

# **DETERMINANTS OF UTILIZATION OF POSTNATAL CARE SERVICES IN NIGERIA**

**Hafsat Iyabode Iyanda**  
**Nigeria**

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## **Determinants of Utilization of Postnatal Care Services in Nigeria**

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

by

Hafsat Iyabode Iyanda  
Nigeria

### Declaration:

Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements.

The thesis (**Determinants of utilization of Postnatal Care Services in Nigeria**) is my own work.

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## Dedication

To the Eternal Glory of God for His immense blessings on me and successful completion of this program.

Glossary of terms.<sup>1</sup>

**Bacille Calmette-Guérin:** is a vaccine given at birth which have protective effect against meningitis and disseminated tuberculosis in children.

**Community Health Workers:** are trained health workers who work with other health and development workers as a team. They provide the first contact between the individual and the health system.

**Low birth weight babies:** refers to babies whose birth weight are less than 2500g irrespective of the gestational age.

**Maternal death:** is defined as the death of a woman during pregnancy or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

**Neonatal mortality:** is defined as the deaths in the first 28 days of life among live births.

**Polio 0:** this is referred to OPV (oral polio vaccine) and said to be live attenuated vaccine for controlling poliomyelitis. It is a vaccine administered at birth.

**Postnatal care:** means both preventive and curative services provided for mothers and newborns in the period after birth until six weeks.

**Postnatal period:** this period commences immediately after childbirth and lasts six weeks.

**Primary care:** basic or general health care focused on the point at which a patient ideally first seeks assistance from the medical care system. It is the basis for referrals to secondary and tertiary level care.

**Reproductive age group:** this refers to all women aged 15-49 years.

**Secondary care:** specialist care provided on an ambulatory or inpatient basis, usually following a referral from primary care.

**Tertiary care:** the provision of highly specialized services in ambulatory and hospital settings.

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<sup>1</sup> Glossary of terms are sourced from Nigeria Demographic and Health survey, WHO and UNICEF websites.



## List of Abbreviations

ANC	Antenatal care
BCG	Bacille Calmette-Guérin
CHW	Community health worker
EBF	Exclusive breastfeeding
FCT	Federal Capital Territory
FMOH	Federal Ministry of Health
GDP	Gross domestic product
LGA	Local Government Authority
MM	Maternal Mortality
MMR	Maternal Mortality Ratio
MNCH	Maternal Newborn and Child health
NDHS	Nigeria Demographic and Health Survey
NGO	Non-Governmental Organization
NHIS	National Health Insurance Scheme
NHP	National Health Policy
NPHCDA	National Primary Health Care Development Agency
NSHDP	National Strategic Health Development Plan
OPV	Oral Polio Vaccine
OOP	Out of pocket
PNC	Postnatal care
RCT	Randomized control trial
SDG	Sustainable Development Goal
SES	Socioeconomic status
SSA	Sub-Saharan Africa
TBAs	Traditional birth attendants
VHT	Village health team
WHO	World Health Organization

**Name:** Hafsat Iyabode Iyanda

**Nationality:** Nigerian

## Abstract

**Background:** Almost half of maternal deaths and sixty six percent of neonatal deaths occur within 24 hours and first week after delivery. The postnatal period is a critical time to reach both mother and newborn with packages of preventive and health promotion interventions as well as ensuring access to case management for illnesses. Nigeria still ranks one of the highest regarding maternal and infant mortality in the world; about 576 deaths per 100,000 live births and 71.2 deaths per 1,000 live births respectively.

**Objective:** To explore the determinants of postnatal care services utilization in Nigeria.

**Methodology:** A literature review was performed. The Titaley conceptual framework (an adapted Anderson and Newman framework of health services utilization) was used for thematic analysis.

**Findings:** Factors that influences utilization of PNC at household and community level were identified and these included women education, wealth status, region and place of residence, access to information, maternal age and parity, previous use of health services.

**Conclusions:** PNC services are needed to be treated with priority as ANC and institutional delivery in order to decrease maternal and neonatal morbidity and mortality. Factors that determine utilization of PNC identified include: maternal education, place and type of residence, religion, perception of PNC, availability, affordability, acceptability, accessibility, culture and access to information.

**Recommendations:** the literature review recommends prioritization of girls' education, women empowerment, mass campaigns, home visits to mothers and newborns during postnatal period, introduction of voucher system in health facilities and making maternal and newborn services free of charge.

**Keywords:** postnatal care, utilization, Nigeria, determinants, maternal neonatal and child health

Word count: 13,117

## Introduction

Reducing maternal and neonatal mortality does not only stop at promoting the utilization of antenatal care (ANC) and institutional delivery/skilled attendance at delivery, but also involves promotion of postnatal care (PNC) services utilization. Over half of postnatal maternal and more than two-thirds neonatal deaths occur during the first seven days of life; implying that this period is critical for maternal and newborn survival (1–3). Notwithstanding its potential role in reducing newborn and maternal deaths, PNC has been one of the components of maternal and newborn care that is poorly provided and utilized; only around 14% of all newborns and 42% of mothers utilize PNC services within the first two days after delivery in Nigeria (4).

Timely and quality PNC are important for mothers and their newborns to treat complications that may arise early and to provide information on mothers and newborns care. It is recommended for women to commence PNC within 24 hours after delivery in those that delivered in health facilities and within 12 hours in those that delivered outside health facilities (5).

As a medical doctor, I have had the opportunity to work in both private and public hospitals in Nigeria. During this time, it was realized that the percentage of women who attend PNC after delivery was low when compared to those who had attended ANC and had delivery in the hospital. The few that attend do so because the newborns need to be immunized and not necessarily going for the PNC services.

Studies have shown that approximately 1 in 7 women and 1 in 3 women use PNC services within first 2 and 3 days after delivery respectively and the low PNC attendance could be a reflection of poor access to health services or some other reasons (5). It is common among women who have had number of previous deliveries not to attend PNC services because of the belief that women who have had many deliveries are experienced and hence can do without PNC (6).

The aim of the literature review is to identify those factors that influence utilization of PNC services in Nigeria and using the findings to make recommendations on how maternal, newborn and child health (MNCH) can be improved.

## Structure of Report

This thesis has six chapters as outlined in the table of contents. Chapter one discusses the background of Nigeria giving the relevant information and characteristics. Chapter two discusses the problem statement, objectives, methodology and conceptual framework. It also explains the search strategy, limitation and inclusion and exclusion criteria for the study. Chapter three and four discuss the findings from peer reviewed articles and other publications. Chapter three is mainly findings according to the conceptual framework while chapter four discusses the effective proven interventions of PNC services from Nigeria and other countries. Chapter five is the discussion on the results/findings and the proven interventions on PNC services. Chapter six present the conclusions drawn from the study and recommendations suggested based on the effective interventions identified.

## CHAPTER 1: BACKGROUND

### 1.1 Demography

Nigeria is a country on the West-coast of Africa and the most populous country in the continent. It is bordered by Niger, the Gulf of Guinea, Benin, Chad and Cameroon. The climate varies with equatorial in the South, Tropical in the center and arid in the North (7). Nigeria with her diverse cultural heritage is made up of 36 states with a Federal Capital Territory (FCT), Abuja (figure 1) and has six geopolitical zones, namely: Northcentral, Northeast, Northwest, Southeast, South-South, and Southwest. There are 774 constitutionally recognized Local Government Areas (LGAs) (4).

Nigeria comprises of over 250 ethnic groups: Yoruba 21%, Hausa and Fulani 29%, Igbo 18%, Ijaw 10%, Kanuri 4%, Ibibio 3.5%, Tiv 2.5%, and so on. Nigeria has two major religions: Christianity and Islam. Muslims are about 50%, Christians about 40% and 10% of indigenous believers (7,8).

Nigeria's population in the 2006 census was estimated to be 140,431,790 by the National Population Commission, current population stands at 186 million with the female population being 49.4% (4,7,9).

Figure 1: Map of Nigeria showing the 36 States and FCT (70)



### 1.2 Health indicators

The 2013 Nigeria Demographic and Health Survey (NDHS) shows total fertility rate 5.5 births per woman with mean age at first birth about 20 years. Maternal mortality (MM) is still very high in the country with about 576 deaths/100,000 live births. Birth rate in the

country is 37.3 births/1,000 population and life expectancy at birth is 53 years and 56 years for males and females respectively (4). The neonatal, infant and under-5 mortality rates in Nigeria are about 37, 69 and 128 deaths/1,000 live births respectively (4).

### 1.3 Socioeconomic profile

The economy is being propelled by growth in the economic sector and telecommunications, despite that, there has not been significant improvement in poverty level of the country. Presently, about 70% of the whole population is living in extreme poverty level<sup>2</sup> (4,7). The literacy level in Nigeria is about 59.6%: 69.2% and 49.7% in male and female respectively. Literacy level in women drop with age, much higher in urban than in rural areas and get better with increasing wealth and differs across zones (4).

### 1.4 National health expenditure

Nigeria's total health expenditure<sup>3</sup> as a share of GDP (gross domestic product) was 3.7% as at 2014. As at 2016, GDP per capita (PPP) was \$5,900 with gross national saving of 13.1% and Gini index (distribution of family income) of 43.7 (7).

### 1.5 Health care system

Nigeria has one of the largest stocks of human resources for health in Africa but due to the low densities of health professionals (about 1.95 per 1000), effective delivery of essential health services is constrained (10). Presently, the inequitable distribution and insufficient availability of registered health professionals in the country are major challenges which have contributed to high prevalence of maternal and child mortality (7, 10,11). Despite efforts made by the federal Ministry of Health (FMOH) on women utilizing MNCH services, 61% of women use ANC services, 36% had delivery in the health facility and 42% utilize PNC services (4). It is believed that the progressive worsening of the health system is caused by the present economic hardship and insurgency in the country and this contributes to the poor health outcome encountered by Nigerians (5).

Nigeria health system is structured into primary, secondary and tertiary levels. Tertiary is at the federal government level and is responsible for policy development, regulation, overall stewardship and provision of tertiary care. Secondary is at the State Governments level and are accountable for providing secondary care in all States. The lowest and the least funded level is the primary level which is coordinated by the LGAs, it is responsible for the primary healthcare (figure 2) (12).

Nigeria has over 3,500 healthcare institutions which are run by both public and private sectors. The public sector operates at the three tiers of healthcare service, constituting; about 54 federal tertiary hospitals as well as States' own general hospitals and primary health centres (13).

Nigeria health system has wide rural urban disparities in the service delivery and resource availability. Good health care services are neither available nor affordable for many Nigerians especially the poor and those who reside in rural areas. The population growth rate of 2.8% per annum also contributes to the health system challenges Nigeria is facing including the alarming high maternal mortality (5).

The National Health Insurance Scheme (NHIS) covers less than 5% of the population; only federal civil servants in two States(Bauchi and Cross River) and FCT are covered (14). Insured women are covered for antenatal care (ANC), delivery and postnatal care (PNC), up to twelve weeks after delivery. The insurance covers 90% of health services delivery package with 10% out of pocket (OOP) expenditure (15).

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<sup>2</sup> Extreme poverty is described as an indigent condition in which people lack the opportunities to develop means required to live a basic human life, thereby causing exclusion from society and development process.(69)

<sup>3</sup> Total Health Expenditure is the sum of private and public health expenditure that cover the provision of health services both preventive and curative, family planning activities, nutrition activities and emergency aid designated for health

Figure 2: Organizational structure of the Nigerian primary health care system (16)



## CHAPTER 2: PROBLEM STATEMENT, JUSTIFICATION, OBJECTIVES AND METHODOLOGY

### 2.1 Problem statement

Globally, maternal mortality is still a challenge. As at 2013, maternal deaths were estimated to be about 289,000 deaths, equivalent to 800 women dying each day due to pregnancy and childbirth. The maternal mortality ratio (MMR) has reduced by 45%; from 380 to 210 maternal deaths per 100,000 live births between 1990 and 2013. Similarly, the infant mortality rate has dropped by 40%; from 90 (in 1990) to 54 deaths per 1,000 live births (in 2014) (2,3,17).

Even though some countries have made remarkable progresses, half of the maternal deaths in the world still take place in Sub-Saharan Africa (SSA) where little or no improvement has been made (6). Together with southern Asia, SSA account for 86% of maternal deaths which is about 14 times higher than the developed world (17).

Nigeria still ranks among the highest with regard to maternal deaths due to poor utilization of MNCH services. Nigeria's MMR range from 300 per 100,000 live births in the southern region to 1,000 per 100,000 live births in the northern region. Approximately 40% of women experience complications after delivery and an estimated 15% develop potentially life-threatening complications (3,4,17-19).

Most maternal and infant deaths occur in the first month after birth: almost half of all maternal deaths occur within the first 24 hours and 66% during the first week (1-3). The first week of life, and certainly the first two days, are the most crucial periods for PNC. This period is a critical time to reach both mother and newborn with packages of preventive and health promotion interventions as well as ensuring access to case management for illnesses (1-3,17).

Studies have shown that women with postpartum haemorrhage or baby with birth asphyxia, sepsis, or complications of preterm birth can die within hours or even minutes if appropriate care is not provided. The delayed attention to complications during labour usually lead to poor outcomes such as intrapartum stillbirths, neonatal illness, disability, obstetric fistula, and other long-term obstetric complications (20).

