

## **Factors Associated With the Timing of First Antenatal Care by Pregnant Women Attending Specialist Hospital, Sokoto**

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### **Abstract**

*This study therefore aimed to explore the factors associated with the timing of first antenatal care attendance by pregnant women in specialist hospital, Sokoto, Sokoto state, Nigeria. Three objectives with three corresponding research and questions guided the study. This is a health facility-based cross-sectional study conducted in specialist hospital Sokoto in Sokoto State, North-West Nigeria. Two hundred and seventy nine Pregnant women presenting at the ANC booking clinic were used in this study. Sample size was calculated using Cochran's formula. A simple random sampling technique was used in selecting respondents using a structured questionnaire. The data analysis was done using SPSS. Pregnant women who initiated ANC early were (42.3%). Majority of the respondents (42.7%) were 25-34 year old. Women with at least secondary level of education were twice likely to commence ANC early compared to those with primary education or no formal education (OR: 2.07, 95% CI: 0.93-4.58). Nulliparous women were almost twice likely to initiate ANC early compared to primiparous and multiparous women (OR: 1.88, 95% CI: 1.10-1.55). Similarly, Primigravid women were 1.6 times more likely to start ANC early compared to multigravid women (OR: 1.55, 95% CI: 0.93-2.57). Women with planned pregnancy were (6%) more likely to register for ANC early compared to those with unplanned pregnancy (OR: 1.06, 95% CI: 0.59-1.90). Early initiation of ANC was (50%) higher in women from low-income household compared to those from high income household (OR: 1.50, 95% CI: 0.83-2.72). This study shows that less than half of the women commenced ANC early. The WHO ANC model recommendation on early commencement of ANC has not been fully met. Therefore, there is need for Sokoto state government in collaboration with the Federal*

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*Ministry of Health and development partners to invest more in reproductive health programming. More innovative interventions need to be developed in order to increase early ANC initiation.*

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**Keywords:** *Factors, Timing, Pregnant women, Antenatal care,*

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## **Introduction**

Pregnancy is a special moment in the life of any woman. This period is usually accompanied with anxiety and the feeling of uncertainty by the woman. Approximately 303,000 women and adolescent girls died from pregnancy and childbirth-related complications in the year 2015 (Alkema, et al., 2016) . Furthermore, 2.6 million babies were stillborn that same year (WHO, 2018). Almost 99% of the maternal deaths and 98% of the child deaths were in low and middle income countries (WHO, 2018). It is therefore important for every pregnant woman to receive appropriate care during pregnancy, delivery and postnatal period. Antenatal care (ANC) can be defined as the care provided by skilled health care professional to pregnant women and adolescent girls in order to ensure the best outcome for mother and baby (WHO, 2018). ANC helps in the identification of danger signs in the pregnancy and provision of care, which in turn reduces maternal morbidity and mortality (WHO, 2018). WHO recommends at least eight ANC contacts between the pregnant women and adolescent girls to ensure improved prenatal outcomes and women's experience (WHO, 2018).

ANC alone is not only one component of the package of health care required for an improved pregnancy outcome as well as newborn health. In addition to ANC, there is need to provide delivery by skilled attendants, emergency obstetric care in case of complicated labour and family planning (WHO 2016). To ensure better outcome for pregnant women and adolescent girls, the timing of initiating first ANC visit is an important factor. It is recommended by WHO that pregnant women in low and middle income countries (LMIC) should initiate ANC within the first trimester (WHO, 2018). While eight ANC contacts is recommended by WHO, the timing of initiation of ANC by pregnant women can affect the number of ANC contacts they can have before delivery (WHO, 2018). Late registration for ANC will result in fewer than eight contacts with the ANC service provider before delivery. The ANC visits are expected to be spread out as follows: five contacts in the third trimester, one contact in the first trimester, and two contacts in the second trimester. The procedures for ANC which are recommended by WHO are as follows: Confirmation of Pregnancy; Detection of signs and symptoms that could result in pregnancy complications such as bleeding, hypertensive disease, malpresentation, anaemia, multiple pregnancy, (IPT) Intermittent Prevention Treatment of Malaria, and use of insecticide treated bednets; Response to complaints made by the pregnant woman; Immunization against tetanus, Anaemia prevention and control measures through the provision of folic acid and iron supplements; Counseling and testing for HIV. Testing for syphilis; Provision of information and advice on self care at home, safer sex, nutrition, breastfeeding, and family planning; Monitoring fetal and maternal wellbeing; and Planning of delivery, counseling on danger signs and emergency preparedness (WHO, 2016).

