from Kabul Medical University (Faculty of Public Health), Afghanistan. After graduation, I joined a research team as an Assistant Researcher. The research team was working on the assessment of referral system in Afghanistan, and as part of the research, the Focus Group Discussions (FGDs) and In-depth interviews were conducted with the community asking them about the problem they faced while being referred from one facility to other. During this research, I heard many sad stories and challenges that the families and women were facing while childbearing to access the care. This research project made me think about the problem critically and try to gather information regarding maternal health in Afghanistan.

After that, I continued my carrier with the Ministry of Public Health (Technical Assistant) in Health System Strengthening and Aid Coordination Directorate. Working with the ministry, I got the opportunity to be involved in the most crucial health-related discussion in Afghanistan and look at the health system and public health from a broader perspective. One of the main problems and priority for the ministry of public of Afghanistan is maternal health, mainly an alarmingly high maternal mortality, which is among the highest in the world. Therefore, most of the national and international organizations work to improve maternal health and decrease the maternal mortality, and as part of the movements, the ministry and its partner tried to make sure that all women have access to skilled delivery care while childbearing by training more midwives and establishing primary health care facilities.

Improvements were made, but still, the challenge remains as of the concern for the public health society in Afghanistan. Because still, the (41%) of deliveries are happening at homes with no assistance of a skilled provider. The skilled delivery care is one of the most effective interventions in preventing maternal deaths. Therefore, .my primary motivation for this study was to identify the main bottlenecks at different levels (community, context, and health system) which has revoked women from having a skilled delivery and provide the recommendation which can be useful in increasing the utilization of delivery care in Afghanistan

1. Background Information (Chapter 1):

1.1. Geography:

Afghanistan is located in Central Asia, with 647,500 square kilometers of land, and Kabul is the capital of the country. Afghanistan shares a border with the other six countries (Pakistan, Iran, Turkmenistan, Uzbekistan, Tajikistan, and China), the map of the country is displayed in (*Annex 1*) (5). Afghanistan is dominated by rugged mountain ranges which run from northeast to the southwest. The climate of Afghanistan is generally of the arid or semi-arid steppe type, featuring cold winters and dry, hot summers (5)

1.2. Demographics:

Afghanistan has a total of 29.1 million populations, of which 14.8 million are male, and 14.3 million are female. The 20.7 million people are living in rural areas, 6.9 million in the urban area, and 1.5 million live as Kuchi (Nomads) (6). The unique fact about Afghan populations is that it has a very young structure. Almost (48%) of the population is under the age of 15. The average household size in Afghanistan is 7.7 persons, and half of the population lives in households with more than nine people (6).

1.3. Economy:

Afghanistan is a low-income country with a 600USD GDP (Gross Domestic Product) per capita. Meanwhile, the (55%) of the population is living under the poverty line (6). Agriculture, farming, and animal husbandry are the backbones of Afghanistan's economy. Agriculture is the source of income for (44%) of households and is also the leading sector for (44%) of employment (6).

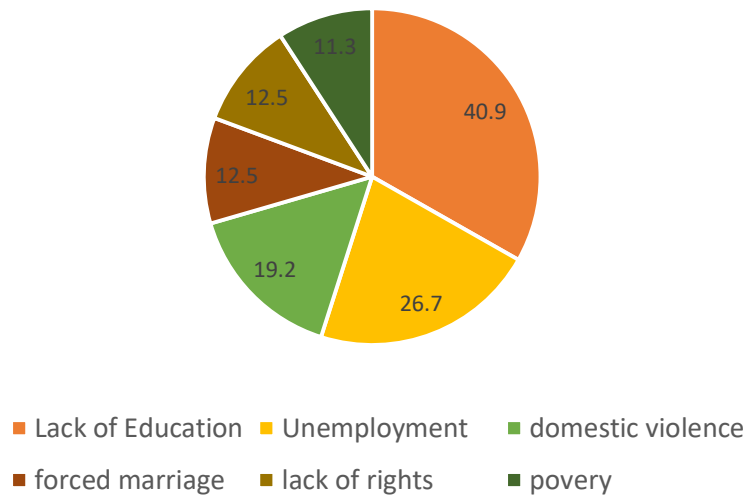
1.4. Education:

Afghanistan is among the countries that perform very poor in providing educational opportunities to the population. The literacy rate in Afghanistan is (65%), and there are around 9.9 million illiterate persons aged 15 and older in Afghanistan (6 million women and 3.9 million men) (6). Data suggest, 1.9 million primary-school-age children and 1.8 million secondary-school age children have no access to the educational opportunity due to many different reasons (6).

1.5. Gender:

Evidence shows a disadvantage position and lack of opportunities for girls and women in Afghanistan. Women in Afghanistan are facing many human right cases of abuse. The country is ranked as the latest favorable (168th) in gender equality index globally (7). As reported by a nationally representative survey, in 2018 the main challenges faced by women are illiteracy and lack of educational opportunities (41%) followed by unemployment (26.7%) and domestic violence (19.2%), the data presented in (8) (**Figure 1**)

The most important challenges faced by Afghan Women in 2018



Figure(1) Adopted from the report of "A survey of Afghan people 2018"

1.6. Political condition and security:

The more than three decades of continuous war in Afghanistan has negatively affected the different aspect of Afghan's life. After the collapse of the Taliban in 2001 and the deployment of the International Security Assistance Forces (ISAF), the county still suffers severe insecurity and instability. Between (2016-2017), the number of injuries and deaths has increased five-fold. The conflict internally displaced more than 1.1 million Afghans in 2017 (6). The return of almost 1.7 million documented and undocumented Afghan refugees, primarily from Pakistan and Iran during 2016-2017 remains a massive pressure on the country's economy and institutions (6).

1.7. Health Systems:

After the collapse of Taliban in 2001 the health system of Afghanistan went through reform, and the Ministry of Public Health (MoPH) with the support of international committee introduced two health packages, Basic Package of Health Services (BPHS) and Essential Package of Hospital Services (EPHS). Additionally, the MoPH introduce a contracting modality to permit the NGOs to implement the BPHS and EPHS all over the country (9). The main elements of BPHS are; Maternal and Newborn Health, Maternal and Newborn Health, Child Health and Immunization, Public Nutrition, Communicable Disease Treatment, and Control, Mental Health, Disability Services, and Regular Supply of Essential Drugs (10). The formal health care starts form Health Post (HP) and ends in Regional Hospital (RH), which is a part of EPHS. The (**Figure 2**) presents the structure of service delivery and the link between health facilities at different levels.

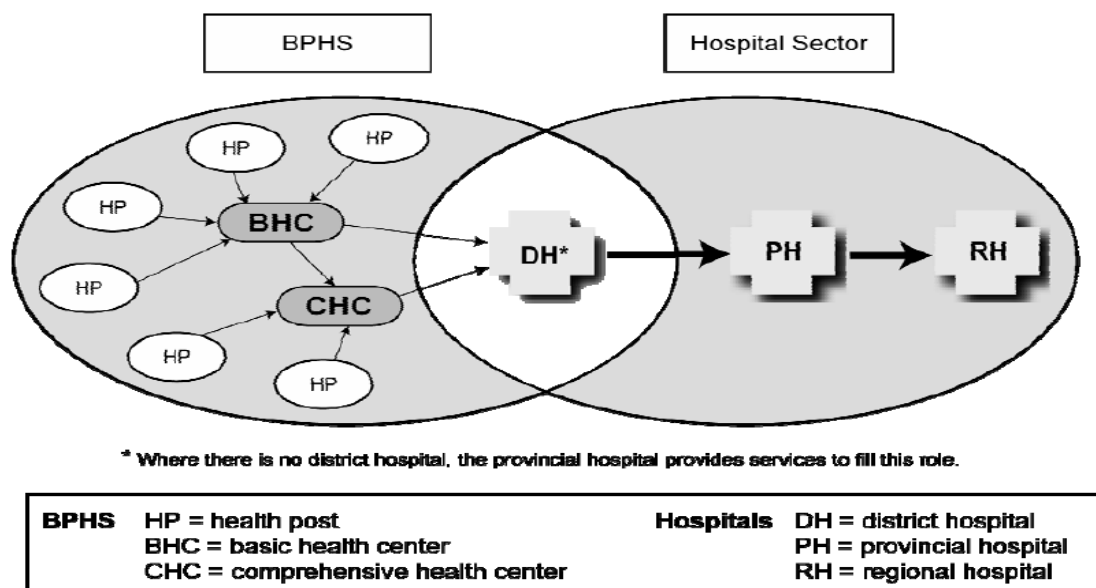


Figure 2 Afghanistan service delivery structure, taken from BPHS policy

Since then, progress has been made in the availability of services and the number of health staff and health facilities. The number of staff present in (**table 1**) and the number of facilities presented in (**table 2**) (11).

Table (1) the number of staff at the national level	
Health Staff	Number
Number of physicians registered with MoPH	2,941
Number of nurses registered with MoPH	5,057
Number of midwives registered with MoPH	2,785

Table (2) Number of BPHS and EPHS facilities at national level			
BPHS facilities at national level		EPHS facilities at national level	
Type of BPHS facility	Number	Type of EPHS facility	Number
Sub-center	986	National referral hospitals	26
Basic Health Centre	873	Regional hospitals	6
Comprehensive Health Centre	432	Provincial hospitals	28
District hospital	84	District hospitals	79
Provincial hospital	27	No. of hospital beds/10,000 population	4
Regional hospital	9		
Special hospital	30		
Mobile clinic	242		
Other	452		
Total health facilities	3,135		
Health posts	17,297		

1.8.RMNCAH (2017-20210) policy:

The Reproductive, Maternal, Newborns, Children and Adolescent Health (RMNCA) policy was introduced to address the priority areas of the health system of Afghanistan and reduce the mortality of the mentioned five groups (12). The policy introduces the following main approaches for reducing maternal mortality (12):

- Birth spacing and family planning
- Antenatal care (ANC) for mothers
- Safe delivery and Birth practices
- Newborn and postpartum care

The data on utilization of above four main care shows; in 2018 (63.8%) of women had at least one ANC and only (20.9%) had all four recommended ANCs. The (59%) of women reported having skilled delivery. The (18.9%) of reproductive age women used family palling methods, and (59.7%) of women received no postpartum care (13)

2. Methodology (Chapter 2)

2.1. Problem Statement:

Every day, around 830 women die because of preventable pregnancy and childbirth-related causes globally (14). In 2015, 30300 women lost their lives due to pregnancy-related complications. Around (99%) of maternal deaths (approximately 302,000) occurred in developing regions (**Figure 3**). However, there is a (44%) reduction in Maternal Mortality Ratio (MMR) from 385/100,000 live births in 1990 to 286/100,000 live births in 2015 (15). Despite the progress, still long way to go towards achieving the Sustainable Developing Goals (SDG) of 70 or less maternal death per 100,000 live births by 2030 and protecting all women from preventable deaths, particularly in conflicted and fragile settings which are counted for (60%) of maternal deaths (16).

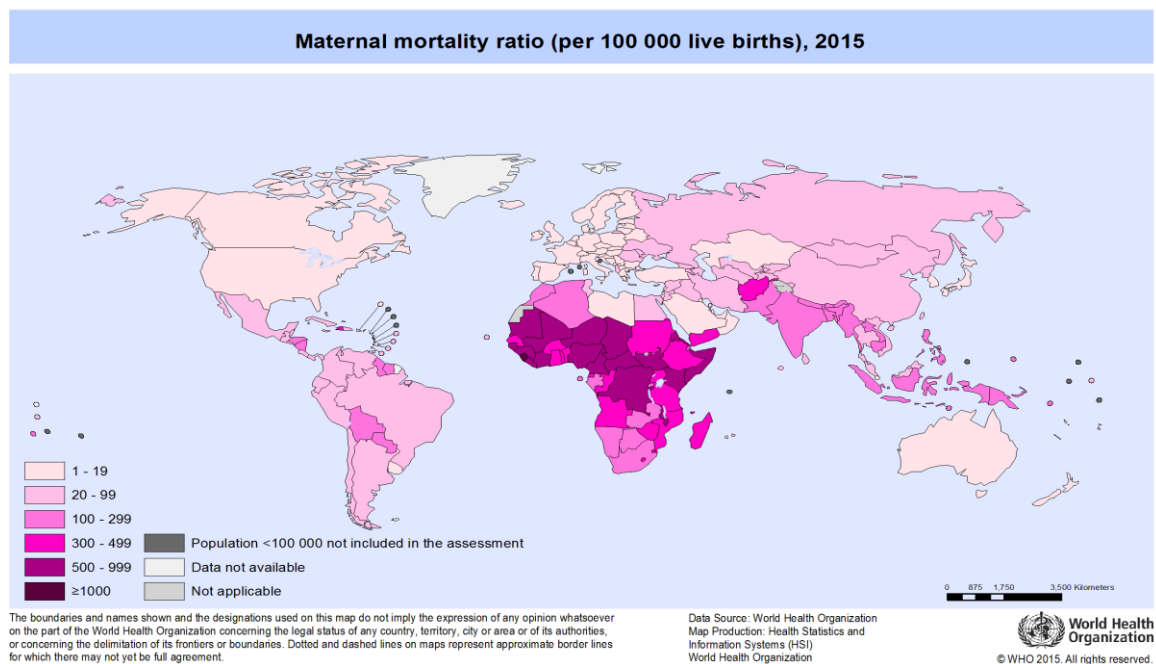
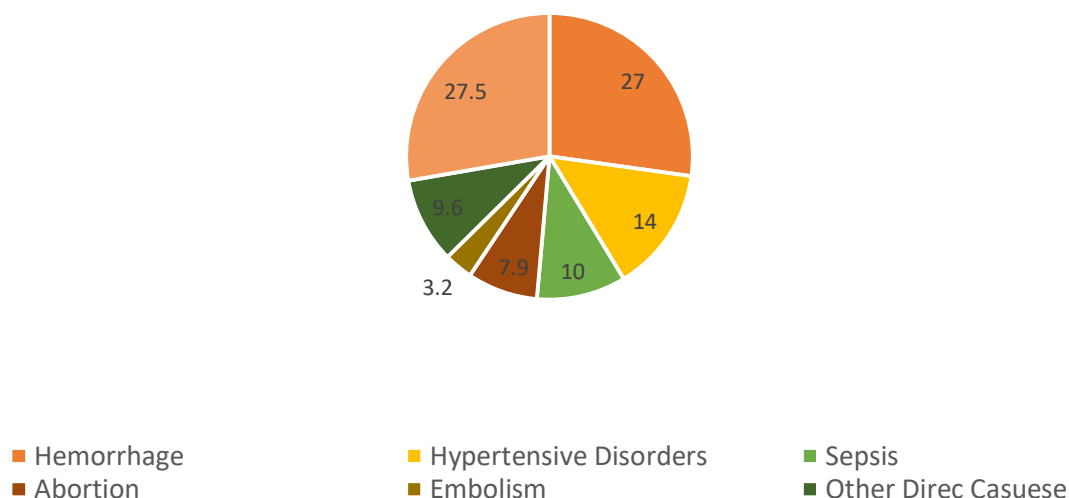