Although the nature and frequency of this care differs significantly, the need for care and support after birth is not well recognized in Nigeria. Rates of provision of skilled care are lower after childbirth than during pregnancy or childbirth, despite both the risks for illness and the potential to improve longer-term outcomes are great (3,21). Attempts to explain this situation have largely focused on individual and household level factors with little attention on the community level factors (4,22).

### 2.2 Justification

About 32% of all deaths occur among women of reproductive age with no significant reduction in the average maternal mortality rate, most of these deaths occur at home. Nearly a quarter of a million babies die annually in Nigeria which translate to 700 deaths per day (4,23,24).

It has been reported that 58% of women in Nigeria do not utilize healthcare during the postnatal period and this put them and the newborns at risk of high morbidity and mortality (4). Evidence has shown that the content of PNC services (annex 2) received by the 42% of women that utilized PNC within the first two days of birth is largely unknown (4,23).

51% and 47% of children receive BCG and Polio 0 (OPV) vaccines respectively on the day of delivery. Nearly 21% of eligible children at their second birthday have not received any vaccinations, these figures still represent a significant threat for achieving sustainable development goal (SDG) 3 by 2030 (table 1) (4).



Recent estimates have shown that PNC services has the lowest uptake in Nigeria when compared to other MNCH services. 61% of women utilizes ANC out of which 51% had at least 4 times during their pregnancies, 36% had health facility delivery and only 42% of the women had PNC services received within the six weeks of delivery (4,25).

One quarter of newborn deaths could be prevented through early PNC. some other practices that can reduce neonatal mortality include hygienic umbilical cord care, early initiation and exclusive breastfeeding (EBF), recognition and care seeking for danger signs (annex 3) (1). Many women do not access PNC due to lack of information, cultural practices, distance, unavailability of services or lack of money. These are still some of the major challenges that need to be tackled for Nigeria to reach the SDG 3 by 2030 (table 1) (23,24).

More in-depth knowledge on all factors mentioned will be important in developing and implementing policies and strategies that can be used in reducing maternal and newborn mortality during postnatal period.

For the country to achieve a sustainable low maternal mortality, increase in PNC utilization as part of maternal health services will need to be achieved. It is then important to identify and address the different determinants that influence the utilization of PNC services.

Table 1: SDG 3 Targets and Indicators (26)

<b>Ensure healthy lives and promote well-being for all at all ages</b>			
SDG 3 Targets		SDG 3 Indicators	
3.1	By 2030, reduce the global Maternal Mortality Ratio to less than 70 per 100,000 live births	3.1.1	Maternal mortality ratio
		3.1.2	Proportion of births attended by skilled health personnel
3.2	By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births	3.2.1	Under-five mortality rate
		3.2.2	Neonatal mortality rate

### 2.3 General objectives

To explore the determinants of postnatal care services utilization in Nigeria in order to provide policy and programme recommendations to improve maternal and neonatal health.

#### 2.3.1 Specific objectives

- i. To identify the determinants influencing utilization of PNC services in Nigeria
- ii. To identify effective interventions from Nigeria and other Sub-Saharan African countries that have proven to increase utilization of PNC services
- iii. To make recommendations to improve policy and practices on utilization of PNC services for better maternal and neonatal health in Nigeria.

### 2.4 Methodology

A document review was performed. The VU e-library was visited in accessing published articles. Search engines and database used were google, google scholar, PubMed, Medline

and Cochrane. Grey literatures used included Nigeria National Health Policy (NHP) 2004, Nigeria NHP 2015, Nigeria National Health Act, Nigeria NHIS guidelines, Nigeria National Strategic Health Development Plan (NSHDP) 2010-2015. Web pages from World Health Organization (WHO) and world factbook were used. Few publications were identified from references cited in relevant articles and reports. The abstract of articles retrieved were screened before selecting the relevant ones.

#### 2.4.1 Criteria of inclusion and exclusion

Many published articles were retrieved and the following criteria were used to include or exclude articles used.

1. Studies and reports including Peer reviewed, systematic reviews, interventional studies that included issues around postnatal care services utilization in Nigeria and SSA were included.
2. Some published articles on PNC from SSA and a limited number from outside SSA were included.
3. Studies on PNC utilization from countries outside low and middle-income countries were excluded.
4. Published articles of which the full editions could not be retrieved were excluded.

#### 2.4.2 Search strategy, search terms and combinations

Literature search was conducted from different sources using different keywords combination for different objectives (table 2). About 200 published articles were initially retrieved using the keywords combination but some of the articles were excluded after reading their abstracts. The first part of the search was on the determinants of PNC services utilization while the second part was based on effective interventions from Nigeria and other SSA countries.

Table 2: Summary of search strategy

s/n	Study objective	sources	Type of literatures	Keywords used
1	To identify the determinants influencing utilization of PNC services in Nigeria	<ul style="list-style-type: none"> <li>• PubMed</li> <li>• Vu library</li> <li>• Google</li> <li>• Google scholar</li> <li>• institution al websites</li> <li>• grey literatures</li> </ul>	Published peer reviewed articles and journals Grey literatures Reports	postnatal care, postpartum care, Nigeria, sociocultural, socioeconomic status, health beliefs, demography, social structure, affordability, accessibility, availability, acceptability health system, sub-Saharan Africa, residence, region, utilization, uptake, Nigeria, SSA, NHIS
2	To identify effective interventions from Nigeria and other countries that have proven to improve the quality of utilization of PNC services	<ul style="list-style-type: none"> <li>• PubMed</li> <li>• Vu library</li> <li>• Google</li> <li>• Google scholar</li> <li>• institution al websites</li> </ul>	Published peer reviewed Articles and journals Systematic reviews Reports	postnatal care, postpartum care, Nigeria, sub-Saharan Africa, health policy, NSHDP, NHP, NHIS strategies, intervention, systematic review, best practices, utilization, Nigeria, SSA

s/n	Study objective	sources	Type of literatures	Keywords used
		<ul style="list-style-type: none"> <li>Cochrane database</li> </ul>		

The key search terms used include: postnatal care, postpartum care, Nigeria, sociocultural, social structure, health beliefs, demography, sub-Saharan Africa, utilization, health system, external environment, enabling factors, predisposing factors, maternal health services, maternal newborn and child health, maternal mortality, intervention, neonatal mortality.

Combination of Key words used include: "postnatal care" AND Nigeria AND utilization AND determinants. Other details of combination of keywords are as shown in table 3.

Table 3: Combination of keywords used

<b>KEYWORDS</b>	"postnatal care" <b>AND/OR</b>	Determinants <b>AND/OR</b>	utilization <b>AND/OR</b>	Nigeria <b>AND/OR</b>
<b>SYNONYMS</b>	"postpartum period"	factors	Use	"Sub-Saharan Africa"
	"Maternal health services"	"Predisposing factors"	Uptake	"Low and middle-income countries"
	"Maternal neonatal and child health"	"Enabling factors"	Interventions	
		"Need factors"	strategies	
		"External environment"	policies	
		"Health system"	"Best practices"	
		"Socioeconomic status"		
		"Health insurance"		
		Literacy		
		"Health belief"		
		Religion		
		"Demographic factor"		
		"Socio-cultural"		

## 2.5 Limitations of methodology

Few articles were found exclusively discussing utilization of PNC. It is possible that some unpublished studies that may enriched the review could not be reached. Only studies published in English language and those over the past 10 years were used. Few systematic reviews that were exclusively on PNC utilization were retrieved. More time would have been good to explore more on the determinants of PNC utilization in Nigeria.

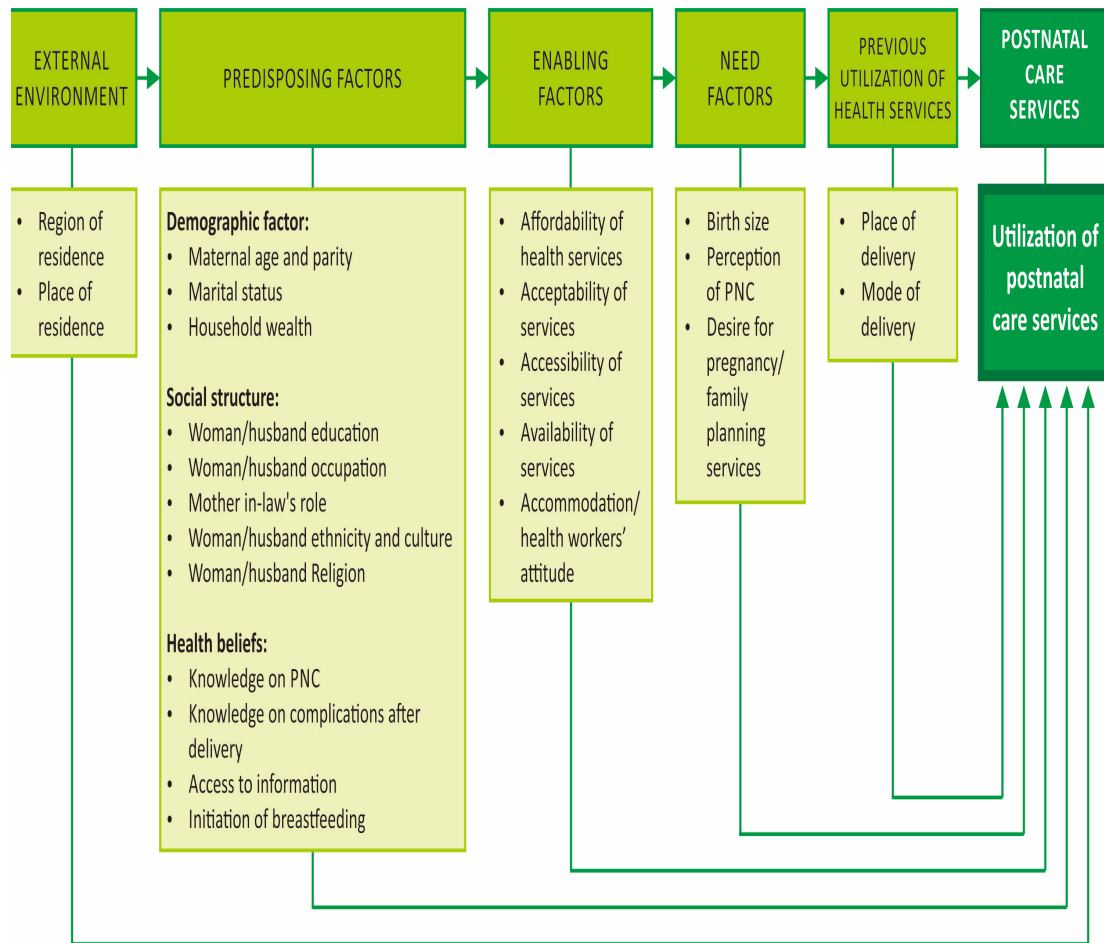
## 2.6 Conceptual framework

The suitable conceptual framework chosen for the literature review was the Titaley conceptual framework (an adapted Anderson and Newman framework of health services utilization) (annex 1). The framework gives an overview of the determinants that influence the utilization of PNC and can be used to explain how those determinants can affect utilization of PNC services in the Nigeria's situation.

The framework guides the analysis, focusing on external, predisposing, enabling and need factors as they are related to PNC services utilization. The external environment is the socioeconomic and living environment (place and region of residence) of women and their households. Predisposing factors are those factors such as the sociocultural characteristics of individuals which is present before the need for the women to attend PNC. This includes the social structure, health beliefs and the demographic characteristics of the women. Enabling Factors are the logistical and motivation aspects of obtaining health care, these are the personal/family characteristics of the women and the influence their community has on them in seeking healthcare. Need Factors are those most immediate cause of health service use, such as perception of functionality and health problems that generate the need for health care services. And finally, the previous utilization of PNC services emphasizes on the experience the women have had, which can influence future PNC utilization (27,28).

The conceptual framework was however adapted (figure 3) because the original framework focused more on the reality of Indonesia as a country and as such, it was adapted to make it general and suit Nigeria context. Some of the factors such as percentage of infants receiving four or more ANC checks in the cluster, birth rank and child sex that can affect PNC utilization which are more to the Indonesian context were edited. The enabling factors were also adjusted to be the acceptability, availability, acceptability, affordability and accommodation of services. Some of the determinants included were: mother-in-law role in PNC utilization, religion, ethnicity and perception of PNC.

Figure 3: Adapted conceptual framework



Titaley conceptual framework (adapted from Anderson and Newman Framework of Health Services Utilization <sup>(28)</sup>)

## CHAPTER 3: FINDINGS

### 3.0 Introduction

This chapter describe factors that determine the utilization of PNC in Nigeria using the conceptual framework. Using different studies from Nigeria and SSA as a guide, these factors will be discussed. The articles used in this chapter are summarized in annex 4.

### 3.1 External environment

#### 3.1.1 Place of residence

Several studies have reported PNC utilization being correlated inversely with rural residence. According to these studies, women who reside in urban settlements tends to utilize PNC services better compared to their counterparts who reside in the rural areas (6,29–31). Similarly, in a study conducted in Nigeria by Dahiru and Oche (2015), it was revealed that 44% of urban settlers utilized PNC services compared to 21% who reside in rural areas (25). One study from Ethiopia reported similar findings to those studies from Nigeria (32). Another study conducted in Ethiopia also reports that most women who reside in urban areas had positive perceptions towards PNC services, while it was the opposite for women who reside in the rural areas (33). Some of the reasons were because rural dwellers are at disadvantages of poor access, long distance travelling and affordability of health services. All the findings have shown that women who reside in urban areas utilize PNC services more than the rural dwellers.