There are many factors that influence the timing of initiation of ANC by pregnant women which includes wrong perception of the right time to start ANC (Gulema & Berhane, 2017). This study therefore aimed to explore the factors associated with the timing of first antenatal care attendance by pregnant women in specialist hospital, Sokoto, Sokoto state, Nigeria.

### **Statement of the Problem**

Antenatal care delivered at health facilities is a key strategy to improve mother and child health. Antenatal care is important in effectively reducing maternal morbidity and mortality by carrying out interventions such as prevention and treatment of anemia through iron and fesoate supplements and malaria prophylaxis.

Timely initiation of ANC would go a long way in reducing maternal mortality in Sub-Saharan Africa. There should therefore be increased accessibility of ANC services by proving scheduled outreach programs in remote areas, continuous provision of health education on the importance of timely accessing of ANC services through the media and community sensitization meetings. Campaign against harmful community norms and cultural beliefs that could hinder mothers from accessing health services.

Despite global effort at reducing maternal mortality, it is still quite high. In the year 2020, maternal mortality ratio was 152 deaths per 100,000 live births and this is an increase from 151 per 100,000 live births in 2019 (Bill and Melinda Gate Foundation, 2012). Whilst the 2020 maternal mortality ratio is a decline from 244 per 100,000 live births in 1990, this is still far from the Sustainable Development Goal (SDG) target 3.1; *“Reduce the global maternal mortality ratio to less than 70 per 100,000 live births”* (Bill and Melinda Gate Foundation, 2021). At the current maternal mortality ratio, it is projected that there will be a continuous decline and by the year 2030, maternal mortality ratio will be 133 per 100,000 live births which is almost twice the SDG target 3.1 (Bill and Melinda Gate Foundation, 2021). This is worrisome.

The need to improve the maternal and child outcome following pregnancy necessitated this study to determine the factors associated with the timing of first antenatal care attendance by pregnant women in specialist hospital, Sokoto as well as how well the WHO recommended eight ANC visits starting from the first trimester is being utilized by pregnant women.

### **Purpose of the study**

The purpose of the study is to determine the factors associated with the timing of first antenatal care attendance by pregnant women in Specialist Hospital Sokoto. Specifically, the work sort to;

1. the proportion of women that attended antenatal care in Sokoto Specialist Hospital.
2. the influence of socio-demographic distribution of participants in this study
3. assess the factors associated with timing of first ANC visit for pregnant women in Specialist Hospital Sokoto

### **Research questions**

1. What are the proportion of women that attended antenatal care in Sokoto Specialist Hospital
4. What are the influence of socio-demographic distribution of participants in this study
2. What are the factors associated with timing of first ANC visit for pregnant women in Specialist Hospital Sokoto

### **Significance of the study**

Many studies have been done in some countries in Africa and South East Asia on the factors influencing the timing of first ANC attendance. The factors responsible for the timing of first ANC visit has not been that explored in the North Western part of Nigeria. Furthermore, it is not clear how well pregnant women in Sokoto utilize the WHO recommendation of early commencement of ANC in the first trimester to ensure that they have up to eight contacts with ANC providers. This study provided an opportunity to research on this subject in Sokoto state, located in North Western Nigeria in order to provide insights into the factors associated with the

timing of first ANC visits by pregnant women. This sets the ground for further research to strengthen the proper utilization of ANC services in Sokoto State and other states or countries with similar context. Furthermore, the findings of this study will be a useful resources to support decision making and planning of sexual and reproductive health programmes in Sokoto state and beyond.

