Factors Associated with Utilization of Antenatal Care Services among Women of Child Bearing in Osogbo, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author ALA designed the study and wrote the protocol. Authors CAO and EEE managed the literature searches while authors CAO, EEE and CEU supervised the data collection. Authors ALA and CEU performed the statistical analysis. Authors CAO and EEE wrote the first draft of the manuscript together with author CEU. All authors read and approved the final manuscript.

Article Information

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ABSTRACT

Aims: To explore the factors associated with the utilization of ANC services among women of child bearing in Osogbo, Nigeria.
Study Design: A descriptive cross-sectional mixed-methods design was used for this study and both quantitative and qualitative methods were used for data collection.
Setting: Osogbo and Olorunda Local Government Area, Osogbo, Osun state.
Methodology: Ten in-depth interviews (IDIs) were conducted among pregnant women while three hundred questionnaires were also administered among women of child bearing age. Data analysis was done using descriptive statistics and Chi-Square. For the qualitative data, they were transcribed, sorted, categorized and analysed thematically.

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Results: Respondents mean age was 28.8 ± 9.3 years, 78.7% were from Yoruba ethnic group and 76.0% were Muslims. The overall mean knowledge score of the respondents was 5.2 ± 2.0 and 90.7% had a poor knowledge of ANC. Few of the IDI respondents mentioned traditional birth attendant and auxiliary nurses as skilled personnel that can offer ANC to pregnant women. Majority (78.0%) of the respondents reportedly have access to ANC services and 78.0% utilised ANC service during the last pregnancy. Most of the qualitative respondents' reported a current use of ANC and some also reported the use during their previous pregnancy. Reasons adduced for utilization of ANC were influence from family members, fear of maternal mortality and still birth.
Conclusion: The study showed that majority of the respondents had poor knowledge of ANC and many did not know that pregnant women should commence ANC as soon as pregnancy is confirmed. It is therefore recommended that ANC education intervention be carried out to educate women on the importance and the numerous advantages of ANC.

1. INTRODUCTION

The health and well-being of a pregnant mother has a role to play in the health and well-being of the baby that will be delivered. The pregnancy stage of a woman is as important to her and also to her family and the society at large. In Central and Western Africa, Nigeria is the highest contributor to maternal mortality with its 14% contribution to the global maternal mortality rate [1]. More than half a million women and girls die each year due to pregnancy, childbirth, and related complications [2,3]. Maternal death risk is more 200 times greater for women in developing and poor countries which are majorly in sub-Saharan Africa, compared to other countries [3]. The death of a pregnant woman goes as far as causing pain to her husband, the children left behind, community members who look up to her for one thing or the other and the role she plays in the society is left as a gap. That is why Antenatal care services are essential for all pregnant women to utilize.

Antenatal Care (ANC) service provides special care for women during pregnancy through the public health services. The major aim of antenatal care services is to ensure that both the foetus and the mother are prevented from health problems and the new born child has a good start in life. These services allow helps to improve maternal and new-born health outcomes by ensuring the management of pre-natal morbidities and promotes health facility delivery and postpartum care [4,5,6]. Focus antenatal care (FANC) requires the pregnant woman to visit the clinic four (4) times during the period of pregnancy, which includes 16, 24-28, 30-32 and 36-40 weeks of gestation. Recently, the Word Health Organization recommends that pregnant women should have their first contact in the first 12 weeks of gestation, with subsequent contacts taking place at 20, 26, 30, 34, 36, 38 and 40 weeks of gestation. Hence, a minimum of eight contacts is recommended to reduce perinatal mortality and improve women's experience of care [7].

