

## PATRONAGE OF ANTENATAL CARE SERVICES IN ZAMFARA STATE, NIGERIA.

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### Abstract

Utilisation of antenatal care (ANC) services by women during pregnancy plays a pivotal role in averting pregnancy related morbidity and mortality. However, utilisation of the services remains low over the years in Nigeria and Zamfara State, in particular. This study examined the patronage of ANC services in urban, semi-urban and rural areas of Zamfara State, Nigeria. Quantitative data were used for the study. A total of 384 copies of questionnaire were administered to women of child-bearing age that had children under-five, using the Multistage Cluster Sampling technique. The Statistical Package for Social Sciences (SPSS) version 21 was used for the data analysis. The Health-Seeking Behavior model developed by Ronald Max Anderson was adopted as the theoretical framework for the study. The study discovered that majority of mothers received ANC services from skilled healthcare providers at least, once, but the utilisation of the specific components of the services was low. Majority of the respondents did not comply with the current 8 ANC Visits, did not take folic acid and iron tablets daily and had not HIV test during pregnancy. Some women did not use the services at all due to reasons including lack of husband/ mother in-law's permission, patronage of traditional birth attendants, lack of interest, not experiencing any pregnancy related illness, distance to healthcare facility, transportation problems, insecurity and poverty. The study recommends that the Zamfara State government should ensure availability, affordability and accessibility of ANC drugs at all government health facilities. The policy of compelling pregnant women to patronize ANC services as well as carrying out mobilization and enlightenment campaigns throughout the State at regular intervals, should be encouraged.

**Keywords:** Ante-natal Care Services. Health-Seeking Behaviour Model; Maternal mortality; Skilled Health Care Providers; Traditional Birth Attendants.

## Introduction

Antenatal care services (ANCs) are the most cost-effective preventive health care (WHO, 1992; Reiss, 1999; Park, 2015) reserved for the use of the world's prospective mothers who appear to be one of the most vulnerable groups exposed to many diseases in society. ANC is a competent preventive medical care service given to women during pregnancy. It is worthy to note that women suffer from many pregnancy related morbidity and mortality issues in the course of child bearing. Over the years, there has been increasing concern by governmental and non-governmental organizations, scholars and practitioners of public health over the high level of global maternal mortality (Black et al., 2016) which could have been prevented through the utilization of ANC services.

A recent report by the WHO et al. (2023), reported that 70% of global maternal deaths in 2020 occurred in Sub-Saharan Africa alone, followed by Central and Southern Asia (17%). Nigeria had the highest number of maternal deaths estimated to have accounted for over a quarter (28.5%) of maternal deaths worldwide in 2020 (WHO et al., 2023). The major causes of maternal mortality in Nigeria are pregnancy related complications that are avoidable through adequate utilisation of ANC services. Despite concerted efforts made over the years by governmental and non-governmental organisations such as WHO, UNICEF etc. in revamping primary healthcare centers in Sub-Saharan Africa, utilization of ANC services in Nigeria is low especially in the North West and North East geo-political zones of the country. While many countries in Africa have reached ANC coverage of 90%, available report in Nigeria shows that 67% of women aged 15-49, who gave birth in the 5 years preceding 2018 Nigeria Demographic and Health Survey (NDHS) received ANC from a skilled provider during the pregnancy for their most recent births in Nigeria and only 57% had at least four ANC visits (NPC, 2018).

Historically, in the early 1900 on-ward, ANC was based on many visits which is known as traditional approach to antenatal care model. Later, the Model was revised in 2001 by the WHO and a new model called focused antenatal care (FANC) was adopted, recommending only four visits. However, the aim of reducing maternal mortality was not achieved. Then the model was further revised in 2016 and arrived at 2016 WHO ANC model consisting of eight contacts in order to reduce perinatal deaths (WHO & USAID, 2016). Studies conducted in Nigeria in general and Zamfara State in particular, reported low utilization of ANC services (Idris et al., 2013; Fagbamigbe & Idemudia, 2015; Shamaki & Alabi, 2017; NPC, 2018). Low utilization of ANC services is associated with maternal morbidity which could inevitably lead to high level of maternal deaths (Alliance, 2015; Shamaki & Alabi, 2017). It is worrisome that Zamfara State had only 25.9% of women with 4+ antenatal visits during pregnancy of the most recent birth, 35.2% received antenatal care, 37.4% took iron tablets or syrup, 19.9% received two or more ante-tetanus injections (NPC, 2018).