#### 3.1.2 Region of residence

In a study conducted in Nigeria, utilization of PNC services was higher from southern geopolitical zones (41%) in comparison to northern zones (24%) (25). In another study where the geopolitical zones were compared, it was reported that PNC utilization was 78% in southwest Nigeria (Lagos State) compared to 35.3% in northwest Nigeria (Kaduna State) and 68% in southeast (Anambra State) (34). From all studies conducted in Nigeria, it has shown that women from southern part of Nigeria utilize PNC more compared to those from the northern region. Reasons given were because Northern Nigeria has more rural dwellers and as it was mentioned above, rural location negatively affect utilization PNC services.

### 3.2 Predisposing factors

#### 3.2.1 Demographic factors

##### 3.2.1.1 *Maternal age and parity*

Studies from Nigeria have reported that mothers with high parity have a higher tendency not to use PNC services compared to those with lower parity. (6,25,35). A similar finding was also reported in another study conducted in Nigeria where percentage of people who attend PNC was 33.3% among women less than 20 years of age and 24% among women above 34 years of age (5). Reasons given were that it could be possible that those women with less parity have less physical and economic demands than those with high parity and that women with high parity might have had unpleasant experience from previous health services.

It has been reported in many studies from Nigeria that there is no significant relationship between the age of women and attendance of PNC services, however, women within age group 25-35 years utilize PNC services more in comparison to those of advanced age or the younger ones (25,31,35).

Studies from Ethiopia and Burkina Faso also show that there is a negative association between increased parity and use of PNC services, however there was no relationship found between the age of women at delivery and use of PNC services (32,36).

### *3.2.1.2 Marital status*

Some studies conducted in Nigeria report that unmarried women usually have less tendency to utilize PNC (21,34,35) whereas it was an insignificant factor in another study(6). This is contrary to a study from Ethiopia where unmarried women attend PNC services more compared to the married ones. The autonomy of the women could be the reason for attending more, while stigma and vulnerability that is associated with pregnancy outside wedlock could be the reasons for those that attend less, these were similar findings from Nigeria and Ethiopia (32,34).

### *3.2.1.3 Household wealth*

Many studies from Nigeria report a positive association between high socioeconomic status (SES) and utilization of PNC services (6,30,31). This is similar to finding to Dahiru and Oche (2015) where it was reported that women from rich households (48%) attend PNC services three times more than those from poor households (13%) (25). Similar finding was reported from a study carried out in Burkina Faso (36). All these findings could be because poor households will have to prioritize their resources and hence may want to cater for basic daily needs first before thinking of seeking health services from health facilities. Despite findings from many studies, some studies from Tanzania have not found any association between SES of women and utilization of PNC services (32,37).

## *3.2.2 Social structure*

### *3.2.2.1 Woman/husband education*

There is evidence from studies that shows that women who are secondary school certificate holder or possess higher diploma attend PNC services more compare to women who do not have any form of formal education. Also, educated husbands have better chances of allowing their wives to attend PNC services compared to the illiterate ones (5,21,30,32,35). Somefun and Ibisomi (2016) noted that the higher the educational level of women the better they utilize PNC services (6). There is a positive correlation between husbands' education and PNC utilization. A study done in Northern Nigeria also revealed that uneducated and unemployed women usually prefer their deliveries at home. The reasons reported by the study include: financial constraints, poor accessibility to health facilities, short duration of labour, cultural beliefs, religion and sometimes husbands' decision (38). Studies from other countries have shown similar findings to those from Nigeria (36,37,39).

### *3.2.2.2 Woman/husband occupation*

In a study conducted in Northeast Nigeria, the husbands' occupation had positive correlation with PNC utilization. Women whose husbands had stable jobs tends to utilize PNC services more than those who did not, this is similar to a study conducted in Burkina Faso (21,36). However, a study conducted in the Southeast Nigeria reported no significant association with maternal occupation and PNC visits (35). This is different from a study conducted in Ethiopia where there was positive relation between women's occupation and attendance of PNC services, but there was none between the work status of the husbands and PNC utilization. It also showed that women who have secured jobs utilize PNC services more frequently compared to those who do not have one (32). Most studies have shown that there is a positive association between women and their husbands' occupation and PNC utilization and can be explained with the level of SES of households. The occupation of women and husbands has showed varied findings from different studies, however since no negative association has been reported, it can be concluded that women who or their husbands are gainfully employed will utilize PNC services more.

### *3.2.2.3 Mother-in-law's role in postnatal care services utilization*

The role of mother-in-law in the utilization of PNC in Nigeria and some African countries is crucial. Mother-in-law visit the new mothers to oversee their welfare and that of the newborns. During this period, the new mothers is obliged to accept whatever the mother-in-law says. It has been reported from a study conducted in Nigeria that women did not breastfeed their newborns because of the mother-in-law's refusal and this has big implication on the health status of newborns. Due to some cultural beliefs and practices such as seclusion of mothers during postnatal period, mothers and their newborns may not be able to utilize PNC services (40). In some other studies conducted in Ghana and Ethiopia, it was reported that the permission of husbands and mother-in-law need to be sought before utilizing PNC (41,42).

### *3.2.2.4 Woman/husband Religion*

Despite the higher percentage of people practicing Islam in Northern Nigeria, a study conducted from the region has reported that among women who attend PNC, Christians (40%) are of higher percentage compared to 21% Muslims and 14% from other religions (25). Several studies conducted have also shown that there is association between PNC utilization and the religion of the women however, a study done in Ethiopia showed that there was no any association whatsoever between woman's religion and attendance of PNC services (32). Findings from two studies conducted in the Southwest Nigeria also reported that the women who practice Islam attend PNC less compared to their Christians counterparts (5,35). Using the findings from different parts of the country, it can be deduced that irrespective of the region, Christians use PNC more than Muslims or traditional believers, perhaps due to the correlation of Christianity being associated to medicine as reported by one study conducted in Nigeria (35). In a study conducted in Nigeria by Rai et al. (2008), the socioeconomic factors such as place and region of residence, women and husband's education, religion, social network, mass media exposure and wealth status were significant in their influence on utilization of PNC services. This shows the strong linkage among many factors that can determine women utilizing PNC (43).

### *3.2.2.5 Woman/husband Ethnicity and culture*

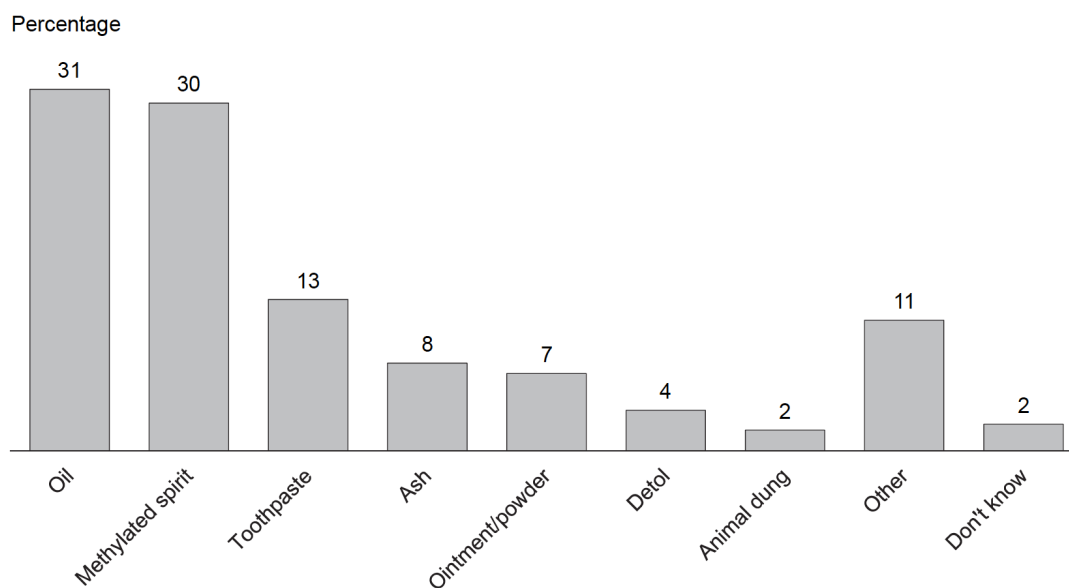
According to a study conducted in southwest Nigeria, some ethnic groups such as Yoruba and Igbos tends to use the PNC services more when compared to others such as the Hausas, Fulanis and Kanuris. One explanation to this could be that among all the major ethnic groups in Nigeria (Yorubas, Hausas and Igbos), the Hausas are least educated. Many studies have shown that geographical and social settings do matter when it comes to utilization of PNC services, hence utilization of PNC services varies among different ethnic groups (31,32).

Some practices in Nigeria and some other African countries are for women to stay back home for the first 40 days after delivery which happen to be the postnatal period. Most mothers only go for the newborns immunization and neglect their own health (40). This was similar to the findings from another study where cultural beliefs such the seclusion and perceptions of service quality reduced the acceptability of a facility-based birth and PNC services (20). Aside utilizing PNC services, some harmful practices during postnatal period that increases the tendency of high morbidity and mortality in mothers and newborns are common. These include: bathing with very hot water, using unsterilized clothing and other substances to clean the umbilical cords of newborns (figure 4), consumption of herbal concoction by mothers and newborns, application of concoction on the anterior fontanelle of newborns, consumption of gruel enriched with local salt (kunnu kanwa), consumption of spicy foods, sitz bath (ritual bath), staying in a hot room and



sometimes sexual abstinence. Some mothers believe these practices make them stronger and most times do not see any harm in them (44).

Figure 4: Types of substance applied on the umbilical Stump (4)



Source: Nigeria Demographic and Health Survey, 2013

### 3.2.3 Health beliefs

#### 3.2.3.1 Knowledge on complications after delivery and postnatal care services

In a study conducted in Northeast Nigeria, it was reported that 61% of women and their families interviewed did not perceive PNC utilization to be important (21). In a study conducted in Tanzania, some women believed PNC is only for the newborns to receive immunization. There is evidence that shows that unless there are issues related to maternal complications, services are more rigorous on the newborns' and neglecting mothers (24).

#### 3.2.3.2 Access to Information:

Research from Nigeria has shown that women who have access to mass media such as television, radio and with awareness on health promotion programs, have better chances utilizing PNC services. This factor is more feasible for women who reside in the urban settlements (6,30,31). Mass media exposure has also been emphasized to be positively and significantly associated with ANC attendance from a study conducted using NDHS 2008. The possibility of women who attended ANC during pregnancy to utilize PNC services is very high (43). However, a study from Ethiopia reports that public media sources such as watching television, listening to radio and reading newspapers, do not have any association with the utilization of PNC services but does with ANC and deliveries. This may be because the study was carried out in the rural area where the majority of women do not have access to the public media sources or perhaps unavailability of these sources in many households' due to them not able to afford them. It may also be because women do not see the importance of PNC after delivery or the importance was not discussed with them during the ANC visits. Hence, if the barriers in accessing the public media sources are abolished there may be positive association of exposure to the public media and PNC utilization (32). With these findings, it has shown that women can access information from ANC clinics even before delivery which increases their chances in utilizing PNC services.

### 3.2.3.3 *Initiation of breastfeeding*

Initiation of breastfeeding is an important aspect of PNC which help to reduce infant morbidity and mortality. Studies have shown that initiating breastfeeding in Sub-Saharan Africa within the first hour and at day one of delivery can reduce neonatal mortality by 22% and 16% respectively. It is expected for new mothers to commence breastfeeding to their newborns as early as possible. The first milk produced by the mother; the colostrum, provides the newborn with some nutritional and immunological benefits. According to WHO, the recommended time for initiation of breastfeeding is within 1hour of delivery. In a study conducted in Nigeria, it has been reported that 53% of mothers initiated breastfeeding within 30minutes after delivery and about 47% did after 30minutes. This finding is similar to other studies from other parts of Nigeria and other African countries. Reasons for the 47% women who did not initiate breastfeeding early include: colostrum being dirty, poor secretion of breastmilk, child or mothers' illness (45,46).

## 3.3 Enabling factors

### 3.3.1 Affordability of health services

Poverty is a strong barrier for women seeking PNC services, as indicated in the previous section. It is not enough for PNC services to be available, the level at which these women can afford the services matter most. Studies have shown that women who are insured attend PNC services more compared to those who have to pay totally out of pocket (25,31). In a facility based study conducted in Southwest Nigeria, it reports that women who are insured attended PNC services more compared to those who were not because those that are not insured will pay totally OOP while those insured will only pay 10% OOP. In the study, only 10% of women were covered with health insurance and the remaining were not, another reason for having low PNC utilization. It was also reported in the study that women who were insured had no problem with transportation to the health facility as compared to those who were not insured (15). The finding from a study conducted in Ghana was similar to those from Nigeria; for women who were covered with health insurance, the likelihood of using ANC, having skilled delivery and utilizing PNC services increased by 96%, 129% and 61% respectively when they were insured, hence insurance play a significant role in the utilization of MNCH services (47).

### 3.3.2 Acceptability of health services

The acceptability of health services has to do with how women, their husbands, mother-in-law and family members perceive PNC services. Research have shown that despite provision of PNC services, some women still do not utilize PNC because it is culturally unacceptable to them. The cultural acceptability as mentioned earlier, can be explained with the practices that occur in many African Countries including Nigeria during the postnatal period where women are not supposed to leave their homes during this period (20,40).