Figure (3) MMR at global level
(http://gamapserver.who.int/gho/interactive_charts/mdg5_mm/atlas.html)

Worldwide, (73%) of maternal deaths occurred due to direct causes in 2015 (17). Hemorrhage is the leading cause of maternal deaths, followed by hypertensive disorders and sepsis. Abortion was also counted for almost (8%) of deaths globally in 2015 (17). The distribution of causes differs per region. The hemorrhage was the leading cause in Northern- Africa while accounted for only 16% in developed regions. The hypertensive disorders were the most common ones in Latin America and the Caribbean, while, most of the deaths due to sepsis occurred in Southern Asia (**Figure 4**) (17).

Global Causes of Maternal Deaths

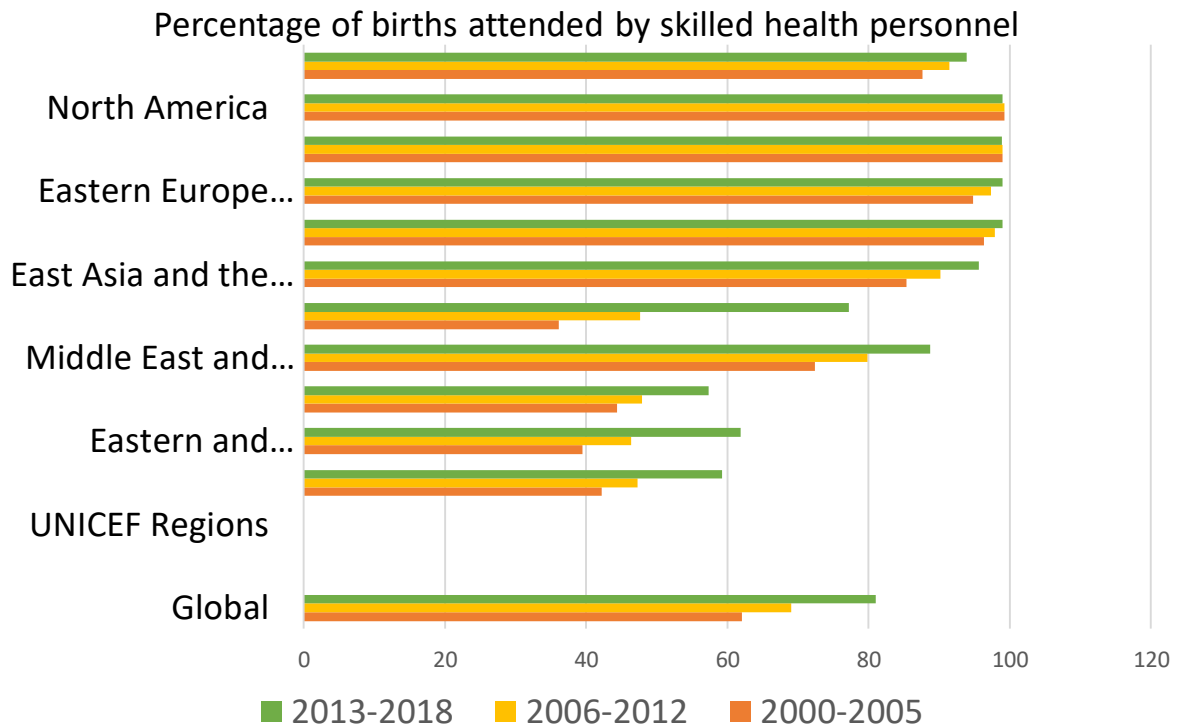


Figure(4)Adopted from Global Causes of maternal deaths by WHO

Most of the maternal death due to pregnancy complications can be prevented if women have access to quality care while childbearing. "A Skilled birth care refers to the care provided to a woman and her newborn during pregnancy, childbirth and immediately after birth by an accredited and competent health care provider who has at her/ his disposal the necessary equipment and the support of a functioning health system" (18). Skilled delivery Care one is one of the most cost-effective interventions which not only prevents maternal deaths but also prevents neonatal deaths and stillbirths (19). The provision of quality and effective skilled delivery care can prevent an estimated 113,000 maternal deaths, 531000 stillbirths, and 1.3 million neonatal deaths annually by 2020 with an investment of only 0.9USD per person worldwide (16). The provision of Maternal Health services especially skilled delivery care and ANC were also mentioned as the vital approach to safe motherhood initiative by WHO (19).

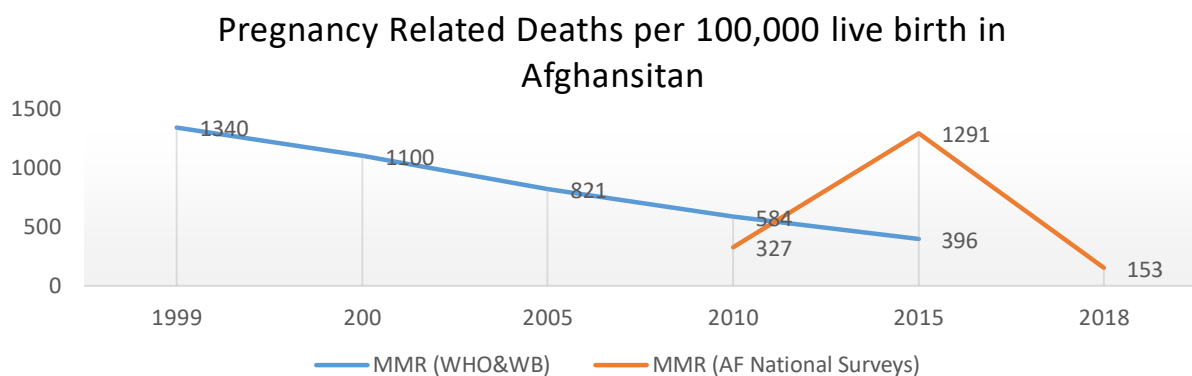
Globally, almost 80 percent of live births were assisted by skilled birth personals between 2013 -2018, which shows significant progress from (62%) between 2000 to 2005. However, the progress varies among regions, and still, there is inequality within different parts of the world.

Skilled delivery is only (59%) in sub-Saharan Africa, where maternal mortality is the highest and is the highest in the developed region with the lowest MMR (20) (*Figure 5*).



Figure(5)Adopted from UNICEF/WHO joint database on SDG 3.1.2 Skilled Attendance at Birth

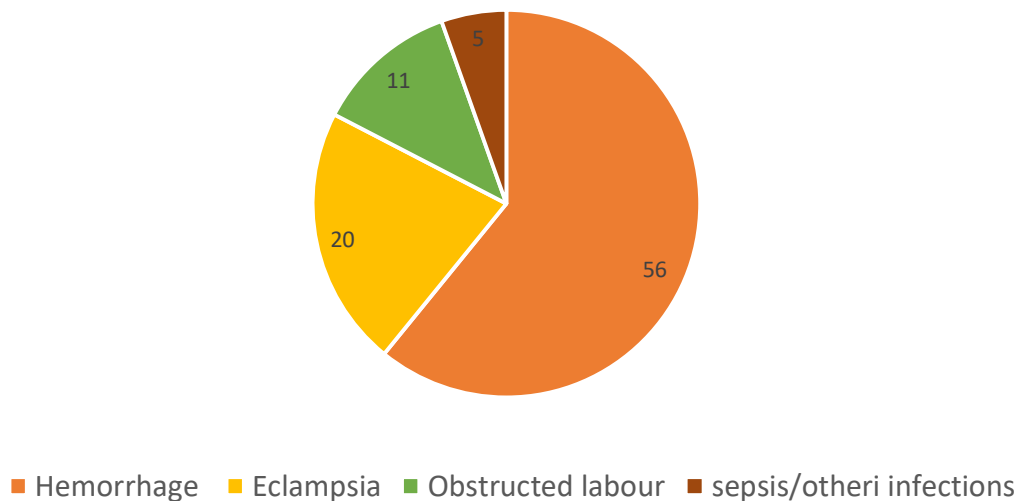
Afghanistan is also one of those conflicted settings, which is among the three countries, including (Yemen and Haiti) with the highest MMR of 396/100,000 live births after Sub-Saharan Africa in 2015 (15). Comparing to the neighboring counties such as Pakistan with the MMR of 178/100,000 live births, Iran 25/100,000 live births, and Tajikistan 32/ 10,000 live births, Afghanistan remains as a country with a very high MMR in the region (15). However, significant discrepancies exist between county national survey estimates and UN modeled data (*Figure 6*) (21) (13). The reasons for under or overestimation provided by the surveys included issues related to data quality and sample size (22) (13).



Figure(6)Comparison of MMR per national surveys data and UN data

After introducing BPHS Services (BPHS), the reproductive and maternal health services have also been given priority and progress made in term of maternal service provision and service utilization since then. As UNICEF Multi indicator survey in 2003 reported, 88.5 % of delivery took place at home (23). Nonetheless, as per AHS 2018, around (41) % of delivery took place at home (13). Indeed, this is an indication of the progress made within these years but, one should consider the fact that still almost half of the women have no access or not using skilled birth care in the country while the high MMR remains an issue. Meanwhile, the leading causes of maternal deaths in Afghanistan are direct causes which can be prevented by having access to skilled delivery care (**Figure 7**) (24).

Causes of Maternal Deaths in Afghanistan



Figure(7)Adopted from: <http://www.emro.who.int/afg/programmes/maternal-child-health.html>

Existing literature suggests that socio-economic factors, issue related to reaching the facility, and health system-related factor contribute to the utilization of skilled delivery care in the country. Taking in to account the combined effect of different factors, further analysis of the problem (using the latest household survey data) from different aspects such as family, community and health system and knowing to what extent they contribute to skilled delivery care utilization will help in addressing the root causes of the problem. This study should hopefully provide the most recent information to inform future policies and interventions to further increase the provision and utilization of skilled birth delivery in the country

2.2. Study Objectives:

To identify and analyze the determinants of skilled delivery care utilization in Afghanistan.

Specific Objectives:

1. To identify socioeconomic and cultural factors affect the decision to seek skilled delivery care and quantify their effect on utilization.
2. To identify factors affect reaching the facility for skilled delivery care.
3. To quantify the effect of factors related to the quality of care on skilled delivery care utilization.
4. To assess the quality of delivery care from both (supply and demand) sides.
5. To provide the recommendations to the Ministry of Public Health, policymakers and those who are involved in designing the intervention to address the issues that contribute to the utilization of skilled delivery in the county to improve the provision and utilization of skilled delivery care in the country.

2.3. Conceptual Framework:

Three Delays Model was used for this analysis (*Figure 8*). Because, this model provides the opportunity to not only look at the problem from supply and demand side or (interaction between provider and patients) but analyze it from a broad aspect which includes factors that can have direct or indirect influence on the problem such as factors related socio-economy/cultural, infrastructure, and quality of care. This model not only considers the critical role of patient and provider but also considers the role of other actors such as a spouse, family members, close relatives and society in general by looking at the socioeconomic and cultural factors (25).

Phase One (First) Delay: Delay in deciding to seek health care. This decision could be taken by the patient herself, husband, other family members or relatives family which can be influenced by factors related to problem and recognition of the problem, factors related to women's status, factors related to socio-economy (wealth, education, residency...etc.) and factors related to previous experience and perceived quality of care (25). (Figure 3)

Phase Two (Second) Delay: Delay in reaching the health facility. This could be determined by factors such as distance from the health facility, infrastructure, roads, and transportation-related issues (25). (Figure 3)

Phase Three (Third) Delay: Delay in receiving adequate care in the health facility. The relevant factors could be the number of staff available staff at the health facility, drugs and supply, competency and motivation of staff, referral system, and communication (25).