Although studies have been done on the patronage of ANC services in developing countries, research designed to determine whether mothers comply with the current 8 ANC visits, take folic acid and iron tablets daily and have HIV test in urban, semi-urban and rural areas of Zamfara State, Nigeria would appear not to have been conducted in that area. This study, therefore, seeks to bridge the knowledge gap.

## Research Questions

This study sought to provide answers to the following questions:

1. What is the level of patronage of ANC services in Zamfara State?
2. To what extent do pregnant women comply with the current 8 ANC visits in Zamfara State?
3. Do pregnant women take folic acid and iron tablets daily?

4. To what extent do pregnant women undergo HIV tests in Zamfara State?

### **Aim and Objectives of the Study**

The aim of the study was to examine the patronage of antenatal care services in Zamfara State. The specific objectives were:

1. To examine the level of patronage of ANC services in Zamfara State.
2. To ascertain the compliance of pregnant women with the current 8 ANC visits in Zamfara State.
3. To determine whether or not, women take folic acid and iron tablets daily during pregnancy
4. To ascertain whether or not, women undergo HIV tests during pregnancy in Zamfara State.

### **Conceptual Clarifications**

**Antenatal care:** The WHO (2005), defined ANC as a type of competent preventive care with the aim of providing consistent checkups that enable health personnel to prevent, detect as well as treat potential health problems that may arise in a pregnant woman. ANC services were measured in terms of receiving antenatal care from a skilled provider, number of ANC visits, number of anti-tetanus injections received, measuring blood pressure, urine and blood measurement, receiving HIV tests, receiving folic acid and iron tablets as well as antimalarial tablets

**Patronage/utilization:** is a measure of whether and how a phenomenon is being used. In the context of this study, patronage refers to the extent to which ANC services are being utilized by mothers during their last pregnancy. Utilisation of ANC services was high at 80% and above coverage.

**Maternal mortality:** This has to do with cases of maternal deaths caused by pregnancy related complications in a given period of time

### **Literature Review**

Studies conducted on the patronage of ANC services from different parts of the world continue to report diverse findings. Such studies conducted in Ghana, Saudi Arabia, Burkina Faso, and Nepal reported high levels of patronage of ANC services. For instance, study by Gudu & Addo (2017) in rural Ghana found that 97% of the mothers received ANCs during their last pregnancy and 75% had four or more ANC visits. This shows that the level of patronage is encouraging in a developing country like Ghana, located in sub-Saharan Africa, a region which is generally believed to have poor or very low uptake of ANC services. This finding was corroborated with the outcomes of other studies in Nepal by Awasthi, et al. (2018) and in Saudi Arabia, by Al hazmi, et al. (2017), which revealed that 80.9% of prospective mothers followed up ANC at first and second trimesters and out of which 80.1% followed up their pregnancies consistently and regularly.

In contrast, studies conducted in Nigeria over the years, reported low patronage of ANC services. For instance, data from a nationwide study by Babalola & Fatusi (2009) revealed that 60% of mothers used antenatal care services at least, once, during their most recent pregnancy. The finding was also confirmed by another nationwide study by Dahiru & Oche (2015), which reported only 54% of women that had at least four ANC visits. Although the studies relied on secondary data derived from nationwide studies, the findings gave clear direction of maternal healthcare utilisation in the country. These findings were further corroborated by those of a study

by Fagbamigbe & Idemudia (2015) which that found only 11.3 % of the respondents had minimum acceptable quality of ANC utilisation.

Furthermore, a study carried out in Northern Nigeria by Doctor et al. (2012) showed that only 26% of the women surveyed had received antenatal care for their most recent pregnancies in northern Nigeria. The finding was in line with that of a study conducted in Sokoto by Shamaki & Alabi (2017), which reported that only 31.1% of the respondents received ANC services. The gap that has been established from all the studies is that the scope of ANC activities measured was inadequate as most of the studies focused only on dichotomous variables. In other words, none of the studies investigated the specific components of ANC services such as compliance to 8 ANC visits, taking folic acid and iron tablets daily, breast examination, abdominal examination and HIV tests which this study addressed.

### **Theoretical Framework**

The study applied the Health-Seeking Behavior model developed by Ronald Max Anderson. The model was first developed in the late 1960s. The basic propositions of the model are that utilization of health care services by people depends on three major variables/determinants: the predisposing factors, enabling factors and need for health care (Andersen, 1995). Central to this study is the predisposing and enabling factors. Predisposing factors such as place of residence, insecurity, patriarchy, health belief, and interest, influence mothers' decision to utilize or not utilize the services. Enabling characteristics like access to health services, level of income, regular source of care, transportation, as well as the need for safe pregnancy and delivery so as to avert maternal morbidity and mortality, determine the patronage of ANC services including compliance to current 8 ANC visits, taking folic acid and iron tablets daily as well as receiving HIV tests during pregnancy.