### 3.3.3 Accessibility of health services

Distance is a great barrier for women in accessing PNC services. In studies done in Nigeria, it has been reported that distance to health facilities has a great negative effect on the use of PNC services. Also in the same studies, as it was indicated in previous section, women who reside in rural areas have difficulties in accessing care compared to those residing in urban areas (30,31). A study conducted in the Southwest Nigeria reports that women who need less time to get to the nearest health facility attended PNC more compare to others with more remote homes (35). The quality of care perceived by users has also been reported low in many parts of the country and it could be a major factor

contributing to low utilization of PNC (48). In a study conducted in Tanzania, there was no significant association with distance of health facilities and PNC utilization (37).

#### 3.3.4 Availability of health services

Studies conducted in Southwest Nigeria report that poor staffing of health professionals especially in primary health care is a set-back for the utilization of PNC services, it may be difficult for health facilities, especially in the rural areas, to function 24 hours and hence discourage women from utilizing PNC services. This can be worse in case of emergencies, as it can lead to complications and sometimes death. The studies further report the extreme state of health services in Nigeria especially in primary and secondary health facilities. It was reported in the findings that despite the low record of maternal mortality in Southwest Nigeria, health services availability is still low in the region (31,48)

#### 3.3.5 Accommodation/health workers' attitude

Negative experiences that women had during antenatal and intrapartum care influence the probability of not seeking PNC services. In a study conducted in Northeast Nigeria, it was reported that there was no significant association between ANC attendance and PNC utilization (21). From studies conducted in Uganda and Zambia, some of the women expressed their displeasure on how they were being treated by health workers when they went for PNC especially those ones that had home delivery. Similar finding was reported in another study on how attitude of health workers has led to negative impact of PNC utilization (29,30).

### 3.4 Need factors

#### 3.4.1 Birth size

Studies conducted in Nigeria report that women who delivered low birth weight babies are less likely to attend PNC services compared to those women who delivered to averagely normal size babies because of their fragility (6,30,31).

#### 3.4.2 Perception of postnatal care services

Evidence from studies conducted in Nigeria have shown that some cultures discourage women from utilizing PNC due to their perception (30,34). It was reported from study conducted in Northwest Nigeria that out of 37.3% deliveries that took place in a health facility only 28.9% of newborn babies received PNC within the postnatal period (25). Research has shown that women who reside in rural areas tends to have more confidence in traditional birth attendants (TBAs) rendering PNC services to them compared to utilizing health centres (31). Poor staffing in health facilities and difficulty in guaranteeing 24-hour availability of services throughout the year could be associated to this. It has also been reported that women scale the services of TBAs higher than that received from health centres because of easy communication and the compassion given by TBAs (31).

It was reported in a study conducted in Burkina Faso that only 45% of mothers and infants both had postnatal visit. Despite there was 90% BCG vaccination in newborns, 52% of mothers did not receive any postpartum care during the visits (36). In a study conducted in Tanzania, it was believed that PNC was for the newborns. Even if mothers do not go for postpartum care because of loss of energy during delivery or due to the cultural practices, relatives can still take the baby to the hospital for PNC (24). Also in Zambia and Uganda, 13% and 24% of newborns who were delivered in health facility received PNC within 7 days of delivery respectively which is lower among newborns delivered at home; about 10% and 15% respectively (29). All these explain the negative perception of PNC services utilization.

### 3.4.3 Desire for pregnancy/family planning services

In a study conducted in Northwest Nigeria, it was reported that women who do not desire to be pregnant anymore or who want it later, have higher percentage of using PNC services compared to those that had their pregnancy as planned. This could be linked to having family planning done to prevent subsequent pregnancies (25). Another study from Nigeria reported that women who approve of family planning or who intend to have family planning done utilize PNC services more compared to those who do not (31).

## 3.5 Previous utilization of health services

### 3.5.1 Place of delivery

In a study from Nigeria, about 48% of women who delivered in the health facility utilize PNC services more compared to 11% of those who deliver outside the health facility (25). In studies conducted in Southwest Nigeria, it was reported that women who had a minimum of 4 ANC visits, institutional delivery and were discharged home within 24 hours tended to attend PNC services more (34,35). This is similar to findings from a study conducted in Northeast Nigeria where ANC attendance had a positive association with PNC services utilization (21). In another study, there were better chances for adolescent mothers to attend PNC services if they had a focused ANC and institutional delivery (43). Some studies from some Asian countries (Nepal and Indonesia) have reported similar findings that most women who deliver their babies outside health facilities are less likely to attend PNC compared to those who had deliveries in health facilities (28,49). This was in contrast to a study conducted in Tanzania where women who delivered in the health facility has less tendency of attending PNC compared to those women that delivered at home (37). However, from a systematic review by Opiyo et al. (2016), it was reported that ANC and institutional delivery were not associated with the utilization of PNC. It was noted in the study that there was an association between ANC and institutional delivery but not with PNC (50).

A response of a focus group discussion in one of the studies from Tanzania stated that "there are women who are frightened to go to the hospital when they are referred because they want to avoid a caesarean section: referral means a caesarean section at the hospital. The prolonged labour in our district hospital can lead to caesarean section. Formerly, I gave birth at home because other women in my neighborhood warned me this could happen [if I went to the hospital]" (24).

### 3.5.2 Mode of delivery

A peer review study from Nigeria reports that women who had their babies delivered by skilled birth attendants have higher tendency of utilizing PNC services compared to those who were delivered by unskilled birth attendants (35). Similar findings were reported by Agho et al. (2016), where women who were delivered by health professionals tended to utilize PNC services more than those that were delivered by non-health professionals (30). In a study conducted in Tanzania, women who had assisted delivery such as caesarian section and forceps delivery tended to utilize PNC services more compared to those that had normal delivery (37).

## CHAPTER 4: EFFECTIVE INTERVENTIONS FROM NIGERIA AND OTHER COUNTRIES THAT HAVE PROVEN TO IMPROVE POSTNATAL CARE SERVICES

### 4.0 Introduction

Effective interventions are key in the reduction of maternal and neonatal deaths. In this chapter, interventions promoting PNC from within and outside Nigeria will be presented. SSA countries are chosen because of their comparable sociocultural environment with Nigeria.

### 4.1 Community outreaches and home-based care interventions

Community outreaches and home visits are commonly done by the health professionals: nurses including community health workers (CHWs). CHWs in the Nigeria context are trained to spend 60% of their time within the communities performing outreaches and home visits and use the remaining 40% at their designated health facilities (19).

Reports have shown that home based care interventions such as home visits can prevent 30–60% of newborn deaths in high mortality settings under controlled conditions. Therefore, WHO and United Nations Children's Fund now recommend home visits by skilled health workers in the first week of life to improve survival (55–58). Some of the African countries who have commenced this home visits include Malawi and Ethiopia. Malawi uses health surveillance assistants to execute this task. Ethiopia train their frontline health workers to provide the home-based maternal and newborn care (55).

Following a study that was conducted on the level of dropout at different levels of maternity care in Nigeria, Introduction of intervention programmes especially for women residing in the rural areas and those with low SES, that will focus on community outreaches on the benefits of continuum of maternal healthcare, were suggested (52). In a study that was conducted in Nigeria, it has shown that CHWs can adequately assess newborns for signs of illness at the household level and refer when medical care is needed (53).

Uganda has used community outreaches through home visits to increase utilization of PNC and reduce MM by CHWs. Activities involved include preventive PNC, health education on EBF, hygienic umbilical cord care, prompt detection and referral for illness, family planning programme, tetanus toxoid administration for reduction of newborn deaths (54).

A home visit programme was conducted in two culturally comparable districts in Uganda where the village health teams (VHTs), consisting of CHWs who have been trained on community mobilization for preventive health services. They were equipped with mobile phones to be used for communications with professional health workers of various health centres involved. The role of the health workers was to enroll women and then communicate with the VHTs who will perform the home visits. Home visits were made to women involved and health education messages beneficial to mothers and their newborns were being passed on. The intervention was incorporated in the routine healthcare delivery (including ANC and PNC services) to avoid making it an experimental design. Some of the information given included hygienic cord care, thermal care for the newborns, early initiation of breastfeeding within one hour of delivery and care-seeking for newborn illness. The intervention improved the relationship and collaboration between the VHTs and the professional health workers. The intervention was successful despite the non-involvement of financial or material benefits to the women that participated (59).

Reporting from a systematic review, another intervention study which was done in Uganda revealed a 77% increase in EBF after the postnatal period, at 12<sup>th</sup> week after delivery in the intervention group compared to the control group. The intervention involved a 7-day household visits by the CHWs which commenced in late pregnancy through the postnatal period (60). Although a similar intervention was carried out in Burkina Faso, the intervention did not show any significant differences (60).

A systematic review also reported an intervention study (randomized control trial (RCT)) that was conducted in Malawi, it involved the volunteer peer counselors performing home

visits. This was started in the third semester and ended at 5 months after delivery. The home visits were scheduled for 5 times: third trimester, one week after birth, 1, 3 and 5 months after birth. The activities involved health education in EBF, family planning, immunizations and prevention for mother to child transmission. The counselors were supervised periodically by the surveillance assistants of the district office. In the same systematic review, another intervention study (RCT) was carried out in Ghana where two and three home visits by CHWs were made during pregnancy and postnatal period respectively. The postnatal period visits were done at day 1, 3 and 7 days after delivery. The intervention also included training and developing a sustainable supervisory and remuneration structure for the community based surveillance volunteers, referral of sick baby to the health facility, sensitization of health facility staff and TBAs. In both intervention studies, there were reductions in neonatal mortality, but maternal mortality was reduced in only the intervention study conducted in Malawi (61).

#### 4.2 Voucher system

In an intervention programme conducted in Kenya, a voucher system was introduced and used in health facilities to increase access to reproductive health services and quality of healthcare services delivered. It targeted the low-income mothers who were identified through a poverty-grading tool. It was shown that the voucher scheme improved the quality of PNC delivered to mothers and babies (51,62).

Improved quality of PNC services and operational efficiency was increased by 39%. This was as a result of the competition for voucher reimbursements across the health facilities that were involved in the intervention. The voucher system also reduced the OOP expenditure and significantly increase the tendency of attending PNC within 48 hours of birth. There was also 5 and 2.5 folds improvement in contraceptive methods counseling and return of fertility postpartum (51,62).

#### 4.3 Enhancing postnatal care services through community involvement

An intervention study was conducted in the Southwest Nigeria where automated text messages reminders were sent to mothers for postnatal clinic attendance. The messages were sent 2 weeks and 5 days before the next scheduled appointment to the health facility. It was reported that there was 50% reduction in failure to attend PNC clinics. It was also shown that the intervention was effective because of the dramatic increase in PNC clinic attendance among mothers compared to the previous years before the intervention (63).

Intervention studies conducted using an integrated approach in 3 Northern States (Katsina, Yobe and Zamfara) of Nigeria have reported to reduce the infant and child mortality within 2 years of the study. The infant mortality declined from 90 deaths per 1,000 live births before study to 50.5 deaths per 1,000 after the study and child mortality reduced from 160 to 84 deaths per 1,000 children. There were activities in increasing the communities' awareness, knowledge and practices of healthy behaviours. There were also sessions where women were taught about the importance of early and EBF, danger signs of their newborn and care of their sick babies. In addition to this, the health system was strengthened by provision of essential drugs, refurbishment of the primary health care facilities, training of clinical staff and established the "primary health under One Roof". With the intervention, there were about 14.6% increase in commencing breastfeeding within 24 hours of delivery in mothers and a 19.4% increase in hygienic cord care (64). Due to the multiple components of the intervention study, it improved the demand side by reducing both infant and maternal mortality; and supply side by strengthening the health system.

The maternal and newborn Health in Ethiopia Partnership (MaNHEP) intervention was conducted in two districts of Ethiopia. It focused on commencement of PNC services within 48 hours of delivery, whether the women had delivered at home or at the health facility. The intervention had three segments. First was training of the health extension workers,

community health development agents and TBAs. These health workers educated the expectant mothers, their families and friends on the importance of PNC. The second segment was the collaborative quality improvement on healthcare delivery and the third part was behavioural change communications where the PNC importance was emphasized to the women. After the intervention, there were 3-fold and 10-fold increase and sustenance in the PNC services coverage in the two districts. Some of the important facilitators were the use of mobile phones to notify the health workers on commencement of labour or birth and the involvement of the family members and friends. Hence this intervention showed the importance of community-based and community-led approaches in increasing utilization of PNC (65). This intervention also improved both the supply and demand sides by improving the knowledge and skills of CHWs and TBAs; and increasing the PNC services utilization.

A mHealth intervention conducted in Ethiopia also showed a significant increase in the utilization of PNC among women who were involved. The intervention involved the health workers using a phone based application that can send reminder for subsequent PNC visits to women and sending educational messages to the health workers themselves to update their knowledge and assist them to make right decisions in different situations (66).

