Antenatal Determinants and Birth Outcomes among First-Time Mothers in Tamale Metropolis

Abstract

Early Antenatal Care initiation among first-time mothersis crucial for the health ofboththe baby and mother. Unfavourable birth outcomes aremostly associated with late initiation of antenatal care in most middle-income countries. This study examined the factors that influence ANC practices among first-time mothers within Tamale Metropolis. The study design was cross-sectionand the study approach was a mixed method. A simple random sampling technique was used to select the health facilities.The data collection techniques were survey and interview and the tools werequestionnaire and interview guide. Data were analyzed using Statistical Package for Social Sciences version 20,andthematic content analysis for quantitative and qualitative data respectively. Results showed that 80% of first-time mothers visited the centers for ANC services more than four times. Factors influencing ANC patronage includethe distance from facilities, support from family, and the educational level of pregnant women. Again,the majority of first-time mothers who patronized ANC services throughout their respective pregnancy terms delivered full-term babies. The age of the respondents was significantly associated with ANC attendance, whilethe presence of a significant correlation between occupation and patronage of ANC services. The study thus recommends that all stakeholders in health, including frontline health providers,should emphasize the effectiveness of adequate ANC attendance and the need for early initiation. Additionally, Ghana Health Service needs to develop programs to strengthen Focus ANC and counseling on birth preparedness.

Keywords: Antenatal, Determinants, Birth Outcomes, First-Time Mothers

INTRODUCTION

Antenatal care (ANC) is specially made for pregnant women to ensure that the pregnancy causes no harm to neither the mother nor the foetus[6]. Pregnancy as another stage in a woman's life demands enough caution, especially for first-time pregnancy. First-time mothers do not have any experience and are new in neonatal care practices. Hence Antenatal care that

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providesmedical/health care screening and prophylactic treatments given to a pregnant woman from conception to the birth of the child is very important, as it controls and manages some factors that might adversely affect a pregnancy outcome[3].According to[6], antenatal care is still one of the Safe Motherhood Interventions, and when administered properly, it can help reduce maternal and perinatal mortality.

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According to[19] prenatal care is a public health service that ensures that any problems in the mother's pregnancy are discovered early. As a result, women must give birth in the presence of competent birth attendants who can provide guidance and an enabling environment for both the mother and the infant to survive, especially in the case of a first-time mother. Women will therefore see no need for hospital birth if they receive optimal antenatal care, lowering the risk of pregnancy-related morbidity and mortality [4]. Every year, about 200 million conceptions occur, with roughly 40% of these resulting in pregnancy-related issues for women worldwide[10].

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Recent studies show that a variety of unfavourable birth outcomes, including low birth weight and prematurity, have become a problem in most countries [3].According to [6], women who attended ANC on fewer occasions had a 51% chance of having a low-birth-weight child compared to those who had enough appointments. According to the Ghana Maternal Health Survey, Ghana had a Maternal Mortality Ratio of 310 for every 100,000 live births in 2017, which is unacceptably high when compared to the global objective of less than 70 per 100,000 live births by 2030. According to the Multi-Indicator Survey [13]the Northern region of Ghana has been the only region in the country to have recorded a lower percentage of pregnant women attending health facilities for prenatal care over the last five years.

According to the [12] cited in[18], it is indicated that for the past five years in the Northern Region, 92% out of 480 women who had live births were recorded to have received antenatal

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care from skilled providers. Also, among 709 deliveries surveyed in the Northern part of Ghana, only 36.4% were done by a skilled provider, and 35.4% in a health institution. The Northern Region had the lowest figure when these percentages were compared to all of Ghana's regions.

According to recent studies, a variety of negative birth outcomes among first-time mothers, such as low birth weight and prematurity, have become an issue in most countries [3]. According to [4]about 303 000 women and adolescent girls who obviously are first-time mothers die worldwide due to pregnancy and childbirth-related problems. The 2014 Ghana Demographic and Health Survey revealed that for females who gave birth five years before the survey, 97% of them accessed ANC services at least once in their last childbirth, and nearly nine in ten women had four or more ANC visits [12].

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There is a pool of literature on determinants of ANC globally and specifically in Africa e.g. [18 &19]. Moreover, health outcomes among first-time mothers are heterogeneous across the country and among nations of the global north and the global south. Therefore, focused antenatal care can prepare the first-time mother to commence and continue good practices compared to poor or absent Antenatal care during this period. Based on this premise, this study examines the determinants of ANC practices among first-time mothers in Northern Ghana (Tamale) such that need-driven policies can be formulated to ensure that ANC compliance is enhanced in the study area.