### Methodology

This is a health facility-based cross-sectional study. This study hospital-based study was conducted in specialist hospital Sokoto, located in Sokoto State, Northwestern Nigeria. The hospital is a tertiary hospital in Sokoto state and receives patients from across the 23 Local Government Areas (LGAs) of the state. These patients include those referred from primary health care facilities in the state and some neighboring states.

Pregnant women presenting for their first ANC booking at the ANC clinic were included in this study. All pregnant women presenting severely ill or in labour during their first ANC visit were excluded from this study. In this study, early ANC visit was considered to be any pregnant woman who presented for first ANC visit within 12 completed gestational weeks (WHO, 2016). Late initiation of ANC will be any woman presenting for first ANC visit after 12 completed gestational weeks. The timing of first ANC visit was recorded in weeks as well as months as mothers in the area of study usually report gestational age in months.

Sample size was calculated using Cochran's formula; a formula for single population proportion.

$$n = \frac{Z^2 P (1 - P)}{d^2}$$

(Cochran and William Gemmell Cochran, 1977)

Where: n = calculated required sample size; Z = z-score at 95% confidence level = 1.96;

P = proportion of pregnant women attending first ANC visit; 24% (Fagbamigbe, et al., 2021) and d = precision = 0.05.

Therefore,  $n = 1.96^2 \times 0.24(1-0.24)/0.05^2$   
 $n = 280$

A simple random sampling technique was used in selecting the respondents for the study. Every third pregnant woman presenting to the ANC clinic on booking day was enrolled until the calculated sample size was reached. Data was collected using structured questionnaire which was developed from data collection tools and findings of relevant literatures. Data collected included socio-demographic data, Obstetric history, maternal service utilization, reasons for timing of first ANC visit.

The face validity was established by presenting to three experts in the department of health sciences and measurement and evaluation in Uthman Dan Fodio University Teaching Hospital (UDUTH). The questionnaire was adjusted to improve the clarity and simplicity of the questions in the questionnaire following the test. While the reliability was ensure by test-retest method among pregnant women presenting for first ANC visit in UDUTH.. UDUTH is a tertiary hospital similar to Specialist hospital where this study was done. The questionnaire was administered by researcher with the assistance of four female assistants data collectors were briefed on interview technique and how to administer the questionnaire. This team together with the primary investigator collected the data. Data was collected once from each respondent as this is a cross sectional study. Regular follow up of the data collection process was done by the primary investigator to ensure that the quality of the process was maintained. During the period of Data

collection, data was regularly checked for completeness and clarity, and feedback was ensured collectors.

The data analysis was done using SPSS and Microsoft excel. The proportion and the confidence interval of the main outcome variables were determined. Inclusive criteria, was through ensuring, Stable pregnant women attending ANC clinic at Specialist hospital, Sokoto for their first ANC booking. Exclusive criteria; All non-pregnant women and Severely ill pregnant women or those in labour. Ethical consideration; Before conducting this study, ethical approvals from the Sokoto state Ministry of Health and Specialist Hospital Sokoto was obtained. Furthermore, individual informed written consent was taken from participants. Interviews were done in a private area of the clinic in order to maintain privacy. Confidentiality was maintained by not recording any direct patient identifying information and data collected was accessed by only the primary investigator. Data was entered and stored in password protected sheets and computer.

### Results

The study mainly focused to determine the factors associated with the timing of first antenatal care attendance by pregnant women in Specialist Hospital Sokoto. A total of 279 copies of the questionnaire were administered and returned. The data collected has been organized in such a way that the data for answering the research question was analyzed using the frequencies and percentages and was presented on tables.