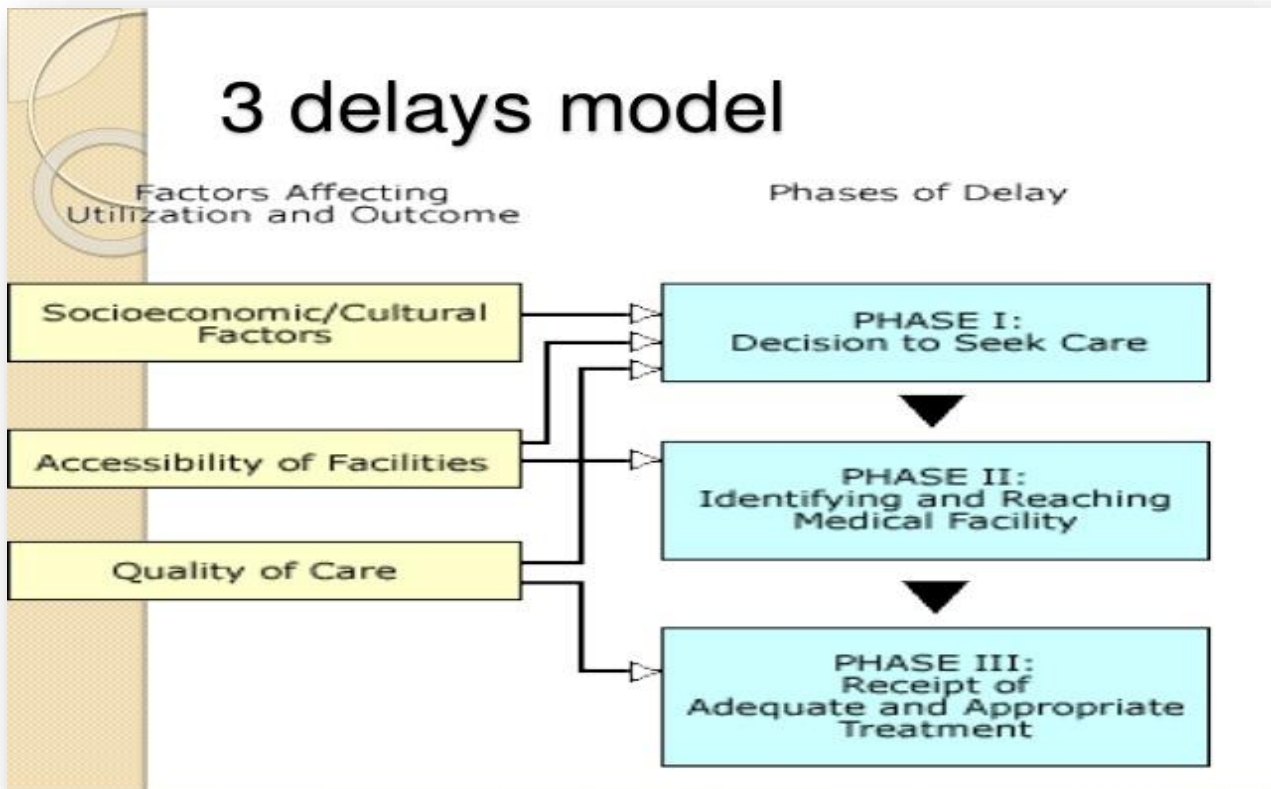


Figure (8) taken from <https://www.slideshare.net/zxieniorita/promoting-community-health>

2.4. Study Methods:

2.4.1. Secondary Data Analysis:

Secondary data analysis of an existing household and health facility surveys was used to quantify the effects of the socioeconomic factors on the utilization of skilled delivery care and also to indicate which quality indicator has the most effect on skilled delivery care utilization. This method enabled the analysis of data which had already been collected from all provinces of the country and gave a general view of the problem in the country with more in-depth analysis of contributing factors to this particular problem. Two main datasets were used for this analysis Afghanistan Household Survey (2018) and Balanced Scorecard (2018), which are discussed below:

The Afghanistan Health Survey 2018 (AHS): The AHS dataset was used to provide the answer to the first objective of the study. The AHS 2018 is a National Household Survey with 23,460 households, conducted in 34 provinces of Afghanistan in 2018. The survey mainly included two parts, the first one was discussing general household and demographic characteristics of the population, and the second part contained the information related to women and children health. The two stages of cluster sampling were used for this survey. At first, the 30 clusters per province were selected randomly based of the Central Statistics Organization (CSO)'s enumeration areas and then 23 households were randomly selected per each cluster which means 690 households were included per province.

The Balanced Score Card 2018 (BSC): As part of objective number three of the study aimed to identify which quality indicators have the most effect on skilled delivery care utilization. The BSC (Balanced Score Card) was used for that. The BSC is the third party monitoring which was conducted in parallel to the AHS, whereby, a repetitive selection of 25 health facilities per province (34 provinces in total) was sampled in 2018 to assess the performance of health providers across the country delivering the BPHS. The Balanced Score Card assessed the performance of provinces per score they receive which ranges from 0 to 100 with an overall mean for all scores each province received which is the same like sum up of the scores. The BPHS BSC domains summarize the health services from the following six perspectives: 1) Client and Community; 2) Human Resources; 3) Physical Capacity; 4) Quality of Service Provision; 5) Management Systems; 6) Overall Mission and in total has 23 indicators to measure these six domains (*Annex 2*)

Operationalized Concepts: Based on the study objectives and according to the framework the following concepts were defined and operationalized to be used for logistic regression (Table3)

Table (3) The operationalize concepts for the regression model	
The Three Delay Concepts	Operationalized Definitions of Concepts for regression model
1. Factors affecting the Outcome/Utilization	We are looking at the utilization of skilled delivery care by 12-49 years old woman in her latest delivery, who had a livebirth two years preceding to the survey
Socio-Economic Factors	<ol style="list-style-type: none"> 1. Age (15-49 years old women) 2. Education (the education of woman categorized as no education, primary, secondary, and higher-more than secondary) 3. Wealth (The wealth status of the household to which woman belong. Based on the information the heath of the household provided the women were grouped to one of the wealth quintiles from the poorest to the) 4. Residency (Urban, Rural) 5. Decision Making (person who decided on the location of delivery) 6. Head of Household Education
Reaching Facility	No indicator for regression only one question asked from women who had not skilled delivery (put under descriptive statistics)
Quality of care	<p>The indicators related to the quality of care selected from BSC:</p> <ol style="list-style-type: none"> 1. Perceived Quality (Score per province) 2. Community Involvement (Score per province) 3. Health Worker Satisfaction (Score Per Province) 4. Health Worker Motivation (Score per province) 5. Salary (Score per Province) 6. Staff Training (Score per Province) 7. Clinical Guidelines (Score per Province) 8. Equipment Functionality (Score per Province) 9. Vaccines and Pharmaceuticals (Score per Province) 10. Physical Assessment of the Patient (Score per Province) 11. Time spent with Patient (Score per Province) 12. Overall Mean of all quality indicators (Mean of all score per indicators at the provincial level)
2. Three Phases	

Phase One-Decision Making	N/A (The information on how she made the decision and reason behind it was not available)
Phase 2- Reaching Facility	N/A (The information were not available)
Phase 3-Receptit on the appropriate treatment	N/A (we do not know to which facility did woman go and weather she received appropriate treatment or not)

2.4.2. Data Analysis:

Afghanistan Household Survey: Out of all women (21,096) interviewed from 33 provinces of the country in AHS 2018 survey, only ever-married women 12-49 years of age with the live birth in two years preceding to the survey (8,509) were included in this analysis. In order to measure the association between socioeconomic and health system-related factors of these women with the desired outcome of the study (The odds of the utilization of skilled delivery care). The dependent variable of the study was skilled delivery care, which is a binary variable with Yes/NO outcome (a woman either used the skilled delivery care or not). The six main independent variables which were assumed to affect the utilization for the utilization of skilled delivery care were selected from AHS 2018 dataset (**Table 4**). The data were analyzed through means of logistic regression models, taking into account the multi-stage stratified sampling method. First, bivariate regression analysis was performed considering the survey nature of the AHS data, to see the association of each variable with the utilization of skilled delivery care. Secondly, the multivariate analysis was done only for those variables which had a significant association with the utilization of skilled delivery care in bivariate analysis to see if the association was still significant and also to measure the effect of each on skilled delivery care utilization.

Balanced Score Card: The BSC 2018 data were merged with the AHS 2018, using provincial averages to measure the association of health system-related factor with skilled delivery care utilization in Afghanistan. This survey measured the performance of each province based on the quality indicators. The 12 out of 23 indicators which were considered to be important of delivery care utilization were added to the regression model. These 12 indicators are presented in (**Table 4**). Before doing the primary analysis, a separate dataset was developed for quality indicators based on the province. All continuous indicators containing quality index score per each province were converted to categorical variables from continuous variables. Instead of including the score of each province the range of scores were included in our analysis and all provinces were categorized based on the range of score, for example, all of the provinces scored from 20-30 were included in one category, the provinces scored 30-40 were placed in the second category and so on. At the first stage, bivariate logistic regression was performed to see the association of each indicator with the utilization of skilled delivery care. Secondly, the indicators with a significant association were added to the multivariate regression model along with other socio-economic variables to control for confounders and measure the association of each on SBA utilization.

Ethical Considerations: Both (AHS and BSC) assessments were done after getting the ethical approval from IRB (Independent Review Board) of Afghanistan. Participation in the study was entirely voluntary and the information was sought only after getting the consent to the participants. The datasets used for this analysis did not contain any personal details and information, the privacy and all research ethical principles were strictly followed by the researcher.

2.4.3. Literature Review:

A review of the existing literature was conducted to give a general overview of what is already known about the determinants of skilled delivery care and to provide the answer to the parts of the objective which could not be answered through secondary analysis. These objectives are mainly objective number two (accessing the facility), and a part of the objective number (the perceived quality).

Search Strategy: literature included in this review are published articles, and gray literature such as reports, factsheets, and annual statistics. The search engines used for peer-reviewed articles are Google Scholar, PubMed, Vu Library. Besides, WHO, World Bank, UNICEF, and MoPH websites were used for reports, statistics, and factsheets. The search language was only limited to English, and the time-bound for articles included in this literature was between 2000-2019 due to the limited number of articles published recently about skilled delivery care in Afghanistan. The articles from neighboring countries such as Pakistan Tajikistan and Iran (due to social and cultural similarities with Afghanistan) and systematic review which were done at the global level specifically for other LMICs or developing countries were also included in this review.

Key Words Used: Afghanistan, *Maternal Health* , *Maternal Services* , Skilled Birth Attendance, skilled birth care, skilled delivery care , Institutional Delivery , Delivery Car , Obstetric Care , Skilled Providers , Social Determinates, Socio-Economic Factors , utilization, Health Seeking, wealth, education, Decision , Gender, culture, religion, security, physical access, Accessing / Accessibility ,barriers, Quality, delivery care, Obstetric Care, EmOC, Perceived Quality, Patient Satisfaction, Staff Behavior , Pakistan , Tajikistan, Iran , Developing Countries, LMICs, Systematic Reviews

3. Results and Findings (Chapter 3)

3.1.Literature Review

3.1.1. Socio-economic Factor-Phase One:

The socio-economic factors reported by previous studies as the determinants of skilled delivery will be discussed in this chapter.

Education: The association of woman's education with the utilization of skilled delivery care was reported by many studies in Afghanistan (26) (27) (28) (29). As reported by a study, the chance of having a skilled birth delivery increases by the education level of the women. The likelihood of having a skilled delivery was 15 times (95% CI= 6.39–27.37; $p= 0.001$) higher in women from a higher level of education (more than secondary) comparing to women with no education (30). The data from 2012 also indicated that the utilization of skilled delivery care was (64.1%) higher in women with primary education than with no education and (71.7%) lower than those with higher or secondary education (29). Evidence from other low and middle-income countries, highlights the importance of education for skilled delivery care. A study done in Pakistan reported that educated mothers (with a primary or higher level of education) were less likely to deliver at home (which is mostly unskilled in Pakistan) comparing to those with no education. Also, women with educated husbands were less likely to deliver at home (31) This could be because, educated husbands are more open to modern medicine, aware of skilled attendants and more able to negotiate and seek better health care as needed for the women (32).

Wealth: The wealth status of the household is reported as determinants of Skilled delivery care in Afghanistan by different studies (26) (27) (29). The evidence from Afghanistan suggests that women from richest quintile are 11 times (95% CI, 7.26–16.70; $p<.001$) more likely to have a skilled delivery compared to the women from the poorest wealth quintile (30). The association of household wealth with skilled delivery was also reported by a study from nine provinces of Afghanistan. The skilled delivery was 79% (CI=1.22-2.63; $P=0.03$) higher among women of the wealthiest quintile comparing to women from poor quintile (26). Another study also mentioned the wealth as the strongest determinants of skilled delivery comparing to other contributing factors base on their analysis (27). Evidence from Pakistan shows a gap in rates of institutional delivery among different subgroups, which are mainly due to socio-economic disparities. For example, the institutional delivery was 1.4 times higher (95% CI=1.18-1.69; $P=0.000$) in high wealth quintile than in poorest wealth quintiles (33). At the global level, the analysis of National Household Surveys forms 80 LMICs found, in all regions of the world the Institutional skilled deliveries were more than 80% in richest quintile and facility non-skilled delivery were also common among the rural area and poor people (34).