### **Methods**

#### **Description of the Study Area**

Zamfara State is one of the States in Nigeria. The State covers an area of 38,418 square kilometers with an estimated population of 5,066,556 people in 2020, out of which 1,114,642 constituting 22% were women of child bearing age (Zamfara State Ministry of Health, 2020). In the context of this study, Gusau (the State capital) was considered as urban area, the local government headquarters was considered as semi-urban while political ward headquarters and other villages were considered rural areas.

#### **Design of the study**

This was a cross sectional survey study because the issues were examined at one point in time. Questionnaire was used as the instrument of data collection, multi stage cluster sampling was employed for the administration of the questionnaire to the targeted population.

#### **Study population and Sample Size**

This comprised women of child bearing age (WCBA) i.e. women age 15 to 49 years that had under-five children. An estimate by the Zamfara State Ministry of Health revealed that 1,114,642 people constituting 22% of the total population of Zamfara State in 2020 were women of child bearing age and that constituted the total population of the study. In determining the sample size, the formula developed by Krejcie & Morgan (1970) was adopted. The formula is as follows:

$$S = \frac{X^2 NP (1-P)}{d^2 (N-1) + X^2 P (1-P)}$$

Where:

$S$  = stands for the required sample size.  $X^2$  = stands for the table value of chi-square for 1 degree of freedom at the desired confidence level of 3.841.  $N$  = stands for the total population or population size = 1,114,642.  $P$  = stands for the population proportion assumed to be .50.  $d^2$  = stands for the degree of accuracy expressed as a proportion 0.05. Based on the application of the formula, the sample size arrived at was 384 respondents. Furthermore, six LGAs were used out of the fourteen LGAs in the State (Gusau, Tsafe, Kaura Namoda, Zurmi, Maradun and Anka LGAs).

Two political wards were selected from each of the LGAs. These political wards were: Dauki and Tsafe Central from Tsafe LGA, Tudun Wada and Wanke from Gusau LGA, Kyambarawa and Dangaladima from Kaura Namoda LGA, Kanwa and Zurmi from Zurmi LGA, Maradu South and Birni Kaya/Dosara from Maradu LGA, Dangaladima and Galadima from Anka LGA. The formula below was used in determining the sample size for each political ward.

$$\text{Ward Sample Population} = \frac{\text{No. of Ward Population}}{\text{No. of the Total population of all the wards}} \times \frac{\text{Sample size}}{1}$$

### Sampling technique

Considering the size of the State, the Multi-Stage Cluster Sampling was employed for the study.

Stage I: The whole State was grouped into three Senatorial Districts (SDs) namely: Zamfara Central Senatorial District (ZCSD), Zamfara North Senatorial District (ZNSD) and Zamfara West Senatorial District (ZWSD).

Stage II: Simple random sampling was used in selecting two LGAs from each of the three SDs.

Stage III: one Political Ward was selected from each of the six LGAs using simple random sampling and one political ward located in headquarters of each LGA was purposively selected in order to have diverse findings.

Stage IV: Enumeration areas were selected from each of the selected Political wards.

Stage V: Systematic sampling technique was employed in administering questionnaire copies to mothers. Where the target mother was not found, the next house was adopted and where two or more mothers were found, a free hand was given to members of the households to select among themselves who would represent them, or balloting was used.

### Method of data collection

Semi-structured questionnaire, consisting series of questions derived from the objectives of the study were distributed to women of child-bearing age and 76% of the questionnaire copies was translated into Hausa language. A comprehensive ANC checklist by the Zamfara State Ministry of Health was used to obtain information on the components of the services used by the respondents. The respondents were met in their respective homes through female research assistants who were employed and trained by the researchers. Both direct administration and self-administration techniques of administering questionnaire were used.

### Method of data analysis

A total of 382 copies of questionnaire were retrieved. The questionnaires were edited and itemized, the data were coded and entered into the computer. Data cleaning was done by carrying out range and consistency checks. The Statistical Package of Social Science (SPSS) Version 21 was used for the analysis. Univariate and Bivariate analysis were employed.