METHODOLOGY

Profile of Tamale Metropolitan Area

Tamale metropolis is located in the northern region of Ghana. Geographically, Tamale is located on latitude 9˚ '23'N and longitude 0˚ 50'W. It is the administrative capital of the Northern Region

of Ghana. The Tamale metropolis shares a boundary with the SaveluguNanton municipality in the North, East Gonja district in the South, Tolon District in the West, and the Yendi Municipality in the East. The Metropolis occupies approximately 750 sq. km, equivalent to 13% of the total land area of the Northern Region.

Study Design

The study employed a cross-sectional study design with a mixed-method approach. Using both qualitative and quantitative data. According to [15],the cross-sectional design is the most appropriate approach when measuring the prevalence of a condition, knowledge, and attitude among patients and health professionals in validation studies.

Study Population

The participants in this study were first-time mothers (15-49 years old) and midwives within the Tamale Metropolis.

Inclusion criteria

First-time mothers and registered midwives from government health facilities.

Exclusion criteria

First-time mothers who are not within the Tamale Metropolis would be excluded from the study. Midwives in private health facilities would be excluded from the study. In addition, midwives without a license to operate would be excluded.

3.5 Sample Size Determination

The sample size was determined using ***Yamane's formula***

n = N/[1+N(e)^2]

Where;

n= Sample size

N= Total number of reproductive-age women in the Tamale Metropolis = 59,341

e= margin of error at 95% Confidence interval = 0.05 or 5%

n=59,341/1+59,341 (0.05^2)

n=**397.32~397**

Using the 2010 Population and Housing Census District Analytical Report for Tamale Metropolis, the approximate sample size will be ***397.***

Sampling Procedure

A simple random sampling technique was used to select four facilities: Reproductive and Child Health Centre, Tamale West Hospital, Nyohini Health Centre, and Tamale Central Hospital, from the 26 government health facilities in Tamale Metro.

Purposive sampling was used to select ten (10) midwives for in-depth interviews (qualitative), and simple random sampling was used to select 397 first-time mothers for the quantitative aspect of the study. Registers of various facilities were used as a sampling frame, and the 397 study participants were drawn from the registers randomly.

Data Collection

The qualitative aspect of the study employed an in-depth interview with some Community Health Nurses and Midwives. The quantitative aspect of the study employed an interviewer-

administered questionnaire with semi-structured questions on antenatal care given to women who came for postnatal care services. Adequate check for missing questions without answers on the field was undertakenand the data was properly sealed in a box before and after the data collection to ensure safe transport to and from the field.

Data Analysis

Statistical Package for Social Sciences version 20 was used to analyze the data. Frequencies and percentages were used to present categorical data. Means and standard deviations were used to display continuous data. Significant variables from the bivariate analysis were fitted in logistic regression models, and all confounders were accounted for; statistical significance was set at $p < 0.05$. The qualitative data were first of all transcribed verbatim from the recordings of the in-depth interviews. After the transcription, thematic analysis was used to organize the data into sections or themes by coding each interview answer by reading every sentence of the transcript and then identifying answers that are similar to each category or area. The individual responses were used in triangulation. The concepts extracted from the themes were then presented in narratives and used to support the quantitative results.

Ethical Consideration

Permission was obtained from the Tamale Metropolitan Health Directorate and the various facilities, and ethical approval was obtained from Kwame Nkrumah University of Science and Technology, a committee of Human Research, publication and ethics ref: CHRPE/AP/266/21

RESULTS

Demographic Characteristics

The total number of respondents in the study was 390. **Table 1.** contain the respective data on the demographic characteristics of respondents. More than half (53.3%) of the respondents were from rural areas, with almost 60% of them being between the ages of 21 and 30. Less than 5% (2.3%) of respondents were more than 40 years old. About 70% of the respondents were Dagombas, and more than three-quarters (76.7%) of the respondents were Muslims. Eight out of 10 respondents were married, and about 2% of them were cohabitating.

One-third of the respondents were employed in the public sector, and more than 40% (42.9%) of the respondents were unemployed.

The majority of the respondents, 38.5%, said they have schooled up to the tertiary level.