#### 4.4 Mass media campaign

An intervention carried out in Malawi using community driven mass media campaign was reported to improve the use of PNC services among women who were exposed to it. The campaign messages included panel discussions, community discussions, drama and songs for women. The community formed listening clubs where they can listen to radio programmes and discuss it afterwards. The result of the campaign showed that there was a positive association of the campaign exposure and the utilization of PNC. The increase in the utilization of PNC can be most likely due to the improved knowledge of the maternal health issues learned from the mass campaign. This intervention can be an effective alternative in cases where there are limited community health workers that can deliver PNC at various homes (67). It has been reported in a systematic review that mass media and patient-mediated interventions have improved the quality of health services, though it was stated that the applicability in rural settings may not be limited. In the same review, emphasis was laid on multifaceted interventions as they have improve the quality of health services and invariably maternal and newborn health (68).

## CHAPTER 5: DISCUSSION

### 5.0 Introduction

In this chapter, the main findings from the literature will be analyzed using the conceptual framework. Evidence from the effective interventions from chapter four will also be analyzed and discussions will be made on how to improve utilization of PNC services in Nigeria. Despite published articles used for the literature review were sufficient for the framework selected, their quality could not be well ascertained, however because they fit into the inclusion criteria they were used for the review.

Despite the reduction in maternal and neonatal mortality that is expected to be derived from utilization of PNC and other MNCH services (ANC and institutional delivery), Nigeria still does not seem to be making much progress (25). Even with the higher rate of PNC attendance in Southwest Nigeria (55.7%), PNC checkups are still low compared to the recommended number of visits by WHO (34).

Utilization of maternal and neonatal healthcare services especially PNC is a phenomenon which is related to the availability, quality, cost of services, social structure, health belief and characteristics of the health users themselves (34). Some factors that have a strong association with the utilization of PNC include: maternal age, geopolitical zone, place of residence, maternal education, working status of mother, educational level of husband, household wealth level, parity and the utilization of ANC (25).

### 5.1 External environment

High rate of utilization of PNC services in women who reside in urban areas could be because of the higher number of standard and well-equipped health facilities found in urban areas. The low use of PNC services in rural areas could be associated to high level of illiteracy among the women.

The high uptake of PNC utilization found in southwest Nigeria can be because of the high number of educated women (table 4) and urban settlements found in this geopolitical zone compared to other geopolitical zones. The level of acceptability and availability of PNC services in Southern and Eastern Nigeria can also explain the reason women from these regions utilize PNC more.

Table 4: Educational attainment of the female household population in Nigeria based on place and region of residence <sup>(4)</sup>

<b>Background characteristics</b>	<b>No education</b>	<b>primary</b>	<b>secondary</b>	<b>More than secondary</b>	<b>Median years completed</b>
<b>Residence</b>					
<b>Urban</b>	21.5	31.4	35.6	10.6	5.6
<b>Rural</b>	53.5	26.9	15.9	2.1	0.0
<b>Zones</b>					
<b>North Central</b>	38.0	32.5	22.7	5.7	1.9
<b>North East</b>	61.1	22.6	11.6	2.9	0.0
<b>North West</b>	62.8	22.5	10.9	1.4	0.0



<b>South East</b>	18.7	35.0	36.5	8.8	5.6
<b>South South</b>	13.0	36.4	41.0	9.1	5.9
<b>South West</b>	17.1	32.3	39.3	11.0	5.9

Percentage distribution of educational level women age 15-49.

Source: Nigeria Demographic and Health Survey, 2013

## 5.2 Predisposing factors

Many studies have acknowledged that women in the age group 26-35 years are more likely to use PNC services compared to the younger or older ones. The majority of women in this age group (26-35 years) are expected to be married and may not have had many children. This can then explain the reason why women within this age group have higher tendency to utilize PNC.

In the younger ones (less than 26 years), the reasons of utilizing PNC services less could be because they may not be married and due to shame, financial constraints and sometimes judgement from health workers and people around them, all these may not allow them to attend PNC after delivery. Sometimes the low uptake of PNC services may be due to early marriage. Child marriage is common in Northern Nigeria and is negatively associated with utilization of PNC. This could be because the female child who has been married off may not be well educated or may be younger than the husband, which can make her not to have voice against her husband commands and can disempower her from making decision for utilizing PNC. This may also be one of the reasons why PNC utilization is low in Northern Nigeria.

In the older ones (more than 35 years), their experience in childbearing, high parity, sometimes financial constraints due to large family size and low SES can be some of the reasons for not utilizing PNC services. Most women in this age group that would be found attending PNC are those who are educated, who had previous complications from childbirth or who are just giving birth due to late marriage or infertility.

Despite the fact that unmarried teenagers are less likely to attend PNC services in Nigeria, it was reported in a study conducted in Ethiopia that women who are not married attended PNC more than those that were married, because of their autonomy to make decision for themselves. This can be a slight difference in culture as this study was carried out in another African country with slight diverse ethnicity and culture. Overall, there should not be discrimination to anyone when it comes to healthcare delivery. It is important to know that any woman who has had delivery is entitled to a comprehensive maternal healthcare. Hence, health workers should leave cultural issues out of work and always be professional. No article was found explicitly explaining the attitudes of health workers to women who attend PNC in health facilities in Nigeria.

Many of the factors that determine utilization of PNC are linked to one another. Some of these factors include: the socioeconomic factors such as place and region of residence, women and husband's education, religion, social network, mass media exposure and wealth status.

The educational level of households is an important factor because of its association with many factors that have significant impact on health-seeking behaviour. Educated women have more self-confidence and self-worth, which can break the barrier of not going for PNC and there could also be a reduced power difference between the educated women and health providers.

Educated women may be able to comprehend the importance of PNC more and likely to know where to go seeking for the health services compared to uneducated women. Since education enable the ability to read and write, educated women may have better access to health promotion messages and get more information on the importance of the available

health services. It is more feasible for educated women to have a higher SES in their households and be gainfully employed, hence they have higher autonomy to make independent decisions on healthcare utilization. In many studies conducted in Nigeria, it has shown that most women who do not attend PNC are uneducated and had their deliveries at home, which stresses the importance of education in the utilization of PNC. In other words, education has an immense influence on the utilization of PNC services, although there are still some educated mothers who do not utilize PNC.

Men who are educated will most of the time be informed on the benefits of attending PNC. PNC utilization can be increased faster when both husbands and wives are educated compared to when either or neither of them are educated.

Despite the role of mother-in-law on PNC utilization in Nigeria have not been clearly mentioned in articles, few publications have reported the influence of mother in-laws in the decision making during pregnancy and postnatal period. The utilization of PNC by mother and the newborn depends on mother-in-law's beliefs and decision due to her dominance and role in the household. In such situation, women do not have voice for medical care decisions as these are mostly made by their mother-in-law and/or husbands.

In Nigeria, it is a usual practice for mother in-law to visit new mothers and newborns during the postnatal period, during which the mother in-law has to monitor the mother's and newborn's wellbeing. During this period, the new mother has to heed to mother in-law's advice. The usual practice as it has been mentioned earlier, is for mothers not to leave their homes in the first 40 days as it is believed that "their body is not yet strong". During this period, mother-in-law sometimes bring forward some non-beneficial and harmful practices to engage in which may be difficult to refuse, this may still make it unacceptable for some women. This practice is common in the rural areas, although this is fading away in the urban part of Nigeria. It is good to note that interventions strategized to increase the utilization of PNC should not be towards women alone but to their immediate family members such as the husbands and mother-in-law who have influence on utilizing PNC services. This perception can be abolished if there is involvement of community and religious leaders in health programmes such as organizing discussions in mosques, churches, market places on how to enhance the perception of PNC utilization.

In Nigeria, aside ill-health of mothers and their newborns, mothers are usually eager to breastfeed their babies however, time of initiation is the problem. In some cases, mothers prefer to give boiled water mixed with honey, glucose and animal milk to their newborns as soon as they are delivered because colostrum is believed to be dirty and harmful.

The tendency for newborns to receive PNC depends on mothers. In Nigeria context, many women cherish their newborns' health more than theirs, this is the reason some women, despite taking their babies for PNC, will not bother to have themselves checked.

Low PNC utilization in Northern Nigeria could also be due to the higher number of Muslims, high level of illiteracy, high rate of poor SES and more rural settlements. The higher PNC utilization among Christians could be linked to Christianity being associated with medicine. It is believed that seeking for healing whenever there is an ailment is important in Christianity. This can be explained with faith-based health centres being possessed by churches and most times situated near or inside the church, thus another reason of higher percentage of Christians utilizing PNC services. The fact that women who are Muslims need permission from their spouses before seeking health care may make them not to attend PNC as stipulated. The traditional believers may not also attend PNC because of their belief in potency of herbal medicine. One of the setbacks of traditional practices used by traditional believers are the uncertainty of the herbal medicines standard.

The low PNC utilization seen in Northern Nigeria could be correlated to the high number of Muslims in the regions and the high utilization in the South can be associated with high number of Christians found in the southern regions. It is also important to note that many ethnic groups in Nigeria found in different regions have preferences for different religions

and this can indirectly be associated with the level utilization of PNC reported. hence, utilization of PNC may be more related to the ethnic group and not religion.

As mass media such as newspaper, radio and television stations are more accessible for the urban dwellers, it can explain the reason why women who reside in urban areas utilize PNC services more compared to rural dwellers. Availability of information, health seeking behaviour and improved knowledge on PNC are interrelated factors that can influence PNC utilization. These can be achieved through community awareness and campaigns.

### 5.3 Enabling factors

As mentioned earlier, enabling factors that determine the utilization of PNC services in mothers and their newborns are interrelated. It is easy for women who are insured with health insurance to afford PNC services compared to those that are not insured, because those insured will only need to pay 10% OOP. In Nigeria, health insurance cover mothers and newborns who are insured till the twelfth week after delivery. Since the cost for PNC services are unknown, women that are not insured may be discouraged from utilizing PNC services. It is also worth to note that less than 5% of the population is covered with health insurance.

Uneducated women may prefer delivery at home and not seeking healthcare due to the high possibility of unemployment and financial constraints among them. Some women deliver at home due to the long distance of health facilities from their homes. Women who had delivery at home may have less opportunity in getting information on the benefits of PNC when compared to those who had their delivery in the health facility.

Most women residing in rural areas live far away from health centres hence they have less tendency in attending PNC services. In cases where women are able to get to the health facility, there may be unavailability of services. This is a common scenario in rural health centres where there is discontinuity in health services delivery. In situations where there are financial and cultural constraints, most mothers and their newborns are unlikely to return for PNC even if they had antenatal care and facility delivery.

Without availability of health workers, women will not be able to utilize PNC services even if the barriers of affordability, accessibility, acceptability have been overcome. Poor attitude seen in health workers can also affect PNC utilization, especially if women have had previous bad experience. The attitude of health professionals also contributes to utilization of PNC services, although few studies were found to prove this in Nigeria. Since there is high rate of deliveries in rural areas, home visits by midwives and TBAs could be the solution, as this has been successfully practiced in Uganda which is of similar context to Nigeria. The attitude of health professionals towards women may be difficult to determine, however, it will be expected that health professionals who have good working environment with better motivation will perform better. Hence, the reason for good motivation among health workers, especially those working in rural areas.

Since there are more standard hospitals in the urban settlements, it will be possible for women who are urban dwellers to have better opportunities to utilize PNC services compared to those in rural areas. Due to better road network in urban areas, women residing there will have better access to PNC services.

Regular PNC provision can be achieved by providing twenty-four hour necessary resources (human and supplies) for mothers and their newborns, improvement in quality of care, promotion of emergency transport system and removal of the financial barriers. There is also need for periodic health system research in order to achieve optimal delivery strategies from interventions.

#### 5.4 Need factors

Unexpected findings of women with babies of low birth weight not attending PNC could be because of the fragility of small babies. The mothers might be scared something may go wrong during the course of taking them to clinic for PNC checkup.

Women who are educated may also make use of family planning services more because they had better chances of accessing information and as it has shown from publications that women with lower parity utilize PNC services more.

Perception of PNC services is an important drive for women to utilize PNC services. Women may have more confidence in TBAs who most of the time have good interpersonal communication and relationships at the village level. The TBAs also offer other forms of service charges when the women do not have cash to tender and sometimes allow payments to be made in installment. Due to the flexibility of the TBAs in their services, women in rural areas tend to visit the TBAs more rather than the health facilities for PNC checkup.

#### 5.5 Previous utilization of health services

It is logical to have higher number of women who attended ANC during their pregnancies and had institutional deliveries to likewise utilize PNC. Similarly, women who had delivered their babies using skilled birth attendants or health professionals will utilize PNC services more compared to those who had unskilled delivery. Women, along with their relatives should therefore be encouraged to attend ANC clinics where they will be informed of the importance of skilled delivery and also PNC utilization in order to improve MNCH. It is worth to remember that the Nigeria 2013 NDHS reported 36% of women had their delivery in health facility while 63% delivered at home (4).

#### 5.6 Effective interventions that improved utilization of Postnatal care

Nigeria primary health care is made of 5 levels as mentioned earlier. These levels can be followed hierarchically to improve PNC services among women. Activities that can be used as strategies include home visits, outreaches, community campaigns and other beneficial health services that will improve PNC utilization.

Community outreaches can be used as an intervention to increase the uptake of PNC services, especially in rural areas where health facilities are less available. As the CHWs act as a mitigating factor to the crisis of human resources for health, they can go a long way in reducing maternal and neonatal mortality with the provision of MNCH services in communities, most especially in the rural areas. Their services can be at the household and community levels. They can also be the 'middle man' between the community and the more skilled health workers. However, one of the challenges faced by CHWs is the overburden of tasks with limited support from the health system and poor wages which can demotivate them from carrying out their duties, therefore, this needs to be taken into account.