Residency: Studies previously done in Afghanistan reported, the inequality in the utilization of services by women's residency area. A nationally representative study reported that (65%) of women in the urban area utilized institutional delivery care, while, only (24%) of rural women utilized these services, and all the differences were statistically significant ($p < 0.001$) (35). Another study conducted in the capital city (Kabul) and a rural district of Badakhshan province (Ragh) reported a considerable variation among these two settings. In Kabul, (82%) (5,594 out of 6,789) reported having delivery assisted by a skilled provider, while in Ragh district only (3%) (381 out of 11,366) women (36). Meanwhile, the reasons for not having a skilled delivery were different by residency area, the reason given by women from Kabul was not considering it essential while in Badakhshan it was a transportation problem (36).

Decision Making: Evidence from Afghanistan show that women have less role in deciding whether to have a skilled delivery. As reported by a survey, more than half (54.8%) of the decision on seeking the delivery care were made by husbands (31.2%) were made by women themselves and other actors such as mother-in-law, father-in-law, friends and community health workers were involved in the decision regarding place of delivery (26). A survey conducted in three provinces of the country reported that mothers-in-law and husbands play a crucial role in deciding whether women use Community Midwives program (CMs) during delivery, and were generally supporting the program (37). Another study which was done in Kabul city, and a rural area of Ghazni province found; usually, mothers-in-law and husbands do not support women to seek delivery care even in case of complications, because a pregnant woman is expected to be strong and bear the pain (38). However, the result of this study may not be generalizable due to the qualitative nature of the study and survey setting (done only in two health facilities). A National survey in Tajikistan reported that women who had control over financial matters of the family such as buying essential items or borrowing money from friends had (4.8%) more chance of a delivery attended by a skilled provided (39).

Intimate Partner Violence (IPV): In Afghanistan, as per latest data, (56%) of ever-married women experienced emotional, physical or sexual violence from their partner and (52%) reported experiencing one of these twelve months before the study (21). Nevertheless, (61%) of ever-married women who experienced violence never sought care/ help, and in most of the cases have not even spoken about (21). Meanwhile, none of the studies in Afghanistan discussed the IPV in its association with maternal health services utilization or skilled delivery care. Evidence, such as a systematic review and meta-analysis indicated that women with the experience of IPV mainly physical violence had 20% (Adjusted OR = 0.8, 95% CI = 0.69, 0.92) lower chance of using skilled delivery care comparing to those who did not experience IPV (40). This association could be because of the impact of IPV on women's' decision making, freedom, and financial independence (40). Lack of these factors, on the other hand, may also expose women to IPV in a similar context like Afghanistan where men are given more power and authority by society and women are more vulnerable and dependent to the men of the family (6).

Culture: Religious beliefs and cultural practices influence the norms, values, and practices surrounding childbearing and service utilization (32). Women of some cultures and societies may avoid facility delivery due to culture, specific requirements related to the delivery position, or other issues of childbirth such as warmth or handling of the Placenta (32). Afghan society has its unique norms, perceptions, and values. However, the cultural practices and the pathways through which it affects the health and health-seeking behavior is not well documented in Afghanistan. In regarding maternal health and skilled delivery care utilization also not much is known. Though, a study from Ghazni province, found that when the pregnant woman faces the complication uses the traditional remedies at first, and only if the traditional remedies fail, the family seek health care which causes the delay in contacting the healthcare. (38). Another study from Badakhshan province informed that with no exception, all women were not seeking healthcare even in a case of complications and emergencies without the men of the family, called (Mahram) (41). The study from Pakistan (the country that shares almost the same cultural values and religion with Afghanistan) found a firm belief of women on "Taweeze" (Amulet with Quranic verses written on) which they were taking form faith healers to have a normal delivery and prevent the stillbirth (42). They also believed, the adverse outcome of delivery such as blue or stillbirth baby is caused by "Saya" (Evil Spirit) (42). Though, the result of all studies mentioned above may not necessarily present the beliefs and perception of the whole population.

3.1.2. Accessibility-Phase Two:

In Afghanistan, the data on overall accessibility of care shows; (50,6%) of people can access the services within 30 minutes and (90.6%) can access within two hours, the accessibility is more limited for poorer and rural respondents than in urban and wealthier (13).

Transport and infrastructure: A study on determinants of skilled delivery in nine provinces in Afghanistan reported that the lack of transportation and transportation costs were reported by (58.5%) and (43.5%) of respondents; respectively as a barrier to seeking delivery care (26). Infrastructure and transportation were also found to be a barrier in Kandahar province, such as quoted by the study a woman said, "The problem is transportation. Vehicles break down on the way as the road is very bad" (43). A study evaluating the effectiveness of Community Midwives (CMs) programs found, the majority of women knew the importance of skilled delivery done by community midwives but, in practice were delivering at home and the reason for not using CMS program were geographical distance, poor roads and lack of transportation (37). The distance from the health facility and lack of transportation were also contributing in the delay to seeking health care in Badakhshan province, as women were taken to health facility only if they develop the complications (41). Women from a rural area of Ghazni province also faced the same challenges, and the situation was even worse during the night when there was no transportation and women were unable to seek care even in case of complications (38).

Security: Not much is known about the impact of security on health and service utilization in Afghanistan because most of the study do not collect data from insecure settings (44). The study conducted by MSF (Doctors Without Borders) in different provinces found that besides road and infrastructure problems e, the insecurity has also negatively affected the access to healthcare (45). Majority of the respondent (71%; 545 out of 759) reported experiencing a barrier on the way to reach the health facility, and the insecurity was the most common reason given by (60.6 %; 330) of the respondent as the barrier to reaching the facility (45).

3.1.3. Quality of Care-Phase Three:

Provision of delivery Services: As per the latest national assessment, which was done in 2014, (97%) of facilities were providing delivery services. While only (66%) of facilities were providing delivery services 24/7. For the provision of EmONC (Emergency Obstetric and Newborn Care), only 66% of facilities had an SBA on call for 24/7 and the percentage was even low for the District Hospitals (DHS) (57%) and Basic Health Centers (BHC) and Sub Health Centers (SHC) (44%).The EmOC (Instrumental delivery was also performed by 66% of facilities three months before the study, which varies by facility type. Totally, (95%) Of Provincial (PH) and Regional (RH) hospitals and (16%) of DHs (The ones with less than four deliveries per day) and Comprehensive Health Centers (CHCs) reported provision of these services. Also, (86%) of facilities reported performing a blood transfusion in the past three months before the survey which was again common in PH (97%) and it was (75%) in DHS and CHC None of the BHC and SHC were providing any of these EmOC services. The Cesarean surgery was also reported by (87%) of facilities which was highest (97%) in PH and RH and (78%) in DH and CHC. None of BHC and SHs were providing the C-section surgery (46). The table of services per type of facility is attached in (*Annex 3*).

Medicines and Equipment: The Injectable Oxytocin, Magnesium, and Gentamicin are the tree primary lifesaving medicines for delivery. The injectable Oxytocin was available in (91%) of facilities, Magnesium and Gentamicin were available in (81%) and (53%) of facilities, respectively (46). The Magnesium sulfate (MgSO₄) is vital for the management of Proclams/Eclampsia which was available in (81%) of facilities, and overall 82% of facilities had soap and handwashing in the delivery room, (85%) had running water in the delivery room (46)

Guidelines and Protocols: The guidelines and protocols for normal delivery care were available in (52%) of facilities. The (53%) of facilities had easily visible Charter of Patients' Rights on display (46). The guideline on EmONC was available in (47%) of facilities. The guidelines for pre_referral were available in (41%) of facilities (46).

Referral System: The data on referral system shows that overall, 95% of facilities were referring women or newborns from the low level to the higher level. However, only (27%) of facilities had functional ambulance even in private facilities, the percentage was low (20%) (46). The guidelines on pre-referral were available in (41%) of facilities. The referral slept was being provided by 81% of facilities and (42%) of facilities were sending a health worker to

accompany patients (46). The detailed information on the referral system by facility type is attached in (*Annex 4*).

Respectful Maternal Services: The latest data suggest only (18%) of maternal service providers received training on respectful maternal services. In (55%) of facilities, a companion was allowed with the women. Moreover, (34%) of women were told during the first stage of labor about what will happen during labor (46).

Clinical Practices: A study assessing skilled birth providers in Afghanistan reported, from a total of 82 doctors and 142 midwives from facilities that provide EmOC services, the doctor and midwives had a similar level of knowledge on 24 possible skills. In total, (76%) of midwives and (73%) of doctors had received training in at least 12 of 24 possible skills. However, the study concluded that more in job training was needed for the providers to address the three major causes of maternal deaths (Pre-eclampsia/eclampsia and postpartum hemorrhage) (47). Because of both midwives and doctors score (75%) or lower in the knowledge of postpartum hemorrhage and decision making in eclampsia scenario (47).

A national assessment of delivery care in 2016 reported; only 30% of women presented at the first stage of labor were asked about danger signs of obstetric complication. This finding means the skilled providers were missing a crucial part to identify the women need and do on-time referrals (46). Besides, the routine observation of maternal and labor progress considered to be essential for preventing further complication or providing appropriate care (46). Whereas only 64 % of observed women at the first stage of labor had their blood pressure checked, and 38% had fetal heartrate assessed (46). In addition to that, only (73%) of SBA at national level knew that Active Management of the Third Stage of Labor includes administration uterotonic and only 72% of women received this during third stage (46). Because, administrating uterotonic is a global indicator for tracking the quality of skilled birth attendance, and is highly recommended by WHO to prevent Post-Partum Hemorrhage (PPH)-defined as blood loss of 500 ml or more within 24 hours of birth, this a serious quality concern for Afghanistan (48).

The Pre-eclampsia/eclampsia occurs during pregnancy, delivery, or after that, and it should be managed before becoming severe to prevent maternal and newborn death. Meanwhile, the assessment shows that only 63% of women observed during the first stage of labor had their blood pressure, and only 32 during the second and third stage of labor (46). Another study also found that all observed facilities had blood pressure cuffs, stethoscopes, and anti-hypertensive drugs. No significant differences were observed in the proportion of doctors and midwives PE/E (82% Vs. 79%) who received in job training on the use of MgSO₄ to treat severe E/PE (49). However, the study indicated that the one-fifth of doctors and one-third of midwives were unable to identify the need of continuing anti-hypertensive drugs after delivery and they were also weak in deciding on use MgSO₄ instead of diazepam (49).

Cesarean-Section is one of the main strategies to prevent maternal mortality in low-income settings. The WHO recommended the C-section up to (10% -15%) to be effective in reducing Maternal Mortality (50). However, in Afghanistan in C-section is underused and was only (6.6%) in 2018 (13). Though C-section reported in 2015 was only 3% and an increase to 6.6% within only three years may raise further question (21). The low rate of C-section than

recommended could be due to lack of equipment and lack of staff to perform the procedures in facilities rather than tertiary hospitals. Because in 2016 (97%) of provincial, regional and specialty hospitals reported performing C-section, only (78%) of the district hospital and none of the Comprehensive or other health facilities (46). On the quality of C-section, an assessment found that in most of the cases, 87% (151 out of 173) C-Section was performed on emergency bases (51). Meanwhile, the timely diagnosis of complication and timely performing of the procedure prevent the C-section to become emergency (51). The other critical practice for the C-section is the active phase pantograph with a four-hour action lien which is recommended by WHO (in particular for low resource setting) to monitor the progress of labor (52). However, the study found, out of 170 observed C-section cases in only 28% of them the pantograph was used. The use was low in district hospice (24%) comparing to (39%) in the regional hospital (51).

Demand Side (Perceived) Quality of Care: The overall client satisfaction is low, and a reduction of 5% was observed in the overall score of client satisfaction (Median score 69.9%) in 2018 comparing to 2017 (53). Nonetheless, the overall satisfaction score reported by Afghanistan National Survey in 2018 was (mean;60.2 %) which is even lower (13).

In regarding Skilled Birth Attendance, a study done in Badakhshan province found that even women near the health facilities were seeking the help of Traditional Birth Attendants (TBAs) or female CHWs in the village if the female staff was absent in the facility (41). The study also added that almost all women from the villages preferred TBAs (Dias) and female CHWs for delivery, the main given reason was that they trusted TBAs for the privacy matter and accessibility and they also believed that the TBAs behave much better and friendly compared to the health staff (41). The unfriendly behavior of staff, using harsh words and even physical violence were also reported as the reason for patient dissatisfaction in Ghazni province (38). Lack of privacy, long waiting time, and the absence of female staff during the night, were also reported as a barrier to skilled delivery utilization even in settings near to health facilities (54). A study which was done in capital City (Kabul) found that women from community experienced lack of care by providers, verbal /physical abuses and even the experience of seeing women died in hospital corridors (55).

Furthermore, the same study as the result of observing national maternity hospital confirmed that women were verbally abused for the number of children they had even if the woman was in life treating condition (55). The same study also conducted the FGDs /Interviews and observing the national maternity hospitals. As the result they found that the factors such overcrowded (having more than 100 delivery per day), hard-working for hours and not getting prize from the, having opportunities and training only based on the relationships, fear (fear of making mistakes, being blamed and losing the job) and finally family pressure to carry the family responsibly were affecting the quality of care provided by these profession staff (55).