Table 1: Demographic data

Question	Variables	Frequency	Percentage
	15-24	111	39.8
	25-34	119	42.7
	35-44	44	15.8
	45 years and above	5	1.8
	Total	279	100.0
Religion	Islam	217	77.8
	Christianity	62	22.2
	Total	279	100.0
Tribe	Hausa	173	62.0
	Igbo	28	10.0
	Yoruba	58	20.8
	Others Specify	20	7.2
	Total	279	100.0
Marital Status	Single	3	1.1
	Married	271	97.1
	Widow	1	0.4
	Divorced	4	1.7
	Total	279	100.0

The findings in table 1 shows that majority of the respondents were within the age range of 25-34 constituting (42.7%) of the total respondents. This was closely followed by respondents who are 15-24 years old (39.8%) and 35-44 years old (15.8%). The least percentage of respondents

(1.8%) were aged 45 years and above. Majority of the respondents were Muslims (77.8%) and mostly Hausa by tribe (62.0%). Yoruba and Igbo constituted 20.8% and 10.0% of respondents respectively. Other ethnic group were 7.2% of respondents. Only 1.1% (n=3) are single while 271 (97.1%) are married and 0.4% are widows. Respondents who were divorced were 1.7% (n=4).

Table 2 Previous obstetric history

Question	Variables	Frequency	Percentage
Number of Pregnancies (Gravidity)	Primigravid	85	30.5
	Multigravid	194	69.5
	Total	279	100.0
Number of Children (Parity)	None	75	26.9
	One	51	18.3
	Two-Three	90	32.2
	Four – Six	55	19.7
	Seven and Above	8	2.9
	Total	279	100.0
Number of Children Died	None	217	77.8
	>One	62	22.2
	Total	279	100.0
Previous ANC Use	Yes	256	91.8
	No	23	8.2
Total		279	100.0

The result in table 2 indicates that (69.5%) were multigravid with (32.2%) (n=90). Those having two to three children were the majority (32.2%) while (26.9%) had none. Of respondents who experienced child deaths, (22.2%) (n=62) has had at least one child death in the past. Majority (91.8%) of respondents had used ANC services previously.

Table 3 Current pregnancy history

Question	Variables	Frequency	Percentage
Gestational Age of Current Pregnancy	1-3 months	50	17.9
	4-6 months	140	50.1
	7-9 months	89	32
	Total	279	100.0
Age of Pregnancy at first ANC Visit in current pregnancy	1-3months	118	42.3
	4-6 months	129	46.2
	7-9 months	32	11.4
	Total	279	100.0
Number of ANC Visits	<4 visits	166	63.1
	4 visits and above	93	36.9

	Total	279	100.0
Type of Pregnancy	Planned	227	81.4
	Unplanned	52	18.6
	Total	279	100.0
Perceived Benefit of early Initiation of ANC	Yes, beneficial	258	92.4
	No benefits	21	7.6
	Total	279	100.0

The result as shown in table 3 shows that 140 (50.1%) are in their 4<sup>th</sup> to 6<sup>th</sup> month gestation in their current pregnancy, followed by (32%) of respondents in their third trimester. Majority (46.2%) of the respondents commenced ANC when the age of their pregnancy was 4-6 month. This is closely followed by those (42.3%) who commenced ANC within the first three months of their pregnancy. About two-thirds (63.1%) of respondents had less than four ANC visits. Majority of the pregnancies were Planned (81.4%) with (92.4%) of respondents agreeing to the beneficial effect of early ANC commencement.

Table 4 Reason for starting ANC at the gestational age ANC was initiated

Reasons	Frequency	Percentage
I think the timing was correct	116	41.6
Advice by health worker	73	26.2
Advice by family and friends	53	19.0
Due to challenges in current pregnancy	12	4.3
Due to challenges in previous pregnancies	11	3.9
Early ANC booking was beneficial in previous pregnancy	14	5.0

Table 4 shows the reasons for the timing of ANC initiation by pregnant women at the age of their pregnancy at commencement of ANC. Most of the women (41.6%) started ANC because they thought their pregnancies were at the right gestational age to commence ANC. This was followed by (26.2%) of women who commenced ANC following advice from health workers. Women who decided to commence ANC due to challenges in their current pregnancies and/or previous pregnancies were (4.3%) and (3.9%) respectively while (5%) of women booked for ANC early because early ANC booking was beneficial in their previous pregnancies.