### **Ethical consideration**

On consent, all the authors declare that written informed consent and co-operation of the respondents was solicited and obtained for the conduct and publication of this research study. Regarding ethical approval, all the authors hereby declare that the study has been examined and approved by the Zamfara State Ministry of Health Ethical Committee.

### **Findings**

**Table 1: Socio-Demographic Characteristics of the Respondents**

<b>Characteristics</b>		<b>Frequency</b>	<b>Percentage</b>
<b>Location</b>	Urban	98	25.7
	Semi-urban	154	40.3
	Rural	130	34.0
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Age in years less</b>	Le thtthan 18 years	17	4.5
	18 -29	191	50.0
	30 – 39	139	36.4
	40 - 49	32	8.4
	50 and above	3	0.8
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Highest</b>	No formal education	36	9.4
<b>Educational qualification</b>	Quranic education	121	31.7
	Primary certificate	22	5.8
	SSCE	111	29.1
	NCE/ND	44	11.5
	HND	19	5.0
	University degree	28	7.3
	Others	1	0.3
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Occupation</b>	Full h house wife/unemployed	82	21.5
	Non-agricultural labour	9	2.4
	Craftswoman	146	38.2
	Trader	44	11.5
	Food selling	39	10.2
	Traditional medicine woman	3	0.8
	Farming	3	0.8
	Civil servant	44	11.5
	Others	12	3.1
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Income</b>	No response	3	.8
	Less than N5000	207	54.2
	N5,001 – 15,000	70	18.3

N5,001 – 20,000	31	8.1
N 20,001 – 30,000	37	9.7
N30,001 -40,000	27	7.1
N40,001 and above	7	1.8
<b>Total</b>	<b>382</b>	<b>100.0</b>

**Field Survey, 2021**

As indicated in Table I, 40.3% of the respondents were from Semi-urban areas, 34% from rural areas while 25.7% from urban areas. About 94.8% were within the age bracket (18 - 49 years) which is conceived as child-bearing age. A significant number of mothers (40.9%) had no Western education and schooling process of majority of women with Western education apparently terminates at completion of secondary school education. The highest percentage of the respondents (88.5%) were not working in the formal sector, out of which 21.5% engaged in domestic chores. Majority (54.2%) earned less than N 5,000 per month which illustrates the respondents' very low level of income in the State.

**Patronage of ANC Services**

**Table 2: Respondents on Specific ANC Services Received During their Last Pregnancies.**

	<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Whether ANC services were received from a skilled healthcare provider</b>	Yes	346	90.6
	No	36	9.4
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Number of times ANC was visited</b>	1 – 2	38	9.9
	3 -4	83	21.7
	5 – 7	83	22
	8	88	23.0
	More than 8 times	29	7.6
	I don't know	25	6.5
	No response	36	9.4
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Whether blood pressure checking was performed</b>	Yes	290	75.9
	No	92	24.1
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Whether urine tests was performed</b>	Yes	259	67.8
	No	123	32.2
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Whether hepatitis B Test was performed</b>	Yes	119	31.2
	No	263	68.8
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Whether HIV Test was performed</b>	Yes	159	41.6
	No	223	58.4
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Whether breast cancer test was performed</b>	Yes	82	21.5
	No	300	78.5
	<b>Total</b>	<b>382</b>	<b>100.0</b>

<b>Whether diet related advice was received</b>	Yes	169	44.2
	No	213	55.8
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Whether family planning advice was received</b>	Yes	142	37.2
	No	240	62.8
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Whether breast feeding related advice was received</b>	Yes	166	43.5
	No	216	56.5
	<b>Total</b>	<b>382</b>	<b>100.0</b>

**Table 2: Respondents on Specific ANC Services Received During their Last Pregnancies (Contin.)**

<b>Number of times iron and folic acid tablets were taken</b>	<b>Never</b>	<b>32</b>	<b>8.4</b>
	Once	31	8.1
	Twice	40	10.5
	Daily	190	49.7
	Weekly	54	14.1
	Others	29	7.6
	No response	6	1.6
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Number of times antimalarial drugs were taken</b>	None	21	5.5
	1	40	10.4
	2	65	17.0
	3	111	29.1
	4 and above	130	34.0
	No response	15	4.0
	<b>Total</b>	<b>382</b>	<b>100.0</b>
<b>Number of tetanus toxoids (TT) injections received</b>	None	42	11.0
	1	99	26.0
	2	130	34.0
	3	102	26.7
	More than 3	2	0.5
	No response	7	1.8
	<b>Total</b>	<b>382</b>	<b>100.0</b>

**Field Survey, 2021**

As depicted in Table 2, majority of respondents (90.6%) received certain number of ANC services at least once during their most recent birth and only 9.4% of mothers had not received ANC services at all. The respondents were asked to state reasons for using or not using ANC services. 41.1% did not respond to the question, 37.2% used ANC because it is important for both babies and the mothers, 13.9% used ANC because their husbands encouraged them to do so. Of those who did not use ANC services at all, 5.2% was due to lack of husband's permission, 0.7% due to patronage of traditional birth attendants, others 1.9% reported lack of interest, distance to healthcare facility, insecurity and poverty as reasons for non-utilizing the services.