During outreaches which will be conducted by CHWs, women, especially the marginalized ones, can be educated on the importance of maternal health care and be provided with curative health services. During the course of the outreaches also, some women to be approached might be some of the mother in-laws who have negative perceptions on ANC, facility delivery and PNC. The disadvantages of early marriages can also be discussed and the community members can be involved in many activities to improve MNCH. The outreach will therefore be a medium of educating women and their relatives on the importance of MNCH.

Home visits is another intervention that can be carried out by the CHWs in rural areas. During the visits, women will be educated on the importance of PNC and will be taught on safe PNC practices. Examples include: hygienic cord care, thermal care for newborns, importance of early initiation of breastfeeding and benefits of colostrum. Home visits by

CHWs with adequate community awareness, especially to the rural areas where mothers and their newborns are secluded more during postnatal period, will give those women and their newborns opportunities to receive PNC services in their homes.

Introduction of voucher system is also a good way of encouraging women to utilize PNC services better, especially among women who are not covered with health insurance, as it has shown from intervention studies that solving the affordability barrier by using the voucher system will increase the utilization of PNC among women. This can be effective and sustainable with good political will.

Intervention studies conducted in both Nigeria and Ethiopia where mobile phones were used as a device of communication showed that they were more effective in the educated women. This was because those who responded more positively to the messages sent for attending PNC clinics were the educated women. The less response by the uneducated women could be attributed to the burden text messages sent. The overburden of such can be reduced by creating more programmes in radio stations using local languages which can overcome the barrier of utilizing PNC services.

Regular mass media campaigns in communities can also increase the utilization of PNC. In rural areas, public sound system can be used in talking to women in their various households. Those women that work outside their homes can be approached in groups in their working places. With the support of the government, programmes in local languages can be introduced in radio and television stations for improving the knowledge of women and their family members on PNC services utilization. It will be important for government to increase the efficiency of radio stations in the rural areas since that is the easy medium through which information can be accessed.

## 5.7 conclusion

It will be important to link these interventions to the available policy as well to address the implementation challenges. As it is known that skilled clinical care during delivery and postnatal period determine the survival of both mothers and their newborns, it is then crucial to mention that the clinical care should be made more accessible, available and culturally appropriate.

It is also important to state that most of these determinants if not all, are interlinked to one another in the utilization of PNC services. From the analysis, it has shown that education of the women and perhaps that of their husbands are important determinants for utilizing PNC. It has shown that the level of literacy of the mother determines whether or not she uses PNC services. In the same vein, education can be associated to SES. Women who are educated will usually want to reside in the urban region because of greater opportunities and availability of jobs. Although, to a lesser extent, educated women are also found in the rural areas and as such literacy is not a criterion for utilizing PNC. There are still smarter uneducated women who utilize PNC services in the rural areas. However, in most cases, educated women, in contrast to the uneducated ones, may have better propensity and opportunities of utilizing PNC services.

Based on points that have been mentioned, Nigeria can go a step forward to continue and carrying out interventions that have been successfully implemented in the country and some SSA countries to improve PNC utilization.

After analyzing all the obtainable published articles on the determinants that influence utilization of PNC services in Nigeria and also on the interventions that have proven effective, it has shown that the conceptual framework selected after adaptation, satisfy the need of the literature review. The original framework was more of Indonesia context rather than generalized, thus it was adapted. Issues missing from the original framework have been mentioned in chapter 2 above.

## CHAPTER 6: CONCLUSION AND RECOMMENDATION

### 6.1 Conclusion

PNC services are needed to be treated with priority, like ANC and institutional delivery, in order to reduce MM to less than 70 per 100,000 live births and neonatal mortality to at least as low as 12 per 1,000 live births by year 2030 as indicated by SDG 3.

Some of the factors that determine the utilization of PNC services in Nigeria that were identified include: maternal education, paternal education, place and type of residence, religion, perception of PNC, availability, affordability, acceptability, accessibility of services, the culture of the community, access to information and place of delivery.

With the review, it has shown that maternal education is an important factor that influences the use of PNC services. This is because maternal education has positive relationship with most of the determinants identified. The high PNC utilization that occur in the southern and eastern parts of Nigeria can also be associated to the high level of education compared to Northern Nigeria. Aside maternal education, most of the factors are interrelated and have influence on the utilization of PNC.

The role of religion in the utilization of PNC was not clear. Even though evidence has shown that Christians utilize PNC services more than the Muslims, many studies where Christians have utilized PNC more than the Muslims were conducted in regions where the population of the Christians are high, hence religion as a determinant is comparative. It will be commendable if a population level study can be conducted so as to know the certainty. Other factors such as culture, education and SES cannot be excluded to have more influence than religion.

Access to information was also shown to be an important determinant of PNC utilization. It has shown from evidence that mothers that have access to mass media use PNC services more. However, the uncertain part of it is that despite the availability of mass media such as radio stations in some parts of rural settlements, there is still low utilization of PNC in such areas. The low use of PNC services could then be attributed to lower level of education among women in the rural areas.

Few studies have dwelled on how health services delivery to mothers and their newborns affect PNC utilization. Even though it was mentioned in publications that attitude of health workers hinder the use of PNC services, there should be more to the health workers attitudes mentioned in published articles. More studies in future should be able to explain this.

## 6.2 Recommendation

The recommendations will be context specific and based on the objectives, findings and effective interventions that have been discussed. These will be used by the policy makers to improve maternal and child health care services in Nigeria. The recommendations will be categorized into individual/community and States/National levels.

### Individual level/Community Level

- Girls' education and Women empowerment: woman's education is one of the important factors that can decrease maternal and neonatal mortality. Priority should be put into educating the female child from primary school level to college. Educating a girl will empower her, increase her level of awareness and go a long way in improving all aspects of life and not only health. Parents should try to give equal opportunity to female and male children in terms of education.  
There should be programmes and activities for women to be empowered economically and socially, especially in the less privileged communities. Empowering women with skills can help them to have a livelihood and make decisions including for healthcare. Men should try as much as possible to give their wives autonomy to take decisions. The community leaders should be responsible for this since they are the closest to the communities. The States' governments should consider increasing accessibility to schools especially in rural areas.  
Regular meetings should be held among community leaders and States' government to discuss the challenges and way forward on how to increase the level at which female children are being enrolled in schools. This should be started as early as possible by the LGAs of each community.
- Involvement of the men and other family members in PNC utilization: men and family members including mother-in-law should be involved right from the antenatal period so that they can understand the importance of MNCH. This can be done by encouraging husbands and close relatives to come with women to antenatal clinics, delivery and postnatal clinics. During visits, sessions can be arranged for the accompanied husbands and relatives, where their opinions on MNCH services will be known and discussions will be made on how their decisions can improve the utilization of PNC and other MNCH services. The community health officers, midwives and medical officers of different health centres can be responsible for this and can in turn report to the LGAs in charge of the health facilities. Since less fund is needed to achieve this, it can be commenced immediately.
- Campaigns and advocacy to community on the importance of PNC services: campaigns should be started in various communities as soon as possible. This can be organized by the LGAs. This should be intensified in rural areas because of the low utilization of PNC. There should be involvement of family members, community and religious leaders. The purpose of involving these leaders is to change the negative perception of women, their husbands and community as a whole on the use of PNC services. Some elderly women can be educated during these campaigns and advocacy by explaining to them how to enlighten younger women on the importance of PNC. During the campaign, information on the practices such women staying back at home for 40 days after delivery, family planning services, hygienic umbilical care, early initiation and EBF can be discussed. The negative effects of some other harmful cultural practices should also be discussed. The campaign should be regular as the goal of modifying peoples' perception may be difficult to achieve quickly. Men should be involved in all the campaigns. The LGAs should recruit CHWs for the execution of the programme.
- Community-based outreach programmes, home visits and vocational training: health professionals from various health facilities should conduct regular community outreaches especially in the rural areas where we have low uptake of PNC utilization. This can be sponsored by the LGAs and States Governments. In this programmes, the communities will be provided with reproductive health information and services.

Vocational trainings and other forms of professional trainings that can fetch livelihood for women should be organized by the LGAs. This will alleviate the barrier of affordability of health services among women and also give some empowerment.

Introduction of home visits especially in rural areas by the CHWs should be commenced in Nigeria. There is need to commence integrated postnatal home visits packages in various states with appropriate health workers and referral care. Home visits should be organized by the health facilities and monitored by the LGAs. Due to the logistics attached, commencement may take effect after budget allocation have been released from the States' government.

#### State/National Level

- Voucher system and Review of the health insurance scheme: introduction of voucher system in health facilities to encourage PNC utilization will help the poor that cannot afford PNC services. This should be commenced in the rural areas immediately due to the low level of PNC utilization. The FMOH should include the funds for this scheme in the next and subsequent annual budgets. The allocation should be given to the appropriate authorities for the feasibility and sustainability of this scheme. Government should also review the National Health Insurance scheme to make MNCH services free in Nigeria. There should be special consideration for all pregnant women no matter their status to have free treatment till end of their postnatal period.
- The use of automated text messages and phone calls: this is an effective and cheap way to increase the utilization of PNC services. As we are in the era where most of households own a mobile phone, this system should be used to call and send messages to new mothers to remind them of the next appointment for PNC. It must be ensured that women have access to a mobile phone, whether owned by them or by available and reachable relatives. Mobile phones should be provided to health facilities especially those in rural areas. FMOH should collaborate with the telecommunication companies to reduce the tariffs for this service all over the country. Regular monitoring should also be made by delegated officials from different States. The FMOH should be responsible on how this can be achieved by involving all the telecommunications companies in Nigeria to reach agreements.
- Improvement in Health services: government should build health facilities close to the community so as to access them within short distance. They should also renovate those health facilities that are not functioning. The health professionals working in rural areas should be given special allowances as a way of motivation. Funds for these activities can be included in the FMOH annual budget. The renovations of health facilities have been included recently in the FMOH annual budget but more emphasis should be laid to the health facilities in rural areas since those are where we have the lowest utilization of PNC services. Key stakeholders such as the FMOH, States' Ministry of Health, community and religious leaders, women organizations, Medical and Dental Council of Nigeria, Nursing Council of Nigeria, NHIS, National Primary Health Care Development Agency (NPHCDA), Ministry of Finance, chief medical officers of health facilities from all States, interested donors and non-governmental organizations (NGOs) should come together to discuss on how the barriers to utilization of PNC can be reduced and plan on how to improve MNCH services at all levels.
- Policy and reform: the government should review and strategize its policy to see that those regions where we have low utilization of PNC are provided with adequate health facilities and human resources. There should be assurance of appropriate need-based resources in all regions. FMOH should be responsible for the formulation and implementation of the policy. FMOH should involve all relevant stakeholders' such as NPHCDA, chief medical officers of health facilities from all States, Medical and Dental



Council of Nigeria, community leaders, Nursing Council of Nigeria, NGOs and interested donors.

- Research: further studies should be conducted to know the reasons why women do not utilize PNC compare to ANC and facility delivery. Research should also be conducted at the national level to further explore determinants such as religion and attitudes of health workers, for which it is not clear how they affect PNC utilization. The FMOH should be responsible for conducting the research. There should be available budget allocated for the execution of the research. Since funding is involved, the research to be done can commence when government has release the allocation for the execution.

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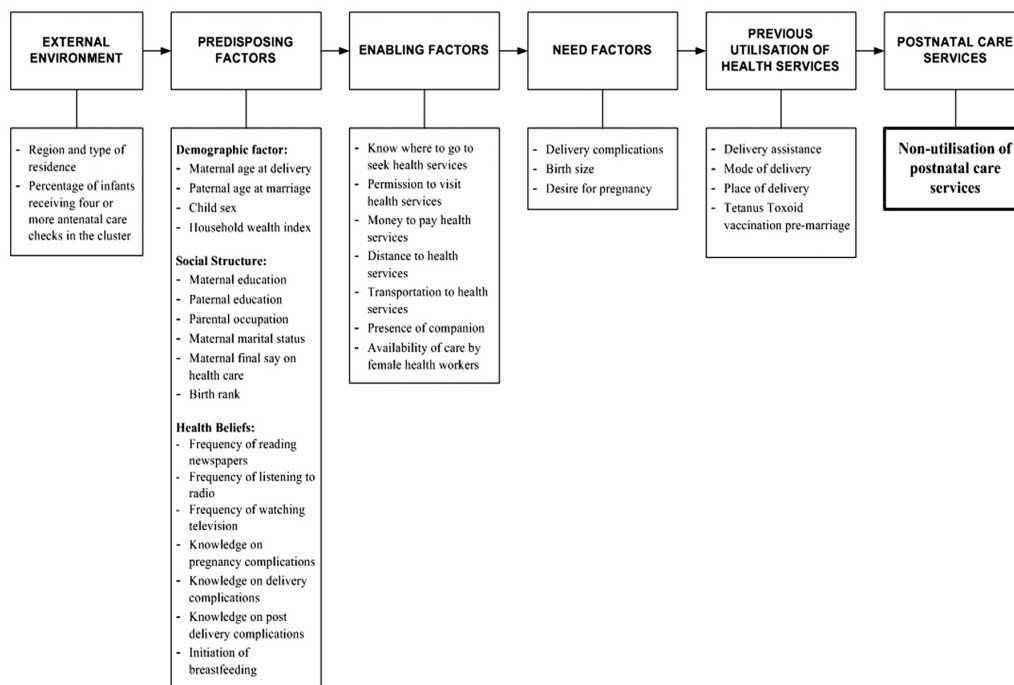
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## ANNEXURES