Table 5 factors influencing timing of initiation of ANC

Question	Variables	Frequency	Percentage
Long distance to the health facility	YES	134	48.0
	NO	145	52.0
	Total	279	100.0
How long does it take	<1hr	98	35.1

you to be attended to in the hospital	2-3hr	122	43.7
	4-5hr	50	17.9
	>6hr	9	3.3
Is there privacy in the ANC Centre?	YES	194	69.5
	NO	79	30.5
	Total	279	100.0
How is the attitude Of health workers?	Good	172	61.0
	Fair	97	34.8
	Poor	5	1.8
	Bad	4	1.4
	Total	279	100.0
Do you have adequate Health facility?	YES	197	70.6
	NO	82	29.4
	Total	279	100.0
Does your cultural belief Prevent you from ANC?	YES	49	17.6
	NO	230	82.4
	Total	279	100.0
Does fear of cost of service Prevent you from ANC?	YES	64	22.9
	NO	215	77.1
	Total	279	100.0
Have you had previous Successful pregnancies	YES	224	80.3
	NO	55	19.7
	Total	279	100.0
Does multiple ANC Visit Prevent you from attending ANC?	Yes	40	14.3
	No	239	85.7
	Total	279	100.0

Table 5 indicates the factors influencing timing of initiation of ANC. Long distance to the health facility was not a concern for (52%) of respondent while (48%) agreed that distance was a factor that influenced their decision to start ANC. Regarding waiting time by pregnant women during ANC visits, (43.7%) indicated that long hours of waiting also influenced the initiation of ANC. Majority (69.5%) agreed that there was privacy during ANC consultation in the health facility and the attitude of the health workers was considered good as reported by (61%) of respondents. Responses regarding if health facilities providing ANC were adequate, shows that (70.6%) of respondents agreed that they have access to adequate health facility. About (18%) of respondents accepted that cultural beliefs prevented them from attending ANC. Furthermore, a high proportion of the respondents (77.1%) agreed that the fear of cost of ANC services does not deter



them from attending ANC. Regarding the success of previous pregnancies, 224 (80.3%) has had a successful pregnancy and (85.7%) of respondents reported that multiple ANC visits does not prevent them from initiating ANC.

Table 6 Odd ratios of determinates of the timing of initiation of ANC

<b>Characteristics</b>	<b>Odd Ratio (95% Confidence Interval)</b>
<b>Maternal Age</b>	
25 years and more	1.27 (0.78 - 2.07)
24 years and below	1
<b>Women's educational level</b>	
Secondary education and above	2.07 (0.93 - 4.58)
No Education	1
<b>Heads of Household's Education level</b>	
Secondary education and above	0.90 (0.37 - 2.20)
No Education	1
<b>Household income</b>	
< 100,000 Naira (133 USD)	1.50 (0.83 - 2.72)
100,000 Naira (133 USD) or more	1
<b>Gravidity</b>	
Primigravida	1.55 (0.93 - 2.57)
Multigravida	1
<b>Parity</b>	
Nulliparous	1.88 (1.10 - 3.20)
Primiparous and Multiparous	1
<b>Previous child death</b>	
Yes	0.92 (0.54 - 1.55)
No	1
<b>Number of ANC visits</b>	
<4 visits	0.94 (0.58 - 1.55)
4 or more visits	1
<b>Type of pregnancy</b>	
Planned	1.06 (0.59 - 1.90)
Unplanned	1

Table 6 shows the odd ratios (OR) and (95%) confidence interval of determinates of the timing of initiation of ANC by pregnant women. The odds of pregnant women commencing ANC in the first trimester was (27%) higher for women 25 years and above compared to women below 25 years (OR: 1.27, 95% CI: 0.78 - 2.07). Maternal education shows that the odds of a pregnant woman starting ANC in the first trimester was twice higher for women with at least secondary school education compared to women with Primary school education or without formal education. This was not reflected for the educational level of the heads of households which shows 10% less tendency to commence ANC early for women whose heads of household had at

least secondary school level of education compared to those whose head of household had primary education or no formal education (OR: 0.90, 95% CI: 0.37 – 2.20). The odds that pregnant women will initiate ANC in their first trimester was (50%) higher for women whose household income was less than 100,000 Naira (133 US dollars) compared to those with 100,000 Naira and above as household income (OR: 1.50, 95% CI: 0.83 – 2.72).