However, not all women access these services and benefits from all that ANC has to offer the pregnant woman. The 2018 NDHS results show that 67% of women who gave birth in the 5 years preceding the survey received antenatal care from a skilled provider at least once for their last birth. Amongst this 67%, 57% of women had four or more ANC visits compared to at least 90% antenatal visit required for optimal antenatal care. Several studies documented factors such as individual level (socio-economic, lack of knowledge about available services, and reproductive characteristics), household level or interpersonal level (women's autonomy, husband attitude and support, family income) and health service level (distance, accessibility and availability [4,8,9,10]. Regrettably, despite the benefits derived from utilization of antenatal care in terms of reducing maternal and neonatal mortality, Nigeria does not seem to be making progress in terms of these services. This study therefore designed to explore the factors associated with the utilization of antenatal care services among women of child bearing in Osogbo, Nigeria.

2. METHODOLOGY

2.1 Study Design

A cross sectional descriptive mixed methods design was used to determine factors associated with utilization of antenatal care service among women of child bearing in Osogbo, Nigeria.

2.2 Study Area

Osogbo is a city in Nigeria and the capital of Osun State. Osogbo city seats the Headquarters of both Osogbo and Olorunda Local Government Areas. It is some 88 kilometers by road northeast of Ibadan. It is also 108 kilometres (67 mi) by road south of Ilorin and 108 kilometres (67 mi) northwest of Akure. Osogbo shares boundary with Ikirun, Ilesa, Ede, Egbedore and Iragbiji and is easily accessible from any part of the state because of its central nature. It is about 48 km from Ife, 32 km from Ilesa, 46 km from Iwo, 48 km from Ikire and 46 km from Ila-Orangun; The city had a population of about 156,694 people as of 2006 according to the census [11].

2.3 Study Population

The study population consisted of women of child bearing in Osogbo, Osun State.

2.4 Inclusion Criteria

Women of child bearing within the age range of 15–45 years who are currently pregnant and/or ever been pregnant were included in this study.

2.5 Exclusion Criteria

Women less than 15 years or more than 45 years, those who had never been pregnant and those who did not give their consent were not allowed to participate in the study.

2.6 Sample Size Determination

The total population was too large to cover due to time and financial constraints then part of the population was selected from the target population. Therefore, the sample size was calculated using Fisher's (1998) formula.

$n= z^2pq/d^2$

n= sample size
z= the standard normal deviation which corresponds to the 95% confidence level (1.96).

p= estimate of key proportion (26.3% or 0.263). This prevalence is derived from a similar study titled "Utilization of Antenatal Care in Ibadan North Local Government Area, Oyo State, Nigeria" [12].

q= 1-p (1-0.263= 0.737)

d= degree of accuracy desired (0.05)

$$n= \frac{1.96^2 \times 0.263 \times 0.737}{0.05^2}$$

= 298

The calculated sample size was increased by 10% to 328 so as to make provision for incomplete data.

2.7 Sampling Procedure

For the qualitative study, five in-depth interviews each were conducted among pregnant women in the two LGAs in the study area making ten IDIs. The selection of IDI respondents was done using a non-probability sampling technique involving purposive sampling. This implies that the respondents were selected because of their pregnancy status.

For the quantitative study, a total of three hundred consenting respondents were used and the following five stage sampling technique was adopted in selecting the respondents'.

Stage 2: The wards (Osogbo=15; Olorunda=11) in both LGAs were stratified into rural and urban wards

Stage 3: Four wards each in both LGAs were randomly selected for this study (two each in rural and urban strata).

Stage 4: Three communities each were randomly selected from each ward.

Stage 5: Respondents were then chosen from every other household until the required respondents were gotten.

2.8 Method for Data Collection

Both quantitative (Questionnaire) and qualitative (In-depth Interview) methods were used for data collection.

2.8.1 In-depth Interview (IDI)

An in-depth interview guide was developed by the researchers was used to collect information used in modifying the questions asked in the quantitative (questionnaire) data collection tool. The major questions in the guide that was used for the interview focused on knowledge, utilization and factors associated with utilization of antenatal care services.

2.8.2 The questionnaire

An interviewer administered questionnaire was used to obtain the necessary information from

the respondents. The questionnaire was developed by the researchers based on literature reviewed together with findings from in-depth interviews. The questionnaire was used to collect information on the socio demographic data of the respondents, knowledge, utilization and factors associated with utilization of ANC services. The questionnaire consisted of both open and close-ended questions and was administered by the research assistants.