WHO recommended a minimum of eight ANC visits during pregnancy, but as depicted in Table 2, only 30.6% had 8 or more contacts. Although majority of the respondents received ANC services from a skilled provider during their recent birth at least once, utilization of specific



components of the services was low. Table 2 demonstrates the proportion of mothers who received ANC services and had their blood pressure measured (75.9%), urine tested (67.8%), hepatitis B tested (31.2%), HIV tested (41.6), breast cancer tested (21.5%), diet related advice received (44.2%), family planning advice received (37.2%), breast feeding advice received (43.5%). The level of utilization was low because with exception of blood pressure and urine measurements, less than 50% of women had received all the services.

Furthermore, only 49.7% of women took iron and folic acid tablets daily, and 8.4% did not take the tablets at all. Malaria and neonatal tetanus are among the leading causes of maternal and child mortality in developing countries, as depicted in the table, 63.1% of women took 3 or more anti-malarial drugs to get protection from malaria in pregnancy. Five ways of protecting women from neonatal tetanus have been identified, one of which is, women are required to receive two doses of tetanus toxoid injections during pregnancy to protect a birth against neonatal tetanus. About 37% received 1 or 0 doses of tetanus toxoid injections (TT) indicating that many prospective mothers had not received TT injection.

The WHO recommends that ANC visits should start from conception of pregnancy. The finding of the study shows that majority of the respondents (35.6%) started ANC visits during second trimester and this category of respondents was asked to state reason for the delay: 56.5% did not answer the question, 30.1% reported lack of interest in early antenatal visit, 4.2%, because of not experiencing any pregnancy related illness, 6.8% stated financial problem, while others 2.4% stated lack of permission of mother in-laws, lack of husbands permission and transportation problems.

## Bivariate Analysis

**Table 3: Cross Tabulation of Location and Number of ANC Visits**

		How many times did you visit ANC during your last pregnancy?							Total
		No response	1 - 2	3 -4	5 – 7	8	More than 8 times	I don't know	
Location	Urban	0	5	12	30	29	15	7	98
		0.0%	5.1%	12.2%	30.6%	29.6%	15.3%	7.1%	100.0%
	Semi – urban	9	5	37	59	26	10	8	154
		5.8%	3.2%	24.0%	38.3%	16.9%	6.5%	5.2%	100.0%
	Rural	0	28	34	21	33	4	10	130
		0.0%	21.5%	26.2%	16.2%	25.4%	3.1%	7.7%	100.0%
Total		9	38	83	110	88	29	25	382
		2.4%	9.9%	21.7%	28.8%	23.0%	7.6%	6.5%	100.0%
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		2.4%	9.9%	21.7%	28.8%	23.0%	7.6%	6.5%	100.0%

## Field Survey, 2021

As indicated in Table 3, only 30.6% of the respondents had 8 or more ANC visits in the State. Urban mothers (44.9%) were more likely than semi-urban mothers, (28.5%) to have 8 ANC visits. The least was found among Semi-urban mothers (23.4%).

**Table 4: Cross Tabulation of Location and HIV test**

		No	Yes	Total
Location	Urban	25	73	98
		25.5%	74.5%	100.0%
	Semi-urban	92	62	154
		59.7%	40.3%	100.0%
	Rural	106	24	130
		81.5%	18.5%	100.0%
Total		223	159	382
		58.4%	41.6%	100.0%
		100.0%	100.0%	100.0%
		58.4%	41.6%	100.0%

### Field Survey, 2021

Table 4 reveals that HIV test is one of the most important components of ANC services. Majority of the respondents (58.4%) were not tested for HIV throughout their pregnancy periods. Urban mothers (74.5%) were more likely than semi-urban mothers (40.3%), to have HIV test. The lowest were rural mothers (18.5%).