Other findings shows that Primigravid women were (55%) more likely to initiate ANC in their first trimester compared to multigravid women (OR: 1.55 (0.93 – 2.57)). Similarly, the odds of pregnant women initiating ANC in first trimester was (88%) higher for nulliparous women compared to primiparous and multiparous women (OR: 1.88, 95% CI: 1.10 – 3.20). For planned and unplanned pregnancies, the odd of starting ANC early was only (6%) higher for women with planned pregnancies compared to those with unplanned pregnancies (OR: 1.06, 95% CI: 0.59 – 1.90).

### **Discussion**

This study was done to identify the factors associated with the timing of first ANC attendance by pregnant women attending ANC in specialist hospital Sokoto Northwest Nigeria. Majority of the pregnant women were Hausa speaking and Muslims. This is because Sokoto is populated by Hausa tribe and are predominantly Muslims.

Across the world, majority of maternal deaths are due to complication during pregnancy and childbirth which are largely preventable if diagnosed early (Alkema et al., 2016, WHO 2018, WHO 2019). In this study, early initiation of ANC referred to women who did their ANC booking at the hospital in the first trimester of their pregnancy in line with the recommendation of WHO (WHO 2019). It was found that of the women commenced ANC early in this study. This is similar to found by Tesfu and colleagues in their study done in Northwest Ethiopia (Tesfu et al., 2021). This early ANC prevalence is not too far from found by Appiah in the study in Cameroon (Appiah, 2022). This finding from specialist hospital Sokoto in this study is however higher than the findings in a national study across Nigeria, in which only of women in North Western Nigeria and in Sokoto state commence ANC early (Fagbamigbe et al., 2021). This could mean an improvement in the rate of early initiation of ANC by pregnant women in the study area.

In this study, pregnant women commenced ANC at a gestational age they think was the right gestational age for initiating ANC. This is similar to the findings of Gebresilassie and colleagues in their studies in Ethiopia (Gebresilassie et al., 2015) as well as the study in Ghana by Peprah and colleagues (Peprah et al., 2022). Women also commenced ANC in this study based on the advice of health workers that the pregnancy was at the right timing for initiating ANC. The health workers therefore play a vital role in ensuring that the right advice is given to the pregnant women on early ANC initiation.

This study found that nulliparous women were almost twice likely to initiate ANC early compared to primiparous and multiparous women. This is similar to the findings of Alene and colleagues in their study done in northwest Ethiopia which also found that nulliparous women were twice likely to register early for ANC compared to primiparous and multiparous women (Alene et al., 2021). Other studies also corroborates this finding (Banda et al., 2012, Exavery, 2013, Peprah et al., 2022). Similarly, in this study, primigravid women were 1.6 times more likely to book their ANC within the first trimester of pregnancy compared to multigravid women. This is likely because first time pregnant women are not used to the signs and symptoms of pregnancy and therefore likely to seek help with consequent early initiation of ANC. Another likely reason why a primigravida would book for ANC earlier than a multigravida is because the

first pregnancy is usually considered a special pregnancy hence the woman receives full support from her spouse and family which includes booking ANC early to ensure that the pregnancy is well monitored to avoid any complication that will result in a negative outcome for mother and child. In many African communities, childlessness can be a source of stigma and stress for the woman hence a primigravida would ensure that her pregnancy does not result in a negative outcome. A multigravida on the other hand does not experience this kind of pressure. Multiparous women often rely on experience from previous pregnancies and this can result in late commencement of ANC with the potential miss of pregnancy risk factors.

This study observed the (18.6%) of the participants had unintended pregnancies which is slightly higher than (15.8%) found by Exavery and colleagues in their study in Tanzania (Exavery et al., 2013). In this study, women with planned pregnancies were (6%) more likely to initiate ANC in the first trimester compared to those with unplanned pregnancy. Exavery and colleagues founds that early ANC booking was higher among women with planned pregnancies compared to those with unplanned pregnancies (Exavery et al., 2013). A possible explanation for the lower rate of commencing ANC early amongst women with unintended pregnancies is that they may lack support from their husbands/partners and family members.