2.9 Validity of Instruments

In order to ensure validity of the study instruments for data collection, a number of steps were taken which included review of instruments by maternal health experts and pretest among homogenous population. The instruments were also subjected to review at Blue Gate Public Health Promotion Initiative office.

2.10 Reliability of Instruments

Prior to the use of instruments', the IDI guide and questionnaire used for the study were pre-tested in Ede North LGA which has the same characteristics with the study area, to determine how effective the developed instruments would be in collecting appropriate data relevant to the research objectives. The IDI guide was pretested among pregnant women while the questionnaire on the other hand was pretested among women of child bearing age. All the researchers and research assistants assessed clarity, understanding of the questions by the respondents and completeness of questions. The Cronbach's Alpha Model technique was used to measure the reliability of the questionnaire. This involves administering the questionnaire to 10% of the study population and consequently the coefficient reliability was calculated using Statistical Package for Social Science (SPSS) computer software. The result of the analysis of the data collected during the pre-test was 0.87 which showed the instrument was reliable.

2.11 Data Collection Process

Four trained research assistants recruited assisted the researchers in collecting data for the study. Training was conducted for the hired research assistants to ensure that they had adequate understanding of the instruments prior to commencement of data collection. The training focused on the objectives and importance of the study, sampling process, how to secure respondents informed consent, basic interviewing skills and how to review questionnaires to ensure completeness. The research assistants were involved in the pre-testing of the questionnaires in order to create opportunity for them to acquire practical interviewing skills.

In-depth interviews were conducted by two of the researchers *(1 per LGA)* and the interviews were recorded using a digital recorder. Consent of all the respondents was obtained before the interview and the objectives of the study were explained to them. Each of the interview lasted 30-40 minutes.

For the quantitative study, a total of three hundred questionnaires were administered among consenting women of child bearing age in the study area. Informed consent of respondents was obtained and objectives of the study were well explained before the completion of the questionnaires.

2.12 Data Management, Analysis and Presentation

The completed copies of the questionnaire were serially numbered for control and recall purposes. Data collected was checked for completeness and accuracy on a daily basis. The quantitative data collected was collated, screened, scored and entered into computer. The Statistical Package for Social Science (SPSS) was used for the analysis of the data. A 14-point knowledge scale was used to measure the respondents' knowledge. A correct knowledge attracted a score of 1 point while a wrong knowledge was zero. A score of ≤ 7 point was considered poor while scores > 7 were considered good knowledge. Analysis was done using descriptive statistics and Chi-Square. For the qualitative data, they were transcribed, sorted, categorized and analysed thematically.

3. RESULTS AND DISCUSSION

3.1 Demographic Characteristics of Respondents

Only 300 out of 328 questionnaires administered were used for the analysis, given a response rate of 91.5%. Respondents' age ranged from 16-47 years with a mean age of 28.8 ± 9.3 years. Majority (78.7%) of respondents were from Yoruba ethnic group (Fig. 1) and 76.0% were

Muslims. Most (72.0%) of the respondents were currently married and among these, 46.8% were in polygamous family (Table 1).

3.2 Respondents' Knowledge of Antenatal Care

The overall mean knowledge score of the respondents was 5.2 ± 2.0. Majority (90.7%) of the respondents had a poor knowledge (Fig. 2). Many (59.7%) did not know that pregnant women should commence antenatal care immediately they confirm that they are pregnant and 64.3% did not know that antenatal care helps in early detection of complications in pregnancy. Majority (90.7%) of the respondents did not know that traditional birth attendants and herbalists (49.0%) were not skilled personnel that can offer antenatal care for pregnant women (Table 2).