3.2.Result of Statistical Analysis

Throughout this chapter, the result of the statistical analysis will be discussed in two parts. The first part will provide an overview of the percentage and numbers (descriptive statistics). The second part will follow the framework and will provide the answer to the objective of our study, where possible, based on our secondary analysis.

3.2.1. Descriptive Statistics:

The overall socio-economic characteristics of women included in this analysis are presented in (*Table 4*). Most of the women (74%) were living in rural areas, and (58.8%) of them had a skilled delivery two years preceding to the survey. The most common age group (75%) was 20-34 years old. Most of the women (80%) had no formal education, and only (8%) of them had above secondary level education. The same as women, the educational level of the heads of the family was low. Most of the heads of the family (64%) had no formal education, only (6%) had secondary level education and (15%) had higher than secondary level education. The sample had relatively even representation of all wealth quintiles. As (19%) of women were from the poorest quintile and (17%) came from the highest wealth quintile. Regarding the decision about delivery location, (45%) reported, the decision was made by the husband and (33%) reported the decision was made by the woman herself. Mother-in-law was also reported by (14%) of woman as decision-maker about the place of the delivery. Other actors, such as elders of the family, friends, and CHWs, were also reported to be involved in decision making.

Table (4): Characteristic of women who included in the study sample		
N=8,509		
Variable(s)	n	Weighted Percentages
Skilled Birth Attendance		
Yes	4894	59 %
No	3423	41%
Age		
<20	528	6%
20-34	6,380	75%
35-49	1,598	18%
Education of woman		
No education	6,789	80%
Primary	661	7%
Secondary	366	4%
Higher	685	8%

Wealth		
Lowest	1,633	19 %
Second	1,618	19 %
Middle	1,775	21 %
Fourth	1,859	22 %
Highest	1,481	17 %
Residency		
Rural	6,362	74 %
Urban	2,147	25%
Decision Making		
Myself	2,776	33 %
Husband	3,738	45 %
My mother	176	2%
Mother-in-law	2,223	14 %
Father-in-law	165	2 %
Friends/Neighbors	122	1. %
CHW	45	0.5 %
head of household		
Education		
No education	5,412	64 %
Primary	1,181	14 %
Secondary	565	6 %
Higher	1,320	15 %
		15 %

The distribution of skilled and non-skilled delivery by socioeconomic factors

As displayed in (*Figure 9*), the distribution of skilled and non-skilled delivery does not change so much by age category. The skilled delivery is higher (59%) in age group (20-34) compared to women with age less than 20 and more than 34 years old.

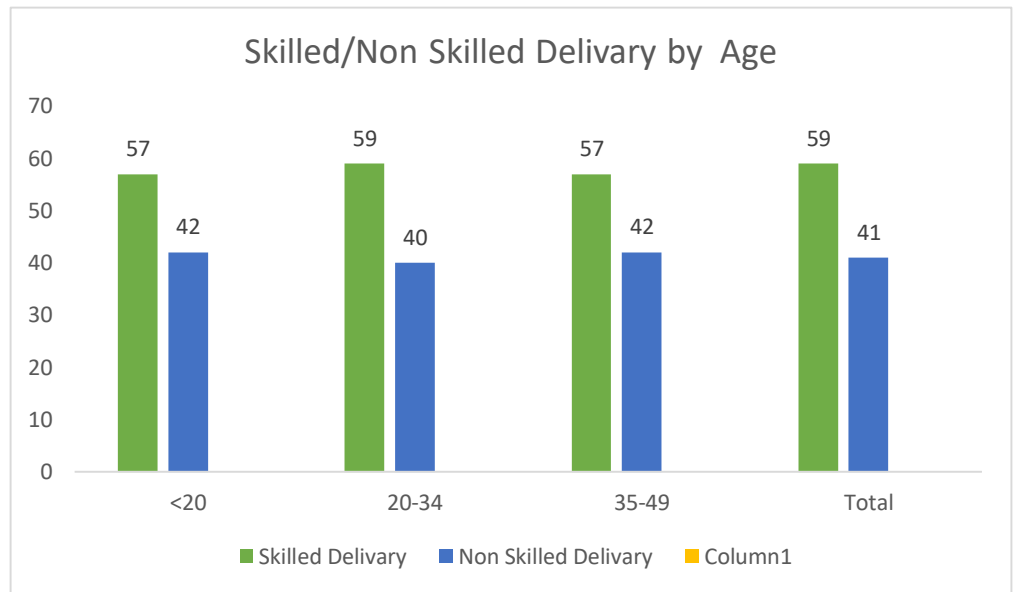


Figure (9) The comparison of skilled delivery per ager group

The (*Figure 10*) shows the distribution of skilled and unskilled delivery per residence areas. Women living in the rural area almost had an equal distribution of skilled (50%) and unskilled delivery (49%). While in the urban areas, most of the women (84%) had a skilled delivery, and only (15%) did not have skilled delivery. All the differences observed were significant ($p=0.000$).

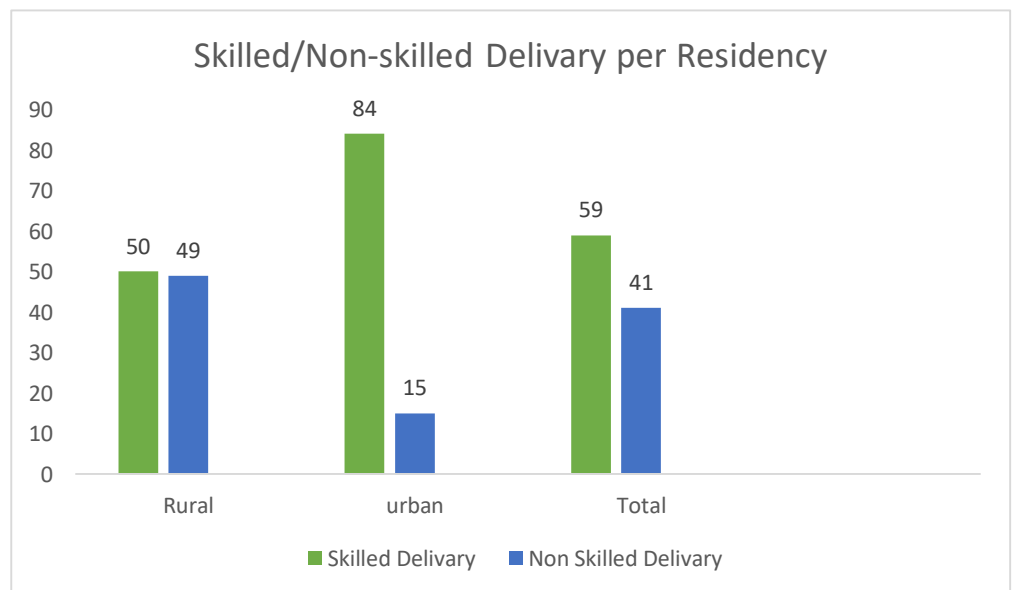


Figure (10) The comparison of skilled delivery per residency

The (*Figure 11*) illustrates the distribution of skilled and non-skilled delivery per education level of the women which were significant ($p=0.000$). There was no considerable difference in skilled and non-skilled delivery among women with no education, However, by increasing the educational level, the percentage of women with skilled delivery increased from (53%) among no educated women to (86%) among highly educated women. Meanwhile, the non-skilled delivery decreased from (47%) in non-educated women to (13%) among highly educated women.

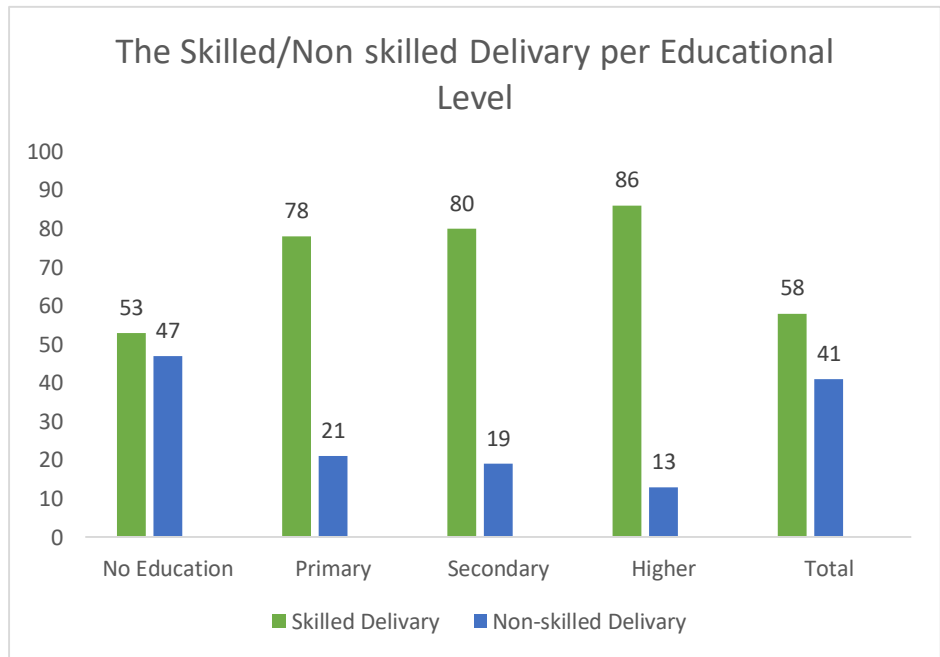


Figure (11) The comparison of skilled delivery per women 's' educational level

The distribution of skilled and nont skilled delivery based on the household's wealth status is shown in (*Figure 12*). Great discrepancy in the utilization of skilled delivery care was observed by wealth quantiles, and the observed differences were significant ($p=0.000$). As the poorest had the lowest skilled delivery (31%) and the wealthiest had a very high rate of skilled delivery (87%) compared to other wealth quintiles. The non-skilled delivery also decreased by increasing in wealth from (31%) in poorest to (12%) in the highest wealth quintile.

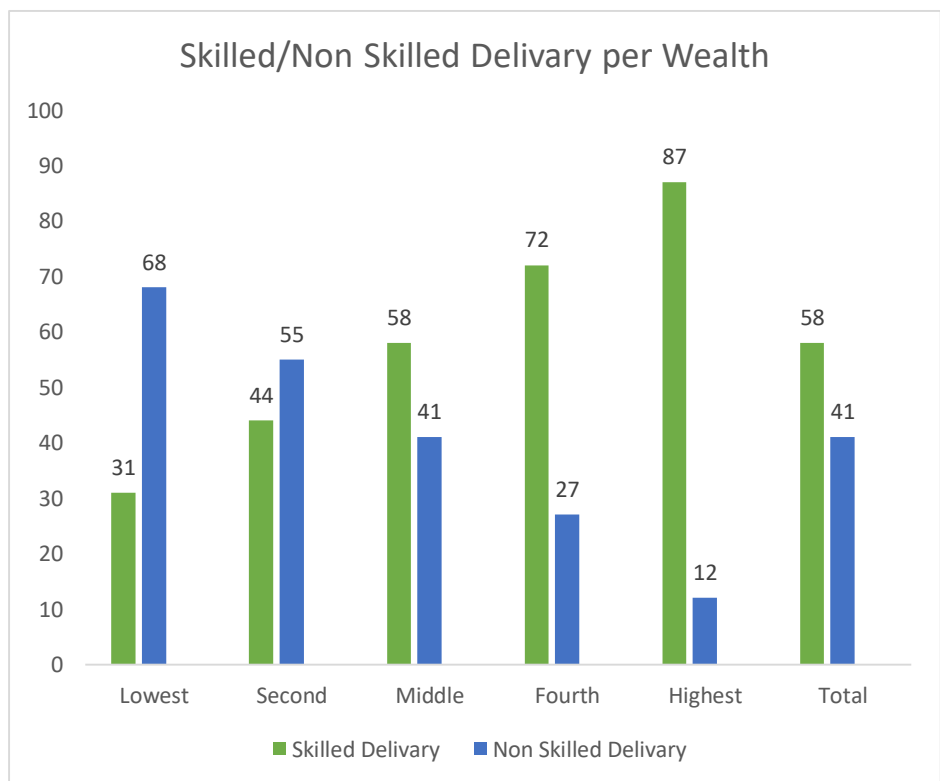


Figure (12)The comparison of skilled delivery per household's wealth status

Reasons for not having a skilled delivery:

In reaction to the question about the reason for not seeking skilled delivery care, the majority of females (21%) cited the distance from the health facility, (11%) the safety issues, and only (3.6%) the transportation issue. Other reasons such as not considering it necessary (21%) service cost (14%), unfriendly staff (7%) and a need for someone to accompany (6%) were also among the common reasons given by women for not attending a skilled delivery in the health facility which are presented in (*Figure 13*).