### Annex 1: Conceptual framework

#### Conceptual framework of factors associated with non-utilisation of postnatal care services.



Titaley conceptual framework (adapted from Anderson and Newman framework of health services utilization <sup>(28)</sup>)

#### Annex 2: Contents of essential postnatal care services

##### I. Contents of Essential postnatal care services for all mothers

- Assess and check for bleeding, check temperature
- Support breastfeeding, checking the breasts to prevent mastitis
- Manage anaemia, promote nutrition and insecticide treated bed nets, give vitamin A supplementation
- Complete tetanus toxoid immunization, if required
- Provide counselling and a range of options for family planning
- Refer for complications such as bleeding, infections, or postnatal depression
- Counsel on danger signs and home care

##### II. Contents of Essential postnatal care services for all newborns

- Assess for danger signs, measure and record weight, and check temperature and feeding
- Support optimal feeding practices, particularly exclusive breastfeeding
- Promote hygiene and good skin, eye, and cord care
- If prophylactic eye care is local policy and has not been given, it is still effective until 12 hours after birth

- Promote clean, dry cord care
- Identify superficial skin infections, such as pus draining from umbilicus, redness extending from umbilicus to skin, more than 10 skin pustules, and swelling, redness, and hardness of skin, and treat or refer if the baby also has danger signs
- Ensure warmth by delaying the baby's first bath to after the first 24 hours, practising skin-to-skin care, and putting a hat on the baby
- Encourage and facilitate birth registration
- Refer for routine immunizations
- Counsel on danger signs and home care

Source: Opportunity for Africa's Newborns (WHO)

### Annex 3: Danger signs

#### ➤ For mothers:

- Excessive bleeding
- Foul smelling vaginal discharge
- Fever with or without chills
- Severe abdominal pain
- Excessive tiredness or breathlessness
- Swollen hands, face and legs with severe headaches or blurred vision
- Painful, engorged breasts or sore, cracked, bleeding nipples

#### ➤ For newborns:

- Convulsions
- Movement only when stimulated or no movement, even when stimulated
- Not feeding well
- Fast breathing (more than 60 breaths per minute), grunting or severe chest in-drawing
- Fever (above 38°C)
- Low body temperature (below 35.5°C)
- Very small baby (less than 1500 grams or born more than two months early)
- Bleeding

Source: Opportunity for Africa's Newborns (WHO)



Annex 4: Summary of articles used in chapter 3

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
1.	<ul style="list-style-type: none"> <li>Oluwaseyi Dolapo Somefun</li> <li>Latifat Ibisomi</li> </ul>	Determinants of postnatal care non-utilization among women in Nigeria	cross-sectional study	Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>63 % of the women did not utilize PNC within 42 days after delivery</li> <li>4 % of the women utilized the appropriate care according the WHO guidelines</li> <li>pregnancy wanted-ness, mother's education, marital status, occupation, place of residence, region, religion wealth status, child's birth order, child's birth size, mothers use of ANC services, distance to health facility place of delivery are significant factors affecting PNC non-utilization</li> <li>Mothers with high parity (5 and above) were 1.53 times more likely to not use postnatal care (RRR = 1.53, CI 1.18–1.99).</li> </ul>	Low uptake of PNC services in Nigeria
2.	<ul style="list-style-type: none"> <li>Titilayo Olaitan</li> <li>Ifeoma P. Okafor,</li> <li>Adebayo T. Onajole</li> <li>Olayinka A. Abosede</li> </ul>	Ending preventable maternal and child deaths in western Nigeria: Do women utilize the life lines?	community based cross sectional study	South-west, Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>Majority (58.8%) made only one PNC visit after delivery</li> <li>About half of mothers attended PNC in the 5<sup>th</sup> or 6<sup>th</sup> week (50.2%).</li> <li>Most (56.8%) of the respondents who delivered at the health facilities were discharged at/after 24 hours post-delivery.</li> <li>Maternal education and marital status significantly influenced utilization.</li> <li>maternal age, employment status,</li> <li>Number of children, spouse employment and educational status played significant roles.</li> <li>Socio-demographic, socio economics factors and health-seeking behaviour were found to play significant roles in the utilization of MNCH services.</li> </ul>	<ul style="list-style-type: none"> <li>The significance of maternal education in predicting utilization was ver prominent.</li> <li>Utilization of maternal and child health services among respondent was above national average but not optimal.</li> </ul>

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
3.	<ul style="list-style-type: none"> <li>Adebowale Ayo Stephen</li> <li>Akinyemi Odunayo Joshua</li> </ul>	Determinants of Maternal Utilization of Health Services and Nutritional Status in a Rural Community in South-West Nigeria	cross-sectional house-hold survey	Southwest, Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>29.1% of the women who had given birth in the last five years prior the survey sought PNC within the first 3 days after delivery</li> <li>The likelihood of utilization of PNC within 3 days after birth was lower among women with primary education) and those who belong to Islam religious group than their counterparts with no education and Christians respectively.</li> </ul>	Age of mother at the birth of their most recent under-five child, education, religion, and income were found to be significantly associated with timing of post-natal check
4.	<ul style="list-style-type: none"> <li>Idris Usman Takai</li> <li>Haruna Dantaro Dlakwa</li> <li>Mohammed Bukar</li> <li>Bala Mohammed Audu</li> <li>Aliyu Salihu Kwayabura</li> </ul>	Factors responsible for underutilization of postnatal care services in Maiduguri, north-eastern Nigeria	cross-sectional, questionnaire based study	Northeast, Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>Only 16.9% of the respondents attended PNC services within 42 days after delivery.</li> <li>Most of the mothers (60.9%) were not knowledgeable about PNC services.</li> <li>Very high proportion of participants (69.4%) did not attend antenatal clinics, and over 70% of the study population had delivered at home.</li> <li>married women were 3 times more likely to have received postnatal care services than the unmarried ones.</li> <li>Education of women is a positive factor for utilization of PNC services in this study after controlling for confounders.</li> </ul>	<ul style="list-style-type: none"> <li>Utilization of PNC services is quite low in Maiduguri.</li> <li>Socioeconomic and sociodemographic factors influenced the use of postnatal care services.</li> </ul>
5.	<ul style="list-style-type: none"> <li>Tukur Dahiru</li> <li>Oche Mansur Oche</li> </ul>	Determinants of antenatal care, institutional delivery and postnatal care services utilization in Nigeria	cross-sectional descriptive using	Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>28.9% of newborn babies received PNC within two months of delivery.</li> <li>The higher the parity the less likely to receive PNC.</li> <li>There is influence of ANC and facility delivery on accessing PNC</li> <li>ANC provides an opportunity for sending message to the attendees on the benefits of facility delivery and PNC.</li> </ul>	<ul style="list-style-type: none"> <li>Maternal and husband's level of education, place of residence (urban/rural), parity and wealth level predicting utilization of MNCH services (ANC,</li> </ul>

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
							institutional delivery and PNC)
6.	<ul style="list-style-type: none"> <li>Stella Babalola</li> <li>Adesegun Fatusi</li> </ul>	Determinants of use of maternal health services in Nigeria - looking beyond individual and household factors	Reproductive Health Survey	Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>41.2% of women received PNC</li> <li>Education is the only individual-level variable that is consistently a significant predictor of service utilization</li> <li>socio-economic level is a consistent significant predictor at the household level</li> <li>At the community level, urban residence and community media saturation are consistently strong predictors.</li> </ul>	<ul style="list-style-type: none"> <li>There was association between ethnicity and PNC utilization</li> <li>Whereas ethnicity seems to make no significant difference for use of ANC, it does for use of skilled assistance and PNC.</li> </ul>
7.	<ul style="list-style-type: none"> <li>Joseph O. Ugboaja</li> <li>Nwosu O. Berthrand</li> <li>Anthony O. Igwegbe</li> <li>Amaka L. OBINwosu</li> </ul>	Barriers to postnatal care and exclusive breastfeeding among Urban women in southeastern Nigeria	Cross sectional survey	Southeast, Nigeria	urban market women	<ul style="list-style-type: none"> <li>Lack of knowledge about PNC distant location of the hospitals and 'feeling that postnatal visits was not necessary' were the main reasons for nonattendance to postnatal clinic.</li> <li>Utilization of PNC services was significantly associated with increasing parity (<math>P &lt; 0.01</math>), maternal education (<math>P = 0.04</math>) and attendance to ANC (<math>P &lt; 0.01</math>).</li> <li>Although the utilization increases with maternal age, there was no significant association (<math>P = 0.02</math>).</li> </ul>	Poor knowledge and inaccessibility to health facilities were the main obstacles to PNC while the practice of exclusive breastfeeding was limited by the stress and mothers' refusal
8.	<ul style="list-style-type: none"> <li>Oche M.O.</li> <li>Umar A.S.</li> <li>Ahmed H.</li> </ul>	Knowledge and practice of exclusive breastfeeding in Kware, Nigeria	cross-sectional descriptive study	Northwest, Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>A total of 54(31%) of the mothers had adequate knowledge of exclusive breastfeeding with 94(53%) of them initiating breastfeeding immediately after birth.</li> <li>Only 55(31%) of the mothers practiced exclusive breastfeeding.</li> </ul>	The knowledge and practice of EBF was low.

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
						<ul style="list-style-type: none"> <li>• Out of the 53 mothers that stopped breastfeeding, 85% of them did so between 16-20months</li> <li>• 94(53%) initiated breastfeeding immediately (&lt;30minutes) after delivery, while 85(47%) did so long after 30 minutes.</li> <li>• Reasons adduced for delayed initiation of breastfeeding among 85 mothers include colostrum being dirty and thought to be harmful to the child, lack of breast milk and mother or child illness</li> </ul>	
9.	<ul style="list-style-type: none"> <li>• K.E. Agho</li> <li>• K. Ezeh</li> <li>• A. I. Issaka</li> <li>• A. I. Enoma</li> <li>• S. Baines</li> <li>• A.M.N. Renzaho</li> </ul>	Population attributable risk estimates for factors associated with non-use of postnatal care services among women in Nigeria	Household survey	Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>• Non-use of PNC services was attributed to 68% of mothers who delivered at home, 61% of those who delivered with the help of non-health professionals and 37% of those who lacked knowledge of delivery complications in the study population.</li> </ul>	Non-use of PNC services among mothers was significantly associated with rural residence, household poverty, no or low levels of mothers' formal education, small perceived size of neonate, poor knowledge of delivery related complications, and limited or no access to the mass media.
10.	<ul style="list-style-type: none"> <li>• Babasola O. Okusanya</li> <li>• Alero A. Roberts</li> </ul>	Birth plans and health insurance enrolment of pregnant women: a cross-sectional	cross-sectional study	Southwest, Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>• Health insured women arranged for transportation and identified a place of birth more than women without an insurance cover.</li> <li>• Women with health insurance had better birth plans for identification of place of birth</li> </ul>	Health insurance ownership was low and birth preparedness was not better among those who owned insurance.

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
	<ul style="list-style-type: none"> <li>Oluwatosin J. Akinsola</li> <li>Boniface A. Oye-Adeniran</li> </ul>	survey at two secondary health facilities in Lagos, Nigeria				<ul style="list-style-type: none"> <li>and transportation in labour than those with no health insurance.</li> <li>Out-of-pocket payment is much more affordable for women who have health insurance enrolment because they pay 10% of the cost of maternity services while the health insurance covers 90% of costs.</li> <li>Ninety per cent had no health insurance and would pay out-of-pocket for delivery.</li> </ul>	
11.	<ul style="list-style-type: none"> <li>Mwifadhi Mrisho</li> <li>Brigit Obrist</li> <li>Joanna Armstrong Schellenberg</li> <li>Rachel A Haws</li> <li>Adiel K Mushi</li> <li>Hassan Mshinda</li> <li>Marcel Tanner</li> <li>David Schellenberg</li> </ul>	The use of antenatal and postnatal care: perspectives and experiences of women and health care providers in rural southern Tanzania	Qualitative study	Southern Tanzania	Women within reproductive age group	<ul style="list-style-type: none"> <li>majority of those who gave birth at home did seek PNC services, but reported attending 3-7 days after childbirth.</li> <li>women with babies as old as 2 or 3 weeks had not yet taken their baby for PNC. Their reasons for the delay were mainly due to waiting for the baby's cord stump to fall off, to allow the mother and baby to regain energy lost during childbirth, lack of money and distance to the health facility.</li> <li>mother would be left at home to regain her energy lost during childbirth</li> </ul>	Respondents in the communities did not make a distinction between the care in the first six weeks and the Expanded Programme on Immunisation (EPI) which is one component of PNC.
12.	<ul style="list-style-type: none"> <li>Emma Sacks</li> <li>Tsitsi B. Masvawure</li> </ul>	Postnatal Care Experiences and Barriers to Care Utilization for Home- and	Qualitative research	Uganda and Zambia	Women within reproductive age group	<ul style="list-style-type: none"> <li>barriers to PNC include cost and distance to access care, and lack of knowledge of the importance of PNC, fear of mistreatment by health care workers</li> </ul>	In both countries, women reported not seeking PNC because they feared the