Majority of the qualitative respondents knew that ANC is a medical service offered to pregnant women. Few of the respondents' mentioned traditional birth attendant and auxiliary nurses as skilled personnel that can offer antenatal care for pregnant women. Only few of the respondents' knew that it is essential for pregnant women to start ANC immediately they confirm their pregnancy. A respondent reported that;

Antenatal care is a medical service that we receive from our hospital during pregnancy. We go to hospital when we notice that the pregnancy has reached like 5 months so that they we screen and counselling us. Like this my pregnancy now, I started my ANC when the pregnancy was 6 months because I usually have miscarriage and my husband wants to be sure I won't lose the pregnancy before giving me ANC money (26 years, Secondary education, Housewife).

Another respondent said;

Antenatal services are services we receive from Nurses and other health care providers during pregnancy. My husband already employed a nurse for me who comes to my house every week to check on me. She comes here to check my BP and also listen to the sound of my baby to know if the baby is playing inside me (36 years, Secondary education, Artisan).

Another respondent said;

*Antenatal care is a medical service being offered to pregnant women during pregnancy. I currently attend LAUTECH teaching hospital and have been screened of many diseases. I was told having diseases during pregnancy might affect my baby and I don't want anything to affect my child. In fact I started my ANC immediately I was confirmed pregnant in the hospital. I was sick and went to hospital for treatment fortunately I was told the sickness was symptoms of pregnancy* (31 years, Tertiary education, Teacher).

3.3 Utilization of Antenatal Care

Majority (78.0%) of the respondents reportedly have access to antenatal services and 78.0% utilised antenatal care service during the last pregnancy. Among these, only (9.0%) visited antenatal during the first trimester while 57.7% visited antenatal during the third trimester. Family members (76.1%) were major source of advice during pregnancy on ANC. Majority (92.3%) of the respondents made preparation for their delivery and these included buying of baby's things (69.3%) and transportation to health facility if needed to a health facility (23.3%). Some (29.7%) of the respondents' reported that they prefer home delivery to hospital and their reasons included attitude of health workers (29.7%) and that it is comfortable (29.7%) (Table 3).

Most of the qualitative respondents' reported a current use of ANC and some of them also reported the use during their previous pregnancy. Reasons adduced for utilization of ANC were influence from family members, fear of maternal mortality and still birth. Few of the respondents reported to be comfortable with home delivery due to attitude of nurses, stress in hospital, long waiting time and finance. Many of the respondents reported stating ANC during the second trimester of their pregnancy. They also reported that their husbands, mother in laws and friends influence their decision to utilize ANC. A respondent specifically said;

My pregnancy is now eight months and I started my ANC when it was four months due to pressure from my mother in law. I do not want to start at that time because I was very fine and do not have a reason to go to hospital. My plan was to start ANC when my pregnancy is eight months. I was not treated well during my previous pregnancy in the hospital by the nurses.
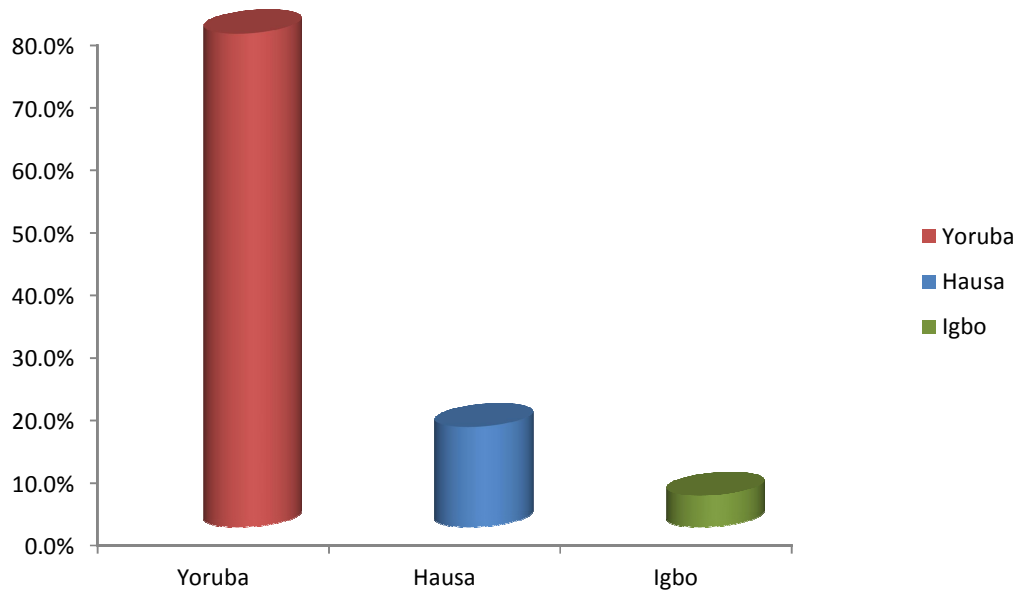
Fig. 1. Respondents ethnic group