Reasons for not utilizing skilled delivery care

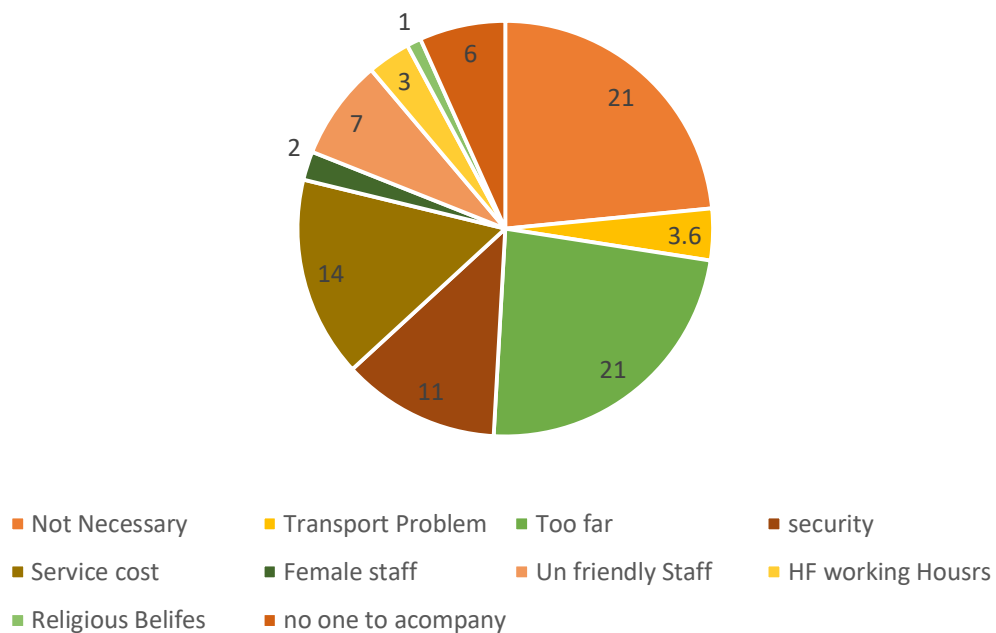


Figure (13) The reasons behind no skilled delivery

3.2.2. Logistic Regressions

3.2.2.1. Socio-economic Factors- First Phase:

As the result of bivariate analysis (unadjusted odds ratio), the socio-economic factors such as woman's educational level, wealth, residency area, education of the head of the household, and decision making were positively associated with the utilization of skilled delivery care (*Table 5*). Nonetheless, the women's age and having previous experience of ANC were not significantly associated with the utilization of skilled delivery

In multivariate analysis, woman's educational level, wealth, residency area, educational level of the head of household and decision making were still significantly associated with the skilled delivery care utilization (*Table 5*).

Education: In bivariate analysis, the women with primary education were 3.3 times (95% CI= 2.4 -4.5; $p=0.000$) more likely to have a skilled delivery compared to the women with no education. In the multivariate analysis, the odds decreased, but the association was still positive and significant. As such, the women with primary education had 2.3 times (95% CI= 1.3-3.9; $p=0.000$) higher chance of having skilled delivery compared to those with no education. The women with higher education had even 5.6 times (95% CI= 3.6-8.6; $p=0.000$) higher chance of skilled delivery compared to women with no education in bivariate analysis. However, in multivariate analysis, the odds of skilled delivery among highly educated women decreased to 2.3 (95% CI=1.3-3.9; $p=0.002$) compared to women with no education.

Wealth: The likelihood of having a skilled delivery were increasing by wealth quintile in both bivariate and multivariate analysis. In bivariate analysis, the women from wealthiest quintile had 14.4 (95% CI=9-23; $p=0.000$) times higher chance of skilled delivery compared to the women from lowest wealth quintile. In multivariate analysis, the odds decreased but was still associated with utilizing the skilled delivery care, as such, women from the highest wealth quintile were 7.2 (95% CI= 3.8-13.5; $p=0.000$) times more likely to have a skilled delivery compared to the women from lowest wealth quintile.

Residency: The chance of having a skilled delivery was changing with the woman's residence area. In bivariate analysis, the women living in urban areas had 4.7 times (CI= 3.4-6.4; $p=0.000$) higher chance of having a skilled delivery compared to the women living in rural areas. In multivariate analysis again, women from urban areas demonstrated 1.8 times (CI= 1.2-2.7; $p=0.001$) higher chance of skilled delivery compared to women from rural areas.

Education of head of the household: The odds of skilled delivery was increasing with the educational level of head of the household in both bivariate and multivariate analysis. Though the increase in odds was not consistent in multivariate analysis, in multivariate analysis, the women with a head of household who had primary education had 1.6 times (CI= 1.1-2.2; $p=0.001$) higher chance of skilled delivery compared to the women with the head of household who had no education. While the odds decreased in the category with a secondary level of

education, but the association was still positive and significant. The women with the head of household who had a secondary level of education were 1.5 times (95% CI= 1.1-2.1; p=0.003) more likely to have a skilled delivery compared to the category with no education. Likewise, women with a head of household who had higher education were 1.4 times (CI= 1.1-1.9; p= 0.003) more likely to have a skilled delivery compared to no education. In contrast, the odds in higher level of education is less than odds in secondary education.

Decision: The person who decides the location of delivery was also found to be associated with the utilization of skilled delivery care. In both (bivariate and multivariate) analysis, the chance of having a skilled delivery was among the highest for the woman if the CHW (Community Health Worker) and Father-in-law decided the place of the delivery. In the bivariate analysis, the odds of having skilled delivery was 18 times (95% CI= 4.0-81; p=0.000) higher if the decision was made by CHW and 5.4 times (95% CI= 2.8-10.5; p=0.000) higher if it was made by father-in-law comparing to decision made by the woman herself about the location of delivery . The association became even stronger in multivariate analysis such as the odds of having a skilled delivery was 19 times (95% CI= 4.7-76; p=0.000) higher if the decision was made by CHW and 9 times (95% CI= 4.2-20.5; p=0.000) higher if father-in-law made it compared to the decision which was made by woman herself. However, the Confidence interval for CHW is large and can be any number from 4.7, which is weak compared to 19 or can be 76, which indicates a robust association. Therefore, one can conclude, we know that the CHW has an association with delivery care utilization, but we are not sure that the strength of the association is as high as 19 times. However, the association is still strong even if the odds are 4.2. The same for father-in-law the likelihood of delivery utilization can be any number from 4.2 to 20.5. The odds of having a skilled delivery was increasing if any other surroundings of the women made the decision compared to the woman herself.

Table (5): Association between Selected Variables and Skilled Delivery Utilization

Variables	Un adjusted Odds ratio (CI)	P*	Adjusted Odds ratio (CI)	P*
Education				
No education (Reference)	1		1	
Primary	3.3 (2.4-4.5)	0.000	2.1 (1.5-3.1)	0.000
Secondary	3.4 (2.3-5.1)	0.000	2.2 (1.4-3.5)	0.001
Higher	5.6 (3.6-8.6)	0.000	2.3 (1.3-3.9)	0.002
Wealth				
Lowest (Reference)	1	0.000	1	
Second	1.7 (1.4-2.17)	0.000	1.5 (1.2-1.6)	0.000
Middle	3. (2.4-3.7)	0.000	2.5 (2.0-3.2)	0.000
Fourth	5.7 (4.0-8.0)	0.000	3.7 (2.6-5.3)	0.000
Highest	14.4(9.0-23.0)	0.000	7.2 (3.8-13.5)	0.000

Residency

Rural (Reference)	1		1	
Urban	4.7(3.4-6.4)	0.000	1.8 (1.2-2.7)	0.001

Decision Making

Myself (Reference)	1		1	
Husband	2.4 (2.0-3.0)	0.000	3.1 (2.6-3.8)	0.000
My mother	2.2 (1.3-3.6)	0.001	2.8 (1.6-4.6)	0.000
Mother-in-law	2.0 (1.6-2.6)	0.000	2.5 (2.0-3.2)	0.000
Father-in-law	5.4 (2.8-10.5)	0.000	9.3 (4.2-20.5)	0.000
Friends/Neighbors	3.0 (1.7-5.3)	0.000	3.4 (1.6-6.9)	0.001
CHW	18.3 (4-81)	0.000	19 (4.7-76)	0.000

head of household**Education**

No education (Reference)	1		1	
Primary	2.7 (2.1-3.5)	0.000	1.6 (1.1-2.2)	0.001
Secondary	2.5 (1.9-3.4)	0.000	1.5 (1.1-2.1)	0.003
Higher	2.9 (2.4-3.6)	0.000	1.4 (1.1-1.9)	0.003

Overall Quality of health system

40-50 (Reference)	1		1	
50-60	5.4 (2.7-11)	0.000	3.6 (1.8-7.0)	0.000
60-70	6.6 (3.2-13.5)	0.000	6.6 (3.3-13.1)	0.000
70-80	8.4 (4-17.5)	0.000	6.6 (3.2-13.7)	0.000
>80	8.6 (3.7-19.5)	0.000	4.6 (1.9-11.2)	0.001

Age

<20 (Reference)	1	
20-34	1.0 (0.8-1.4)	0.577		
35-49	1.0 (0.7-1.4)	0.876		

ANC Visits

NO ANC (Reference)	1	
1-2 ANC	3.6 (0.5-26)	0.191		
2-3 ANC	6.1 (0.8-44)	0.071		
3-6 ANC	6.8 (0.9-48)	0.054		
6 or more	9.5 (1.2-70)	0.027		

3.2.2.2. Accessing the facility –Second Phase:

This study was unable to examine the association of factors related to accessing the facility with the utilization of skilled delivery care.

3.2.2.3. Quality of care- Third Phase:

Bivariate Analysis: The results of the bivariate analysis for 12 quality indicators, selected from Balanced Score Card assessment show a significant association for only four indicators with skilled delivery care utilization. These four indicators are; health worker satisfaction, equipment functionality, availability of pharmaceuticals and vaccine. In addition to these indicators, the association between the overall mean of performance of health system per province was examined and was strongly associated with skilled delivery care utilization compared to all other indicators (*Annex 5*).

Multivariate Analysis: In the multivariate analysis, only the overall mean score included in the regression model, together with other socio-economic indicators. Though, the association decreased in the multivariate analysis comparing to bivariate analysis but was still significant (*Table 6*). The odds of having a skilled delivery was 3.6 times (95% CI=1.8-7.0; p=0.000) higher in women from provinces which had a mean score of (50-60) for health system performance compared to women from the reference category (the provinces with the score of 40-50). In provinces with a score range of (60-70), the odds was 6.6 times (95% CI=3.3-13.1; p=0.000) higher compared to the reference category. The same for provinces with a score range of (70-80) the odds of skilled delivery was 6.6 times (95% CI=3.2-13.7; p=0.000) compared to the reference category. However, the odds decreased in the fourth category (provinces with the highest score range) comparing to the two previous categories, still the association was positive and the chance of having as skilled delivery was 4.6 times (95% CI= 1.9-11.2; p=0.001) higher in women from provinces with a score of (>80) comparing to the women from provinces with the reference score. The explanation for the decrease in the odds of the fourth category is that this not necessarily a decrease of odds of skilled delivery compared to the previous category (provinces with a score of 70-80). Because the Confidence Interval of these two category overlap and again, the strength of association could be the same for both categories.

4. Discussion (Chapter 4)

4.1. Socio-Economic Determinants -First Phase:

This study suggests that the residency area, women's educational level, household wealth, education level of the head of the family and the person who make the decision are significantly associated with the skilled delivery care utilization.

Women living in rural areas have less chance of skilled delivery compared to women living in urban areas. This finding is consistent with a study reviewed the DHS survey of 37 LMIC and found, almost in all counties (33 out of 37) the coverage of delivery assessed by skilled staff was low in rural areas than in urban areas. The study also found that even the poorest in the rural area had a worse situation compared to the poorest women in the urban area (56). The disparities in urban and rural in skilled delivery care utilization could be mainly due to socio-economic inequities of the urban and rural. In our analysis also, the strength of association became weak in multivariate analysis when we looked at the residency area with other variables. The change in Odds suggests that the disparities in the utilization of skilled delivery by residency area are mainly due to socioeconomic factors rather than the nature of rural-urban itself. This finding is supported by the previous evidence which found, usually in LMIC the urban area most of the time presents the double advantage of the higher socio-economic condition than rural areas and at the same time good coverage of services (56). In Afghanistan, in addition to urban-rural socio-economic inequalities, the cultural and political context issues can also be an explanation of the low chance of skilled delivery care utilization in the rural area. Because the culture of not allowing women to go outside the house alone (without a family man) and low women's autonomy is more prominent in rural areas than in big cities, at the same time, the security is even worse in rural areas compared to urban (8)

Educated women are more likely to have skilled delivery than uneducated ones. The education was also reported as the determinant of skilled delivery care utilization by previous researches from Afghanistan (26) (27) (29). The evidence from other countries shows similar results. A study assessing barrier to facility delivery in Africa and Southern Asia found, in both regions, women who had no education (never attended school) were less likely to have an institutional delivery compared to women with secondary education (they were most likely to deliver at a facility) (57). This association could also be because, the education helps women in having more health information, being aware of services, being more open to new healthcare approach and having more interaction with the formal care providers which will ease access and using the health services (32).

Moreover, education helps individuals to have access to more financial and social resources (58), which will help in women's autonomy and more control over their health and decision related to that. However, the way education affects health-seeking behavior is complex and confounded by many other indicators. One of the examples is the study done in India, which explained that the formal education and literacy facilitates to understand and read the health-related messages and may also lead to using the intervention (59). However, to increase the

actual utilization of a particular intervention, the knowledge of content and process of the intervention should be provided to the people. So that, it will change the people's attitudes toward intervention (because seeking health care is mainly described by an individual's attitude) and as a result increase the utilization of intervention by people (59). The comprehensive health education program is considered even important in Afghanistan where the majority of women have no formal education, at the same time, our study suggests still the majority of the women (21%) think having skilled delivery is not necessary.