**Table 5: Cross Tabulation of Location and Taking Iron and Folic acid Tablets**

		No response	Never	Once	Twice	Daily	Weekly	Others	Total
Location	Urban	0	2	4	11	46	23	12	98
		0.0%	2.0%	4.1%	11.2%	46.9%	23.5%	12.2%	100.0%
	Semi urban	6	6	10	8	95	20	9	154
		3.9%	3.9%	6.5%	5.2%	61.7%	13.0%	5.8%	100.0%
	Rural	0	24	17	21	49	11	8	130
		0.0%	18.5%	13.1%	16.2%	37.7%	8.5%	6.2%	100.0%
Total		6	32	31	40	190	54	29	382
		1.6%	8.4%	8.1%	10.5%	49.7%	14.1%	7.6%	100.0%
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		1.6%	8.4%	8.1%	10.5%	49.7%	14.1%	7.6%	100.0%

### Field Survey, 2021

Taking Folic acid and Iron tablets daily is recommended for women during pregnancy. Finding of this study revealed that only 49.7% of mothers took Iron and Folic acid daily as indicated in Table 5. Disparities along places of residence exist in daily use of iron and folic acid tablets. Higher (61.7%) was found among semi-urban mothers, followed by urban mothers (46.9%). The least were rural mothers with 37.7%.

### Discussion of Findings

This study revealed that about 90.6% of mothers received ANC services at least once, from a skilled provider during their recent births. The reasons for such a high coverage could be that most mothers were knowledgeable about the importance of ANC to themselves and their babies and were encouraged by their husbands to use the services. Lack of husband's permission, patronage of traditional birth attendants, lack of interest, distance to healthcare facility, insecurity and poverty were the reasons given by the respondents who did not use the services at all. Similar determinants of maternal health utilisation have also been reported by previous studies in Nigeria and other African countries (Doctor et al., 2012; Adgoy, 2018; Stephen et al., 2019). The finding was in line with predisposing factors of Anderson Model of Healthcare Utilisation.

However, utilization of specific components of the services was low. With the exception of blood pressure checking and urine test, less than 50% of mothers had hepatitis B test, HIV test, breast cancer examination, received diet related advice, received family planning advice, received breast feeding advice, took iron and folic acid tablets daily and only 23% had 8 ANC visits. This agrees with findings of many previous studies in Nigeria and a study in Ethiopia (Doctor et al., 2012; Jibril, 2017; Wolderufael, 2018; NPC, 2018). Early ANC visit is very important but this study found most mothers did not begin ANC visits until their babies were four months old which is not in line with the 2016 WHO ANC model. This also agrees with findings in the 2018 Nigeria demographic and health survey, which reported majority of pregnant women had their first ANC visit in the fourth or fifth month of pregnancy (NPC, 2018). It has been established in this study that urban mothers were more likely to have 8 ANC visits and HIV tests compared to semi-urban and rural mothers in Zamfara State but semi-urban mothers were more likely to take folic acid and iron tablets daily compared to urban and rural mothers in the State.

### Conclusion

This study examined the patronage of antenatal care services in urban, semi-urban and rural areas of Zamfara State, Nigeria. Despite the concerted efforts made over the years at both global and local levels in improving maternal health in general and patronage of antenatal care services in particular, utilisation of specific components of ANC services in Zamfara State remains low especially in semi-urban and rural sections of the State. Pregnant women could avert pregnancy related complications when all the specific components of ANC services were received. Although majority of mothers received ANC services from skilled healthcare providers at least once, most of the mothers had no hepatitis B test, HIV test, breast cancer examination; had not received diet related advice, family planning advice, breast feeding advice and did not take iron and folic acid tablets daily. Majority of the mothers started ANC visits during the fourth month of pregnancy and did not comply with current approved 8 ANC visits especially in the rural areas of the State.

### Recommendations

This study recommends the following:

- (a) As a matter of urgency, Zamfara State government should ensure necessary drugs for ANC are always available and accessible at health facilities and also implement a policy prohibiting pregnant women who do not go for ANC regularly to go to any public health facilities for treatment of any health problem.
- (b) Government should carryout mobilization and enlightenment programs in radio and television stations as well as at places of worships and public gatherings in collaboration with traditional and religious leaders at regular intervals.

- (c) Enlightening husbands to understand the importance of the services and encouraging them to support their wives to go for ANC during pregnancy even if the wives are healthy is imperative.
- (d) PHC centers should enlighten prospective mothers coming for ANC to understand the advantages of early ANC visits, timing and receiving all the recommended doses of ANC services.

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