They are just too strict and talk to pregnant women as if we are small children (34 years, Secondary education, Civil servant).

Another respondent reported that;

I started ANC immediately my pregnancy was confirmed in the hospital. The doctor personally insisted that I start the ANC immediately. I agreed with him because I don't want to die during delivery and I also want my baby to be safe. Though my experience during this ANC has been very bad, the health workers are not friendly and have to wait hours before seeing my doctor (28 years, Tertiary education, Artisan).

Another respondent said;

I have not been going to hospital during this pregnancy for ANC. Though, I have a mother who is a trained birth attendant who comes around to monitor my pregnancy. She's more competent than those is our health centres here (30 years, No formal education, Artisan).

3.4 Factors Associated with Utilization of ANC Services

Factors such as age, marital status, income, age at first marriage and level of knowledge were significantly associated with the utilization of ANC services at a p value <.05 (Table 4).

3.5 Discussion

Respondents' age ranged from 16-47 years with a mean age of 28.8 ± 9.3 years. This shows that women get pregnant within the reproductive age group than when they are below or above. Most of the respondents were Muslims. This contrasts Kalayou et al. study where majority of the respondents were Christian [13]. Most of the respondents were currently married. This could be because getting pregnant outside marriage is not in line with the culture of the study area. Kalayou et al. also reported that most of the respondents were married in a study conducted in Mekelle City, Ethiopia [13]. Majority of the respondents were Yoruba. This supports the fact that South West is made up of Yoruba ethnic group.

Majority of the respondents had a poor knowledge. This could be due to reasons such as the level of education of mothers, the frequency of ANC attendance, the time of ANC commencement, the knowledge passed to the mothers during ANC and means by which information on ANC is been passed [14,15]. Ibrahim, Borgy and Mohammed

reported that majority of the respondents had a high knowledge score regarding antenatal care [16]. Many of the respondents did not know that pregnant women should commence antenatal care immediately they confirm that they are pregnant. This explains why some women start antenatal as late as at their third trimester. The WHO recommended that pregnant women in developing countries such as Nigeria should seek ANC within the first three months of pregnancy, so as to participate in programme areas in tuberculosis (TB), nutrition, immunization against tetanus, and prophylactic treatment of malaria and human immune virus/ acquired immune deficiency syndrome (HIV/AIDS) and other sexually transmitted infections (STIs). It was further said that all pregnant women should have eight contacts with a health provider throughout pregnancy which should be initiated with a first contact at less than 12 weeks gestational age [7]. When pregnant women are not aware of this right knowledge of commencing early antenatal care, it deprives them of the full benefits of utilising ANC services.

Table 1. Demographic characteristics of respondents (N=300)

| Demographic variables	N	%
Age Group (Years)*		
15-24	127	42.3
25-34	74	24.7
35 and above	99	33.0
Marital status		
Single	40	13.3
Married	216	72.0
Separated	44	14.7
Type of family (N=216)		
Monogamous	115	53.2
Polygamous	101	46.8
Occupation		
Farmer	41	13.7
Trader	151	50.3
Civil Servant	28	9.3
Housewife	80	26.7
Educational level		
No formal education	111	37.0
Primary Education	100	33.3
Secondary Education	61	20.3
Tertiary	28	9.3
Husband's level of education		
None	107	35.7
Primary	4	1.3
Secondary	156	52.0
Tertiary	33	11.0
Age at first marriage		
14-19	190	63.3
20 and above	110	36.7
Children ever born		
1-3	203	67.7
4 and above	97	32.3
Income (N=220)		
5,000-24,000	109	49.5
25,000-44,000	43	19.5
45,000-64,000	7	3.2
65,000-84,000	58	26.4
85,000 and above	3	1.4