In this study, majority of women were satisfied with the attitude of the health workers and this was a factor that influences the timing of ANC initiation. This finding disagrees with the findings of Andrew and colleagues in the study done in Papua New Guinea in which women complained about the attitude of health workers but were satisfied with the care they received generally (WHO, 2016). Fear of the cost of services affects the utilization and timing of ANC initiation (Gebremeskel et al., 2015, Paudel et al., 2017). In this study cost was not a relevant factor for deciding the timing of initiating ANC as more than three-quarters of respondent did not consider cost of services as a barrier to commencing ANC. This is likely due to the free maternal health services available in Sokoto state. Whilst it is expected that higher household income should positively influence early initiation of ANC, findings in this study regarding household monthly income and timely ANC initiation disagree with findings from other studies which found that women from higher wealth status were more likely to initiate ANC early (WHO, 2019). On the contrary, Exavery and colleagues in Tanzania found that women from rich households delayed ANC initiation (Exavery et al., 2013). Findings in this study also agrees with the findings of Olayinka and colleagues in their study at Illesa West LGA of Osun State, South West Nigeria in which there was not association between maternal financial status and age at which they seek ANC (Olufemi, et al., 2022). Another way financial barriers have been addressed is the availability of health insurance which many civil servants have access to. In a study done in Ghana, it was found that the high ANC visits by women from Upper East Region was largely due to the availability of health insurance (Anaba & Afaya, 2022).

#### **Implication of findings in this study on reproductive health programming**

Commencement of ANC early will prevent pregnant women from missing out on critical services such as Malaria prophylaxis, tetanus vaccination, HIV testing and treatment of those positive as well as treatment for anaemia, and other pregnancy related conditions. The findings in this study show that most women were able to attend ANC without fear of cost of services due to the free of charge ANC services available in Sokoto state. This is one aspect of the reproductive health programming that should continue in Sokoto state and other states in Nigeria. The low prevalence of pregnant women initiating ANC early in this study shows the need for more awareness on the benefits of early initiation of ANC and the strategy for doing this should be strongly elaborated in any reproductive health programme.

## Summary

This study was done to understand the factors associated with the timing of first antenatal care attendance by pregnant women in specialist hospital, Sokoto. The key findings of this study are as follows:

- Women with at least secondary level of education were twice likely to commence ANC early compare to those with primary education or no formal education.
- Nulliparous women were almost twice likely to initiate ANC early compared to primiparous and multiparous women.
- Primigravid women were 1.6 times more likely to start ANC early compared to multigravid women.
- Women with planned pregnancy were 6% more likely to register for ANC early compared to those with unplanned pregnancy.
- Early initiation of ANC was 50% higher in women from low income household compared to those from high income household. This is likely because financial barriers have been eliminated through provision of ANC services almost free of charge.

## Conclusion

This study shows that less than half of the women commenced ANC early. It therefore means that the WHO ANC model recommendation that every pregnant woman should commence ANC within the first trimester has not been met. Therefore, there is need for Sokoto state government in collaboration with the Federal Ministry of Health and development partners to invest more in reproductive health programming.

This study should be followed by a qualitative study to be able to gain more insight on the perception of people regarding early ANC booking and what can be done to increase the prevalence of early initiation of ANC.

## Recommendations

- Whilst it is laudable that the WHO developed the recommendations on ANC for a positive pregnancy experience, there is however more work to be done in supporting countries to achieve the objectives of this guideline. Countries should therefore be supported in developing reproductive health strategies that will lead to increase in early commencement of ANC.
- Invest in training State officials on adequate ANC programming and communication strategies that can adequately target young women, their spouses and other family members on the benefit of early initiation of ANC as recommended by WHO.
- Catching them young can help improve health-seeking behaviour. It is therefore recommended that awareness on reproductive health should start among adolescent boys and girls in Primary and Secondary schools across Sokoto state.
- Put in place a patient flow system that can reduce ANC clients waiting time during ANC visits.
- Continue to provide free ANC services for pregnant women so that cost will not be a reason for delayed initiation of ANC.

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