The educational level of head of the household affects the likelihood of skilled delivery care utilization by women. Most of the studies conducted in the past looked the educational level of husband. Based on our data we were only able to look at the education level of head of the household because the data was collected from the heads of the household and we combined the information the education level of the head of the household with the skilled delivery variables. The education of head of the household (the one who is authorized and makes the critical decisions) may result in better financial situation of the household the acceptance and familiarity with the health care system, open to the medical care and having better social support and all of these factors are the enablers for seeking and utilizing health care.

Women from highest wealth quintile have almost seven times higher chance of having a skilled delivery compared to women from the poorest quintiles. The past evidence from Afghanistan also suggests wealth as one of the main determinants of skilled delivery care utilization (26) (27) (29) (36). Our finding resembles the finding from other countries which reported the association of wealth with skilled delivery care (33) (57). The wealth may affect the utilization of skilled delivery by the direct-indirect cost that the family has to bear for seeking care. A study done in Ethiopia found that poor people were very aware of their health needs, but their health-seeking behavior was influenced by the cost of the care and the seriousness of the health problem (60). In Afghanistan where (55%) of people live under the poverty line the cost and the capability to pay for care could be one of the main explanation to the effect of wealth on care utilization (6).

However, concerning the direct costs of care, it should be noted that maternal services are free in almost all public health facilities and low utilization could be access, patient's satisfaction, and quality of care. Lack of drug and supply, low quality of care, and hidden (informal) payments have a resulted in high attrition of patients to the private sector and high out of pocket payment (44). The indirect cost for seeking health particular costs attributed to accessing the facilities (transportation) are the main financial barriers after the drug and supply beard by the households in Afghanistan (13). Meanwhile, the wealth status also affects the access to the care, because the accessibility of care is more limited to the poorer and rural people (13). These are the indication to the fact, in order to provide services to all people, we have to focus on all three dimensions of Universal Health Converge (Accessibility, quality, and affordability of care) at the same time to remove the barrier to accessing and utilizing the health care.

The surprising finding of the study is that skilled delivery is less if the decision about the location of delivery is made by women herself compared to other family members or CHW. The role of women and others in decision making was discussed by previous studies in

Afghanistan (26) (36) (37) (41). However, in this study, we quantified the role of all important actors who decide the location of delivery with the utilization of skilled delivery care. Our this finding is in contrast with the study done in Pakistan that reported women who independently made decisions about the medical treatment were less likely to give birth at home (OR 0.83; $p = 0.001$) than women who were depended on other members of the family for decision making about health treatment (31). The possible explanation of our this finding could be that only the family situation or decision making the power of women in the family is not enough for accessing the health services. The women's autonomy is usually defined by social structure linked to religion, culture, and other socio-economic factors which affects weather women have or do not have the autonomy to decide for the health and seek the healthcare (61). In Afghanistan, the role of women is defined in a way that they always need support from other family members, particularly men. This means, even if a woman can decide by herself, this will not necessarily end up having a skilled delivery compared to a decision made by husband or men of the family. They need the support of the men or elder of the family to provide financial support as well as the support to find the facility, transportation and accompany her.

Moreover, our study found the role of the decision of other family members to be essential for the utilization of skilled delivery care. These findings is similar to the study done in India, which shows the effect of family relationship with maternal service utilization. The study reported that women living in a nuclear family who had a good relationship with their husband were more likely to use ANC and have a skilled delivery (the odds of having facility delivery was 1.5 times higher if the women had few difficulties with husband compared to too many difficulties) (62). The women living in joint families who had good relationships with their in-laws were more likely to use ANC only (62). The current study found, if the decision is made by father –in- law, the chance of having a skilled delivery is higher than the decision made by women and her husband. This could be because in Afghan culture elder of the family, especially men are those who are authorized and are the ones who make the important decision in most of the cases. The study from India also found that in a joint family, the relation of women with her husband had no effect on ANC and delivery compared to her relationships with her in-laws (62). This finding suggests the focus should not only be on women's empowerment, but the family involvement of the community and changing community perception toward pregnancy and seeking healthcare is essential to increase the utilization of skilled delivery care.

The CHWs were also associated with an increased chance of having a skilled delivery. The likelihood of having a delivery assisted by a skilled provider was 19 times higher if the decision on the location of delivery was made by CHW comparing to the woman herself. The finding is supported by the Cluster Randomized Trial in Tanzania, which assessed the effectiveness of CHWs on maternal healthcare uptake (63). After giving more responsibilities (consulting and identifying pregnant women, referring for ANCs and giving information on importance of facility delivery) the proportion of home delivery was decreased women in interventions wards were significantly less likely to report having delivered at home (7.3%; RR: 0.54; 95% CI: 0.30–0.95; $p = 0.034$) in a setting that already had a high facility delivery uptake (63). However, the main limitation of the trail is that it was implemented in an urban setting and may not be

implementable in rural settings. The evidence on the effectiveness of CHWs on increasing family planning utilization from many developing countries including Afghanistan refers to the fact that the community listens to the CHWs and they can provide necessary assistance and help to the community regarding maternal health services (64) (65).

Having previous experiences of maternal health services mainly Antenatal Care (ANC) was reported by other studies to be associated with the utilization of skilled delivery care (26) (28) (29) (41). However, in our study, we found no significant association between ANC and skilled delivery. Though after receiving four or more ANC, there was a positive association. This positive association could be because of a woman's ability to access and utilize the services. Because, if she can access to the ANC services regularly, it means she has access and can utilize services and most likely will have skilled delivery, and this may not be mainly because of ANC visits. Based on this study also the majority of women (7089 out of 8,905) had at least more than one ANC but still half of the women had no skilled delivery. This is maybe indeed; ANC does not affect having a skilled delivery.

Cultural practices and religious beliefs are also important factors that may not only influence the utilization of services but also influence other contributing factors to skilled delivery care utilization. Whereas, we were unable to study that effect of cultural on delivery care utilization previous studies suggest issues such as not leaving home alone, only visiting female doctors, trusting the TBAs more is an indication of cultural factors that have contributed to the problem. However, more in-depth analysis of the association between cultural issues and delivery care utilization is required.

4.2. Reaching Facility-Phase 2:

This study was unable to examine the association between factors related to accessing the facility with skilled delivery care utilization. Because the questions related to reaching the facility or barriers on accessing facility were not asked from the women. In AHS, women who had skilled delivery were not asked if they faced any barrier or challenge while coming to the facility. The only question which was asked was about the reason for not seeking the delivery care from those women who did not have a skilled delivery. Therefore, our dataset did not provide enough information to run the logistic regression.

In response to the question about the reason for not using skilled delivery care majority of women (21%) mentioned the distance of health facility followed by security (11%) and transportation issues (3.5%) as the reason not to seek delivery care. In contrast, most of the studies previously done in Afghanistan reported factors such as transportation, transportation costs, and infrastructure as the barriers to accessing the delivery care. The AHS 2018 also reported that the main reason for not seeking health care in Afghanistan after the cost of the services (39.5) is the transportation cost which was mentioned by (17.5%) of the respondent (13). The reason that in our study only (3.5%) reported transportation as the barrier is maybe because this question was only asked from the women and they may not recognize this as the main challenge as in most of the cases men are the ones who are responsible for arranging the transportation and paying the costs attached to that. On security which is the main challenge in

Afghanistan, no study was done, because most of the study do not collect data from insecure settings, but a study conducted by MSF mentioned the security as the barriers to accessing the care. However, most of these studies discussing accessibility issues were conducted in small scale or were qualitative, and the answer to the question on how big is the problem and to what extent it affects the utilization of skilled delivery care remains unknown.

4.3. Quality of Care-Third Phase:

This study examined the association of 12 quality indicators with skilled delivery care utilization in bivariate analysis, while, in multivariate analysis, only the overall mean score of all BSC indicators per province was included. Because the overall mean score of all indicators was strongly associated with the skilled delivery utilization in the bivariate analysis comparing to the other three indicators which were positively associated with skilled delivery utilization. On the other hand, most of the indicators (the ones that were considered to be necessary for the quality of care) included in bivariate analysis were not significantly associated with the utilization of skilled delivery and even for the indicators that were positively associated in bivariate analysis no meaningful association was observed in multivariate analysis. For example, the availability of equipment was still positively associated with skilled delivery in multivariate analysis.

Nonetheless, the availability of vaccines and pharmaceuticals was negatively associated with the utilization of skilled delivery care (meaning that the availability of vaccines and pharmaceuticals in a health facility was decreasing the chance of utilizing skilled delivery care by women). These type of associations were challenging to interpret and make a meaningful conclusion., Considering the above reasons only the overall mean score of all indicators was included in our main logistic regression model along with other socio-economic variables

This study suggests that the overall performance of the system containing (all aspects of quality care) plays a substantial role in the utilization of skilled delivery care. However, the current study was unable to define how and to what extent different aspect of supply-side quality affects the utilization of delivery care. The main statistical explanation is that the data from the Balance Score Card is based on provincial averages. We do not know how the person's probability of skilled delivery care utilization relates to the quality of care in the facility she used and if she did not have skilled delivery care to which facility she would have gone in case of having a skilled delivery. So, we could measure the association of quality of care she received with the probability of having or not having skilled delivery care. On the other hand, it is difficult to measure the effects of quality on service utilization. Because the quality can be defined differently from demand and supply side and is also multi-dimensional, the detailed information on the structure (setting) where care is being provided, the process of care and outcome is needed (66).

Therefore, we looked at the existing literature which suggest there are problem at supply namely unavailability of 24hrs delivery services, lack of guidelines and protocols, lack of well functional referral system and finally lack of health provider's competency in some clinical areas, which may have affected the provision of appropriate treatment and the

patients' experience of health services. Likewise, patients satisfaction is one of the essential dimensions in assessing the quality of the health system and considered as the desired outcome of care (67). The strongest determinants of patients' satisfaction are the overall quality of care namely factors such as provider's interpersonal and communication skills, provider competence, the physical environment of the facility, continuity of care, hospital specifications and overall outcome of care (68). However, the existing evidence failed to give an insight to the main factors influencing the patient's satisfaction (perceived quality) at the national level and to what extent they have contributed to the utilization of skilled delivery care.

4.4. Reflection on the framework:

The three delay model is helpful when the study aims to study factors related to all three delays and assess the problem at the community, general context, and health system at the same time. However, some details are lacking (*Figure 13*)

- Socioeconomic factors are only linked to decision making but can also affect reaching the facility. For example, women or her family may have already decided to seek care, finds the transportation but even after passing these two steps looking at a cost she cannot afford (links of wealth with reaching facility), or, maybe the woman is poor and lives in rural areas. She decides to seek care, leaves home but cannot reach the facility due to infrastructure issues (link of residency with reaching facility). The socio-economic factors may also affect treatment the patient receives as the rich, and educated people may have access to a better quality of care, and the providers may also behave more friendly and give more attention.
- The other missed detail from the model is, distinguishing the supply side quality of care and demand-side (perceived) quality of care. The quality of care not only affects the receipt of appropriate treatment, but it also affects the patient's satisfaction, which is two different things. Reception of the appropriate treatment may lead to patient satisfaction, but this is not the case all the time, because patient's satisfaction is defined by many other factors which need to be distinguished from only appropriated treatment (supply-side Quality). Finally, as a result, patient satisfaction (perceive quality) will affect the utilization of care by woman or surroundings in the future from the very first phase (decision to seek care).