Mean age=28.8 ± 5.2 years

The utilization of ANC in this study was found to be significant with some moderating factors such as age, marital status, income, age at first marriage and level of knowledge. The finding of this study is consistent with the study carried by Dahiru and Oche where they reported age of the woman as a major factor that contributes to the utilization of ANC [4]. They found out that being

Table 2. Respondents' knowledge on antenatal care (N=300)

Knowledge on antenatal care	True	False	Don't know
Antenatal care is the care given to pregnant women during pregnancy.	300 (100.0%)*	0 (0.2%)	0 (0.0%)
Pregnant women should commence antenatal care immediately they confirm they are pregnant.	121 (40.3%)*	179 (59.7%)	0 (0.0%)
Antenatal care cannot helps in preventing maternal mortality/death	180 (60.0%)	12 (4.0%)*	108 (36.0%)
Antenatal care helps in screening for sexually transmitted diseases especially, HIV infection.	51 (17.0%)*	68 (22.7%)	181 (60.3%)
Antenatal care helps in preventing mother to child transmission of HIV/AIDS.	28 (9.3%)*	27 (9.0%)	245 (81.7%)
Antenatal care helps in early detection of complications in pregnancy	107 (35.7%)*	21 (7.0%)	172 (57.3%)
WHO recommends a minimum of 2 antenatal visits for women whose pregnancies are progressing normally	0 (0.0%)*	0 (0.0%)	300 (100.0%
Activities carried out in antenatal clinic			
Health Education	300 (100.0%)*	0 (0.0%)	0 (0.0%)
Empowerment of women	12 (4.0%)	145 (48.3%)*	143 (47.7%)
Identification of pre-existing health problem	39 (13.0%)*	90 (30.0%)	171 (57.0%)
Skilled personnel that can offer antenatal care for pregnant women			
Traditional birth Attendant	272 (90.7%)	28 (9.3%)*	0 (0.0%)
Doctor	300 (100.0%)*	0 (0.0%)	0 (0.0%)
Nurse	3000 (100.0%)*	0 (0.0%)	0 (0.0%)
Herbalist	147 (49.0%)	130 (43.3%)*	0 (0.0%)

Correct responses
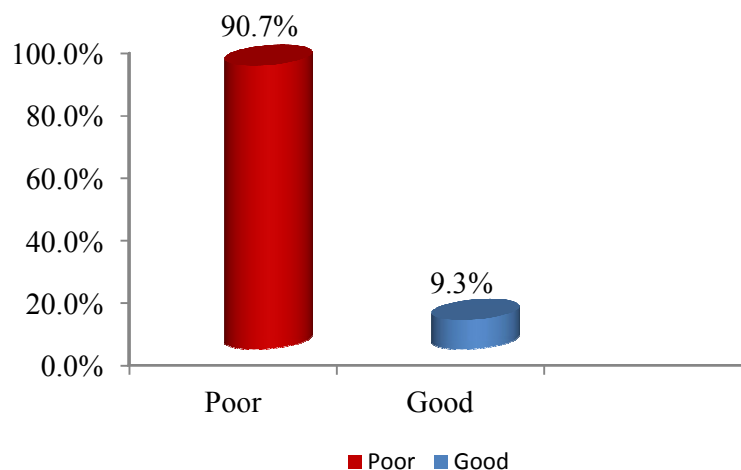
Fig. 2. Respondent's level of knowledge

Table 3. Utilization of antenatal care and preparation for delivery (N=300)