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
	<ul style="list-style-type: none"> <li>Lynn M. Atuyambe</li> <li>Stella Neema</li> <li>Mubiana Macwan'gi</li> <li>Joseph Simbaya</li> <li>Margaret Kruk</li> </ul>	Facility-Delivered Newborns in Uganda and Zambia				<ul style="list-style-type: none"> <li>Women perceived that their newborns were being denied care or given lower priority for care due to having been born at home.</li> <li>The newborns that are being threatened or denied care are likely the same newborns that experience multiple and interactive forms of disadvantage due to geography, maternal education, ethnicity, rural residence and poverty</li> </ul>	repercussions or they believed they would be turned away based on statements made by either providers or community members.
13.	<ul style="list-style-type: none"> <li>Fikirte Tesfahun</li> <li>Walelegn Worku</li> <li>Fekadu Mazengiya</li> <li>Manay Kifle</li> </ul>	Knowledge, Perception and Utilization of Postnatal Care of Mothers in Gondar Zuria District, Ethiopia: A Cross-Sectional Study	Community-based, cross-sectional study supported by a qualitative study conducted among 15-49 years mothers	Ethiopia	Women within reproductive age group	<ul style="list-style-type: none"> <li>majority of the women (84.39 %) were aware and considered PNC necessary (74.27 %).</li> <li>only 66.83 % of women obtained PNC.</li> <li>The most frequent reasons for not obtaining PNC were lack of time (30.47%), long distance to a provider (19.25 %), lack of guardians for children care (16.07 %), and lack of service (8.60 %).</li> <li>place of residence, distance from a health institution, antenatal care visit and having decision making authority for utilization were factors found to be significantly associated with PNC utilization.</li> </ul>	<ul style="list-style-type: none"> <li>Mothers in the study area had a high level of awareness and perception about the necessity of PNC.</li> <li>Urban women and those who displayed higher levels of autonomy were more likely to use postnatal health services.</li> <li>Most mothers have a positive perception toward PNC services; however, mothers in a rural area possess a negative perception.</li> </ul>
14.	<ul style="list-style-type: none"> <li>Henry Wamani</li> </ul>	Infant and Young Child	cross-sectional	Western Uganda	mothers/carers	<ul style="list-style-type: none"> <li>Initiation of breastfeeding was near universal</li> </ul>	<ul style="list-style-type: none"> <li>Infant and young child feeding</li> </ul>

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
	<ul style="list-style-type: none"> <li>Anne Nordrehaug Astrøm</li> <li>Stefan Peterson</li> <li>Thorkild Tylleskar</li> <li>James K. Tumwine</li> </ul>	Feeding in Western Uganda: Knowledge, Practices and Socio-economic Correlates	household survey			<ul style="list-style-type: none"> <li>43% of mothers reported use of pre-lacteals such as Plain water, glucose +water, and sugar +water.</li> <li>Exclusive breastfeeding rate was 57% at birth (i.e. pre-lacteals not confirmed).</li> </ul>	<p>practices observed in this study are far from the recommended norms.</p> <ul style="list-style-type: none"> <li>Of the socio-economic factors, only mothers' education and the household asset index positively correlated with feeding practices.</li> </ul>
15.	<ul style="list-style-type: none"> <li>Shegaw Mulu Tareegn</li> <li>Leslie Sue Lieberman</li> <li>Vincentas Giedraitis</li> </ul>	Determinants of maternal health service utilization in Ethiopia: analysis of the 2011 Ethiopian Demographic and Health Survey	Cross sectional study	Ethiopia	Women within reproductive age group	<ul style="list-style-type: none"> <li>Only 9.3% of women had a postnatal checkup within six weeks after delivery.</li> <li>The use of PNC service is similar to the use of skilled delivery attendants.</li> <li>The proportion of women who had PNC was higher (33.5%) among urban residents than rural residents (5%).</li> <li>Never married women, Orthodox Christians, Guragie ethnic groups, those from the richest household, better educated women and those with only 1 birth had a higher proportion to use postnatal care services</li> </ul>	Maternal health service utilization in Ethiopia is very low.
16.	<ul style="list-style-type: none"> <li>M Bukar</li> <li>YS Jauro</li> </ul>	Home births and postnatal practices in Madagali, North-Eastern Nigeria	cross-sectional descriptive study	Northeast, Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>A significant number of births take place in the home and supervised by unskilled persons.</li> </ul>	

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
17.	<ul style="list-style-type: none"> <li>Okafor I.P.</li> <li>Bashir I.</li> <li>Dolapo D.C.</li> </ul>	Maternal Postnatal Care Utilization and Associated Factors: A Community-Based Study among Women of Child-Bearing Age in Lagos, Nigeria	Cross sectional study	Southwest, Nigeria	Women within reproductive age group	<ul style="list-style-type: none"> <li>Utilization of PNC decreased as the parity increased with a statistically significant difference (<math>p=0.031</math>).</li> <li>Respondents' religious belief significantly influenced use of PNC. Christians (76.8%) were more likely than Muslims (65.5%) or any other religion (55.6%) significantly (Fisher's exact <math>p=0.004</math>) to go for PNC.</li> <li>The higher the level of formal education, the more likely the woman was to utilize PNC.</li> <li>women in the age groups 26–30 years and 31–35 years were more likely to utilize postnatal health services compared to women younger than 25 years or in the age groups 36–40 years and 41–45 years.</li> </ul>	<ul style="list-style-type: none"> <li>Maternal education and health-seeking behavior were found to be strong predictors of utilization.</li> <li>Employment, maternal age, number of children and religion also played significant roles.</li> </ul>
18.	<ul style="list-style-type: none"> <li>Prashant Kumar Singh</li> <li>Rajesh Kumar Rai</li> <li>Manoj Alagarajan</li> <li>Lucky Singh</li> </ul>	Utilization of Maternal Health Care Services among Married Adolescent Women: Insights from the Nigeria Demographic and Health Survey, 2008	Secondary data analysis	Nigeria	Married adolescent (aged 15–19 years) women	<ul style="list-style-type: none"> <li>35.1%, 28.1%, and 31.6% had at least four ANC visits, a safe delivery, and PNC respectively.</li> <li>A large difference was observed by place of residence, women's and husband's education, religion, social group, work status, mass media exposure, wealth status, and region of residence.</li> <li>Nearly 32% of adolescent women had received PNC within 42 days of delivery.</li> <li>Women's education, husband's education, wealth quintile, and region of residence were documented as the most important factors associated with maternal healthcare service utilization.</li> <li>ANC visit was found to be vital in the utilization of PNC.</li> </ul>	<ul style="list-style-type: none"> <li>Adolescent women who utilized safe delivery care was also more likely to use postnatal care</li> <li>Number of factors that have significant influence on the utilization of maternal healthcare services, including place of residence, women's and husband's education level, economic status, birth order and interval, region,</li> </ul>



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							and antenatal care visit
19.	<ul style="list-style-type: none"> <li>Patrick Opiyo Owili</li> <li>Miriam Adoyo Muga</li> <li>Yiing-Jenq Chou,</li> <li>Yi-Hsin Elsa Hsu</li> <li>Nicole Huang</li> <li>Li-Yin Chien</li> </ul>	Associations in the continuum of care for maternal, newborn and child health: a population-based study of 12 sub Saharan Africa countries	Demographic and Health Surveys data of 12 countries in SSA	<ul style="list-style-type: none"> <li>Mali</li> <li>Nigeria</li> <li>DR Congo</li> <li>Rwanda</li> <li>Namibia</li> <li>Senegal</li> <li>Gambia</li> <li>Sierra Leone</li> <li>Liberia</li> <li>Togo</li> <li>Tanzania</li> <li>Zambia</li> </ul>	Women within reproductive age group	<ul style="list-style-type: none"> <li>Adequate utilization of ANC is directly and positively related with adequate utilization of delivery care and child's immunization program but not utilization of PNC.</li> <li>The lack of the association between ANC and PNC was due to the sudden drop-out of women from the pathway of care between delivery care and PNC (34.2 %), hence some women who adequately utilized ANC services did not continued to PNC (23.8 %).</li> </ul>	utilization of each level of MNCH care is related to the next level of care, that is – ANC is associated with delivery care which is then associated with PNC and subsequently with child's immunization program
20.	<ul style="list-style-type: none"> <li>Joyce L Browne</li> <li>Gbenga A Kayode</li> <li>Daniel Arhinful</li> <li>Samuel A J Fidler</li> <li>Diederick E Grobbee</li> <li>Kerstin Klipstein-Grobusch</li> </ul>	Health insurance determines antenatal, delivery and postnatal care utilisation: evidence from the Ghana Demographic and Health Surveillance data	population-based cross-sectional study	Ghana	Women within reproductive age group	Among insured women the likelihood of having ANC increased by 96% and of skilled delivery by 129% while postnatal care among insured women increased by 61%.	Maternal health insurance status plays a significant role in the uptake of the MNCH continuum of care service.
21.	<ul style="list-style-type: none"> <li>Danielle Yugbaré Belemsaga</li> <li>Aristide Bado</li> <li>Anne Goujon</li> </ul>	A cross-sectional mixed study of the opportunity to improve maternal	A cross-sectional mixed study	Burkina Faso	Women within reproductive age group	<ul style="list-style-type: none"> <li>51% of the women who brought their newborn to the health facility were not examined at all during the postpartum period.</li> <li>Overall, 52% of mothers did not receive any postpartum checkup and only 45% of</li> </ul>	<ul style="list-style-type: none"> <li>postpartum care attendance was significantly low among less advantaged households with lo</li> </ul>

S/N	Name	Title of article	Type of study	Location	Study age group	Findings	Comments
	<ul style="list-style-type: none"> <li>Els Duysburgh</li> <li>Olivier Degomme</li> <li>Seni Kouanda</li> <li>Marleen Temmerman</li> </ul>	postpartum care in reproductive, maternal, newborn, and child health services in the Kaya health district of Burkina Faso				<p>mothers and infants both had at least one postpartum visit.</p> <ul style="list-style-type: none"> <li>90% of the newborns do receive the BCG vaccine (normally at birth or soon thereafter)</li> <li>84% of the mothers were not examined at discharge.</li> <li>Women with secondary education or more and living in relatively wealthier households are more likely to have received postpartum care for their newborn as well as themselves.</li> <li>Age of the mother and the number of children were significantly associated with postpartum care: the relationship is positive for young mothers (within the age group 17–29 years) and low parity (1–2 children).</li> </ul>	<p>income, particularly for women with no education, and whose occupation was farming.</p> <ul style="list-style-type: none"> <li>attendance rate declined with the number of children and was remarkably low for women with 5–6 children and older than 30 years</li> </ul>
22.	<ul style="list-style-type: none"> <li>Diwakar Mohan</li> <li>Shivam Gupta</li> <li>Amnesty LeFevre</li> <li>Eva Bazant</li> <li>Japhet Killewo</li> <li>Abdullah H Baqui</li> </ul>	Determinants of postnatal care use at health facilities in rural Tanzania: multilevel analysis of a household survey	Household survey	Tanzania	Women within reproductive age group	<ul style="list-style-type: none"> <li>Women who had completed primary level of education or higher were more likely to go for PNC at a health facility.</li> <li>Those delivering at a health facility, including at a hospital, health center, or dispensary, were less likely to use PNC as compared to those delivering at home.</li> <li>Women who had assisted mode of delivery (Cesarean section/ forceps delivery) were 2.9 times more likely to report receiving PNC services from facilities.</li> <li>Women counseled by a CHW on PNC were 2.3 times more likely to use a facility for PNC services</li> <li>Community education, poverty levels, and distance to nearest facility (which has been widely used as an indicator of geographic access did not appear to have any influence on utilization of PNC.</li> </ul>	<ul style="list-style-type: none"> <li>PNC use is universally low in Morogoro with significant geographic differences.</li> <li>The study reinforces the need to understand the contextual complexities of care seeking and the importance of building and strengthening systems through linkages between</li> </ul>

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							facility and community.
23.	<ul style="list-style-type: none"> <li>• Cheryl A. Moyer</li> <li>• Philip B. Adongo</li> <li>• Raymond A. Aborigo</li> <li>• Abraham Hodgson</li> <li>• Cyril M. Engmann</li> <li>• Raymond DeVries</li> </ul>	"It's up to the Woman's People": How Social Factors Influence Facility-Based Delivery in Rural Northern Ghana	Qualitative research	Northern Ghana	Women with newborn, grandmothers, household heads, compound heads, community leaders, traditional birth attendants, traditional healers, and formally trained healthcare providers.	<ul style="list-style-type: none"> <li>• Several respondents indicated that husbands, mother-in-laws, compound heads and soothsayers may need to be consulted before a woman can go to a facility.</li> </ul>	
24.	<ul style="list-style-type: none"> <li>• Yalem Tsegay</li> <li>• Tesfay Gebrehiwot</li> <li>• Isabel Goicolea</li> <li>• Kerstin Edin</li> <li>• Hailemariam Lemma</li> <li>• Miguel San Sebastian</li> </ul>	Determinants of antenatal and delivery care utilization in Tigray region, Ethiopia: a cross-sectional study	Community-based cross-sectional survey	Ethiopia	Women within reproductive age group	<ul style="list-style-type: none"> <li>• The decision to visit a health facility for delivery was made by the mothers themselves in most cases (74%), followed by the extended family (the woman's mother and father, mother-in-law, elderly relatives and neighbours) (12%), and the husbands and TBAs (4% respectively).</li> <li>• The remaining 6% was involved a joint decision made by husbands and wives</li> </ul>	