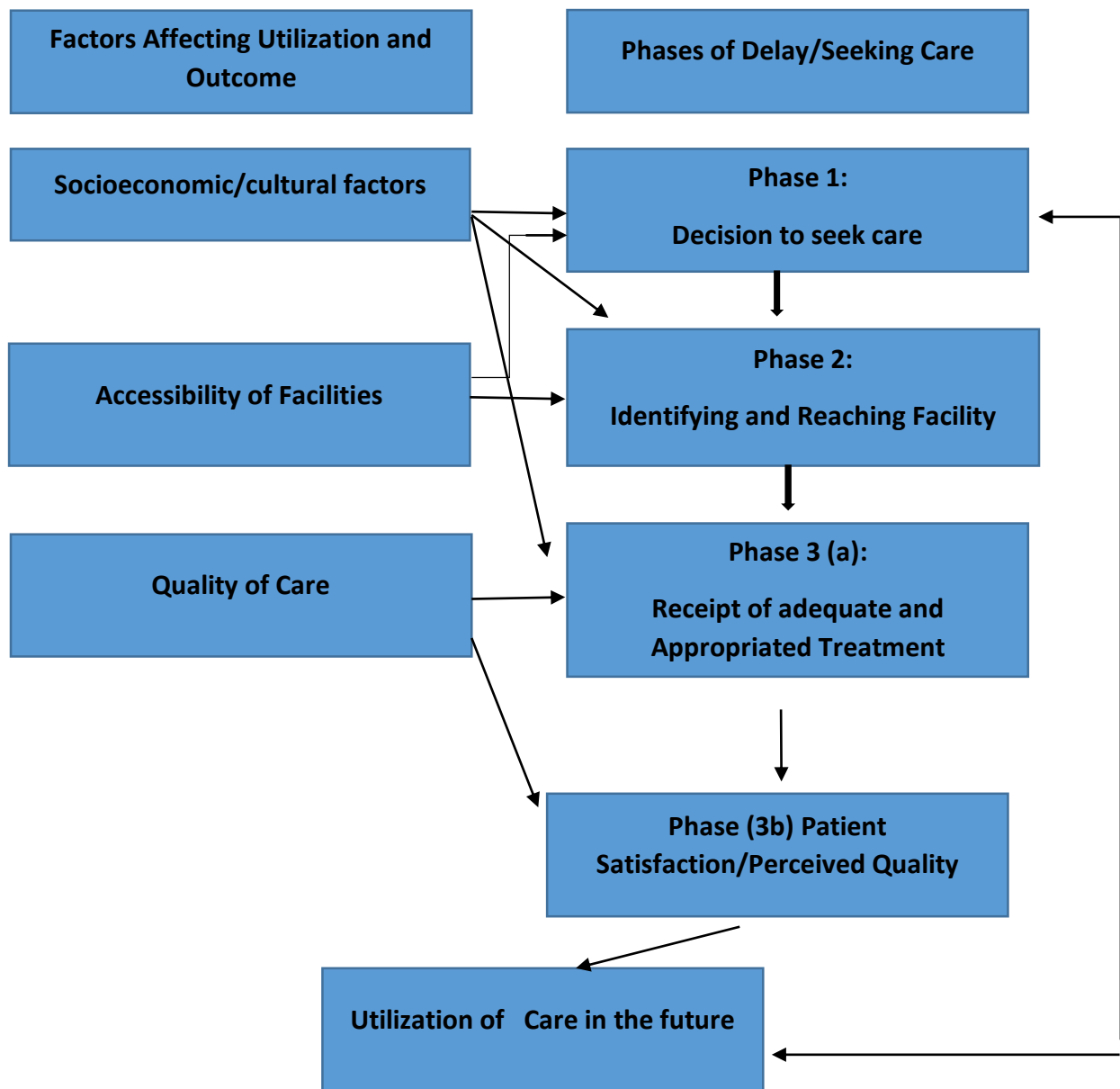


Figure (14)The adjusted framework of three delays based on my own observations

4.5. Limitation of the study:

1. The data come from a cross-sectional survey, and casual -relationship may not be revealed. Since finding why and how a particle factor influences the outcome is not possible through cross-sectional studies.
2. The study was done using secondary data, and some indicators of interest such as cultural issues, Intimate Partner Violence (IPV), the information related to accessing the facility were not included in the main study.
3. The study found the association of important factor with skilled delivery utilization but was unable to explore all the relationships conceptualized in the three delay model. The main reason is data availability, as described by (*Table 3*). We were only able to operationalize three out of the six concepts of the three model (outcome: utilization of skilled delivery; independent variables: socio-economic factors, quality of care). As a result, we were only able to quantify the effect of socio-economic and quality of care factors on the utilization of delivery care. For example, we looked at the association of Socio-economic factors with the skilled delivery care, not with the decision making phase (we know the likelihood of skilled delivery care if the women are educated but we do not know the likelihood of making or not making the right decision (seeking delivery care) if the woman is educated).
4. The data of Balance Score Card does not provide detailed information on the quality of care at the facility level, and the individual link between the quality of care of the facility the women went to (or would have gone to) and her utilization of care.
5. The literature on cultural issues was scarce, and evidence on barriers to accessing the facility at the national level is lacking. Moreover, only one assessment of quality care ever done is in 2016, and comparing and analyzing the quality of care using a wide range of evidence was not possible.

5. Conclusion and Recommendations (Chapter Five)

5.1. Conclusion

This study aimed to identify factors affecting the utilization of skilled delivery care in Afghanistan. The findings demonstrate the combined effects of different factors such as socioeconomic (residency, wealth and education), people who decide on the location of delivery and health system performance on the utilization of skilled delivery

In contrast to what previously done through this study, we look at different aspects of the problem at the same time which enabled us to give an insight of different factors which has contributed to the problem taking from factors related to the women themselves and their families, health system and issues related to physical accessibility to the care. Meanwhile, we were able to quantify the role of people who decide the location of delivery and the overall performance of the health system on the utilization of skilled delivery care which was not done previously in Afghanistan.

This study helped to provide evidence to policymakers and program developers on the factors which are interlinked and needs to be tackled in a coordinated manner at different level (community, health system, or overall context). Because looking at one aspect, for example, only giving information to the women but not involving families and communities, removing financial barriers (providing free services) but compromising the quality and finally making all service available and accessible but not paying attention to the cultural issues will not necessarily increase the utilization of the services. However, through this study, we were unable to assess the effect of context-specific issues such as cultural and the pathways through which it affects the utilization of care, security, an overview of main accessing barriers at national level which will require further investigation.

5.2.Recommendations:

Policy Options:

1. ***Policy change on the funding mechanism for health services:*** The ministry should seek other financial mechanisms such as health insurance and equity fund to finance maternal mainly (delivery) care because of the financial capability of family influences the utilization. On the other hand, the evidence shows even if services are called to be 100% free people are already paying indirectly /informally, which has affected the utilization.
2. ***Introducing policy on accessing services as women's right:*** The ministry of health together with the civil society and women's rights activist should advocate for introducing the right based approach(policies) in issue related to maternal health when the services are available and accessible, but still women are not allowed to use. Because this will help to engage and make the family accountable for the women's health as the family decision have a stronger effect on utilization compared to the woman's decision.

Interventions:

1. ***Decreasing urban-rural inequalities:*** The ministry of health in coordination with the BHPS implementing NGOs should establish more Comprehensive Health Centers (CHCs) and train more midwives selected from the rural areas in order to decrease the disparities in coverage of services between rural-urban areas.
2. ***Investing in Community Health Workers (CHWs):*** The MoPH in coordination with the BHPS implementing NGOs should train and invest in CHWs to increase the skilled delivery utilization through their social network that they have in the community. Particularly in rural settings to work with the communities and encourage them to use skilled delivery care.
3. ***Conducting comprehensive educational program,*** The MoPH with the BHPS implanting NGOs should conduct a comprehensive educational program to the women, husband and the families to increase their awareness on the importance of skilled delivery and encounter the families and society to support the pregnant woman. Because our data shows, still women think skilled delivery is not necessary. On the other hand, involving and educating men (those who make the decisions) as is considered vital for the success of the programs.
4. ***Improving quality in the long term.*** The ministry of health should improve the supply side quality of care by conducting more in-job training, availability of equipment, conducting more in job training and capacity building programs on both (clinical skills and patient's right).

Research:

1. ***Conducting further researches:*** The MoPH with the technical support of one of the UN organizations such as (UNDP, UNICE or WHO) conduct, or support more researches using both (Qualitative & Quantitative) methods to analyze how different factors affect the utilization of delivery care. Moreover, to explore the factors which are not discussed by previous researches such as security, cultural factors, IPV, and accessing issues
2. ***Exploring varies aspects of the quality of care:*** The MoPH with the technical support of one of the UN organizations (UNDP, UNICE or WHO) conduct/support more researches mainly (qualitative methods) concerning the perceived quality of care (client's satisfaction) as well as health workers' satisfaction and how it affects the provision of quality care. Since the evidence and the pathway through which the quality affects the utilization (mainly demand side) is scarce and needs to be further explored for designing context-specific and needs-based interventions.

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7. Annexes

Annex (1): Afghanistan Map



Taken from: https://www.123rf.com/photo_41238873_stock-vector-map-flag-and-location-of-afghanistan.html

Annex (2): The Balanced Score Card Indicator List
Domain A: Client and Community
1. Overall Client Satisfaction and Perceived Quality of Care Index
2. Community Involvement and Decision Making Index
3. Health Post Status Index (New)
Domain B: Human Resources
4. Revised Health Worker Satisfaction Index
5. Health Worker Motivation Index
6. Salary Payment Current
7. Revised Staffing Index -- Meeting minimum staff guidelines
8. New Provider Knowledge Score
9. Revised Staff Received Training (in last year)
Domain C: Physical Capacity
10. Revised Equipment Functionality Index
11. Pharmaceuticals and Vaccines Availability Index
12. Laboratory Functionality Index (CHCs only)
13. Revised Clinical Guidelines Index
14. Revised Infrastructure Index
Domain D: Quality of Service Provision
15. Client Background and Physical Assessment Index
16. Client Counselling Index
17. Universal Precautions
18. Time Spent with Client
Domain E: Management Systems
19. Revised HMIS Use Index
20. Financial Systems
21. Health Facility Management Functionality Index
Domain F: Overall Mission
22. New Outpatient visit concentration index
23. New Patient satisfaction concentration index
Composite Scores
Percent of Upper Benchmarks Achieved
Percent of Lower Benchmarks Achieved
Overall Mean Score

Annex (3) The Type of Delivery Care by Facilities						
Indicator	%	Regional and Provincial Hospitals	District and Comprehensive Health Centers with >5 deliveries per day	District and Comprehensive Health Centers with >5 deliveries per day	Basic Health Center and Sub Health Center	Private
Percentage of facilities that report providing delivery services	97%	100	100	100	94	100
Percentage of facilities that report providing delivery services 24/7	66%	100	100	57	44	90
EmOC: Reported performing instrumental delivery in past 3 months	66%	95%	85%	16%	—	55%
EmOC: Reported performing blood transfusion in past 3 months	86%	97%	75%	—	—	50%
Reported performing cesarean surgery in past 3 months	87%	PH, RH= 97% DHS&C HC>5 deliveries 78%				
Percentage of facilities that report providing cesarean surgeries	91%	97	85%	—	—	65%

Annex (4) The Provision of Referral system by Type of Facility

Indicator	Overall Percentage of facilities	Regional and Provincial Hospitals	District and Comprehensive Health Centers with >5 deliveries per day	District and Comprehensive Health Centers with >5 deliveries per day	Basic Health Center and Sub Health Center	
Percentage of facilities that report ever referring women or newborns to higher levels of care for obstetric/newborn complications	95%	100%	92%	94%	95%	90%
Percentage of facilities that have a functional ambulance with fuel on-site for emergency transport of clients	27%	57%	45%	14%	—	20%
Percentage of facilities with clear criteria for use of emergency transport	25%	57%	40%	14%	13%	15%
Percentage of facilities with guidelines or protocols for pre-referral management of complications available	41%	32%	33%	54%	43%	50%
Percentage of facilities that provide patients with a referral slip when referring out to a higher-level facility	85%	95%	95%	76%	81%	80%
Percentage of facilities sending a health worker to accompany the patient being referred	42%	68%	73%	27%	29%	50%

Annex (5): The association between Skilled Delivery and Score of each quality indicators per province

Un adjusted odds ratio of quality indicators

Variable	n(observations)	n(Provinces)	Odds (95% CI)	P*
Perceived Quality		32		
60-70 (Reference)	4,154	16	1	
70-80	2,258	13	1.1 (0.9-1.4)	0.171
>80	1216	3	1.2 (0.8-1.8)	0.305
Community Involvement		34		
60-70 (Reference)	327	3	1	
70-80	350	3	1.3 (0.8-2.0)	0.231
>80	7,831	28	2.1 (1.5-2.8)	0.000
Health Worker Satisfaction				
50-60 (Reference)	293	2	1	
60-70	6,043	25	5.9 (4.0-8.7)	0.000
70-80	1,142	6	9 (5.9-13.9)	0.000
Health Worker Motivation		34		
60-70 (Reference)	4,060	15	1	
70-80	4,448	19	0.9 (0.7-1.2)	0.896
Salary		34		
1-20 (Reference)	1,143	4	1	
20-40	4,178	17	1.1 (0.8-1.5)	0.361
40-60	479	3	0.6 (0.3-1.1)	0.136
60-80	2,707	10	1.1 (0.8-1.5)	0.333
Staff Training				
0-20 (reference)	5,991		1	
20-40	1,440	5	0.7(0.5-0.8)	0.002
40-60	47	1	2.9 (1.9-4.6)	0.000
60-80	1,030	1	1.3 (0.8-2.2)	0.176
Clinical Guidelines		17		
60-70 (Reference)	71	1	1	
70-80	504	3	0.4 (0.1-1.0)	0.053
80-90	2,270	7	1.2 (0.5-2.9)	0.548
>90	1,753	5	1.1 (0.5-2.6)	0.743

Un adjusted odds of quality indicators				
Variable	n(Observations)	n(Provinces)	Odds (95% CI)	P*
80-90	3,353	14	1.7 (1.1-2.5)	0.005
>90	4,789	19	1.8 (1.3 -2.6)	0.001
Vaccines and Pharmaceuticals				
50-70 (Reference)	702	5	1	
70-80	1,681	8	1.9 (1.3-2.7)	0.001
80-90	4,371	16	3.2 (2.2-4.6)	0.000
>90	1,753	5	2.9 (1.9-4.4)	0.000
Physical Assessment of the client				
60-70 (Reference)	1,171	4	1	
70-80	1,479	7	0.8 (0.6-1.1)	0.389
80-90	2,552	10	2.6 (1.8-3.7)	0.000
>90	3,305	13	1.6 (1.2-2.1)	0.001
Time spent with patient				
0-20 (Reference)	4,497	18	1	
20-40	1,478	8	1.1 (0.8-1.4)	0.388
40-60	1,535	5	1.2 (0.9-1.7)	0.158
60-80	596	2	0.4 (0.2-0.5)	0.000
>80	401	1	1.6 (0.9-2.8)	0.000
Overall Quality				
40-50 (Reference)	114	1	1	
50-60	4,963	20	5.4 (2.7-11)	0.000
60-70	1,485	8	6.6 (3.2-13.5)	0.000
70-80	915	4	8.4 (4-17.5)	0.000
>80	1,030	1	8.6 (3.7-19.5)	0.000