Utilization of Antenatal Care	N	%
Have access to the health facilities (N=300)	235	78.3
Utilised antenatal care service during the last pregnancy (N=235)	234	78.0
Period of pregnancy at which ANC was utilised (N=234)		
First trimester	21	9.0
Second trimester	40	17.1
Third trimester	173	73.9
Sources of advice during pregnancy on ANC (N=234)		
Family members	178	76.1
Friends	56	23.9
Preparation for delivery (N=300)	277	92.3
Forms of preparation made (N=277)*		
Provisions for clean clothes	93	31.0
Prepared for clean instruments for delivery	96	32.0
Preparations for transport if needed to a health facility	70	23.3
Buying of baby's things	208	69.3
Preference for Home Delivery (N=300)	89	29.7
Reason for the preference (N=89)*		
It is comfortable	89	100.0
For privacy reasons	89	100.0
Cost less	38	42.7
Attitude of health workers in health centres	89	100.0

multiple response

Table 4. Factors associated with utilization of ANC services

Factors	Yes	No	X^2	Df	p-value
Age					
15 – 24	82 (64.6%)	45 (35.4%)			
25 – 34	53 (71.6%)	21 (28.4%)	43.032	2	.001
35 and above	99 (100%)	0 (0.0%)			
Marital Status					
Single	40 (100%)	0 (0.0%)			
Married	150 (69.4%)	66 (30.6%)	32.906	2	.043
Separated	44 (100%)	0 (0.0%)			
Income					
5,000-24,000	81 (74.3%)	28 (25.7%)			
25,000-44,000	43 (100%)	0 (0.0%)			
45,000-64,000	7 (100%)	0 (0.0%)	32.672	4	.001
65,000-84,000	58 (100%)	0 (0.0%)			
85,000 and above	3 (100%)	0 (0.0%)			
Age at first marriage					
14 – 19	141 (74.2%)	49 (25.8%)	4.336	1	.037
Above 20	93 (84.5%)	17 (15.5%)			
Level of Knowledge					
Poor	86 (56.6%)	66 (43.4%)			
Fair	120 (100%)	0 (0.0%)	82.389	2	.001
Good	28 (100%)	0 (0.0%)			

in the age group of 35 and above consistently increased the odds of utilization of ANC by about over 200%. Health knowledge is an important factor in the utilization of ANC services. It enables women to be aware of their rights and health status in order to seek appropriate health services [17]. Simkhada et al. reported that lack of knowledge of the benefits of ANC could be a factor for low utilization of ANC [18]. Also, the odds of utilizing ANC were more than three times for those with better knowledge of danger signs of pregnancy than those with poor knowledge in

a study carried out by Birmeta et al. [19]. Furthermore, a study conducted by Tiruaynet and Muchie revealed that economic status contributes to the utilization of ANC [20]. A study from Ethiopia identified that women with higher incomes tend to start ANC early and the likelihood of utilizing ANC decreased, as the family income gets lower [19]. Likewise, a study from China found that women who had higher household income were more likely to have adequately utilized ANC services [21].

4. CONCLUSION

The study showed that majority of the respondents had poor knowledge of antenatal care and many did not know that pregnant women should commence antenatal care as soon as pregnancy is confirmed and some of the respondents still prefer home delivery. It is therefore recommended that ANC education intervention be carried out to educate women on the importance and the numerous advantages of antenatal care with emphasis on the WHO recommended antenatal care visit for optimal care during gestational period. Also, cohort study that includes other variable that was not used in this research is recommended for detailed insight to the factors associated with the utilization of antenatal care.

CONSENT

Informed consent was obtained from the respondents by giving them informed consent form to fill according to their ability to read and write. The informed consent form spelled out the title of the study, the purpose of the study, justification for doing the study as well as the benefit that will be derived at the end of the study. In a situation whereby respondents cannot read or write, verbal consent was sought from them before the interview. Participation in the study was voluntary and there was no criticism of respondents who refuse to participate or wish to withdraw from the study. No identifier like respondents' name or address was written on the questionnaire so as to keep the information given by each respondent confidential.

ETHICAL APPROVAL

As per international standard or university standard written ethical permission has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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