Practices of ANC

In Table 2., almost all (98.7%) of the respondents reported that they had ever heard about ANC before, and close to 60% heard about it from health facilities. One out of every ten respondents heard about ANC from their parents. Over 90% (92.3%) of respondents reported that the people attending ANC are pregnant women. Details are shown in

Issues discussed during ANC

Table 3. indicates the issues discussed during ANC. From the table, a little above half (51.5%) of respondents said the importance of ANC was discussed at ANC. More than half of respondents (54.4%) also reported that the services available at ANC are also discussed at ANC sessions. About 51% of respondents said they also discussed issues relating to early initiation of ANC, and about sixty percent (60.4%) said they discussed issues about pregnancy-related complications. On the importance of ANC, more than three-quarters of respondents confirmed

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that they discussed it during ANC. On the effectiveness of discussions, close to 70% (67.9) rated the effectiveness of discussions to be average.

Table 4. contains responses to ANC services provided by health workers. Out of the total population of 390 respondents, 79.5% said they gave birth through vaginal delivery, while the remaining 20.5 delivered through Caesarian Section. Approximately 87% of respondents delivered a full-term baby with 12.8% being pre-term. A good number (73.8%) of the respondents initiated ANC during the first three months of pregnancy, whiles the other percentage initiated it in their second and third trimesters. About 13% of the respondents said they had to go through cultural rights before going to the hospital and that prevented them from initiating ANC during the first trimester or first three months. About 98% of respondents said their blood sample was taken, and they were given injections on their upper arm and SP tablets to take.

Prevalence of antenatal care (ANC) attendance and services provided by health workers

From **Table 4.**on the services available during ANC, the majority of the respondents (98.7%) and (97.7%) had their urine and blood samples taken, respectively, and 87.4% of them attested that they were given the injection more than once. About 62% of them were given the SP tablets thrice. For those who said they 'weren'tgiven the tablets, about 3.3% of them said the tablets were not available at the facilities they went to for their ANC services, and 2.8% of them said they were allergic to the drug. An enormous number of respondents (92.1%) gave birth in either a hospital, Health Centre, or a Community-Based Health and Planning Service (CHPs) compound assisted by either a Midwife or a Community Health Nurse, whiles 7.9% of them gave birth at home.

Bivariate analysis of factors associated with ANC attendance

In **Table 5.,**a significant association (P=0.043) between age and ANC attendance was observedfrom the results. A significant association was also observed between occupation and then ANC attendance (P=0.002).There was no association observed between the categories of people who go for ANC and then ANC attendance, and there was no significant association (P=0.061). Most of the significance of issues discussed at ANC were insignificant; however, marginal significance was observed between issues being discussed at ANC and ANC attendance, as the p-value was almost approaching insignificance (P=0.047). In addition, a significant association was observed between the effectiveness of issues discussed at ANC and then ANC attendance (P=0.032). A significant association was observed between first pregnancy and then ANC attendance with a p-value of 0.028, but no statistical significance was observed between the mode of delivery and then ANC attendance (P=0.897).

The analysis revealed a significant association between ANC initiation in the last pregnancy and ANC attendance (P< 0.001). Place of delivery was also significantly associated with ANC attendance with p < 0.001. Similarly, a significant association was observed between the person who assisted in the delivery and then ANC attendance with a p-value less than 0.001. In trying to establish an association between the sustainability of children due to the money that is earned monthly and then ANC attendance, there was no significant association (P=0.105). The analysis revealed no association between the reason for attending ANC and then ANC attendance (P=0.0471). In addition, no significant association was established between the place of ANC attendance and then ANC attendance (P=0.441).On the contrary, a significant association was revealed between birth outcome and then ANC attendance (P< 0.001). The study observed no

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association between any cultural belief that prevents pregnant women from attending ANC and then ANC attendance, as the p-value was greater than the threshold for significance (P=0.422).

Predictors of ANC Attendance

Table 6. presents the multivariate analysis of factors that predict ANC attendance. From the table, factors that were significant in the bivariate analysis were used for further analysis in a logistic regression model. The R square value of the model was 18.9% and factors such as first pregnancy, birth outcomes, and place of delivery were still significantly associated with ANC attendance. Respondents who said it was their first pregnancy were 64% less likely to go for ANC attendance [A.O.R= 0.36, C.I (0.18-0.75), P=0.006] compared to those who had been pregnant before. Respondents who were previously delivered full-term birth babies were 70% less likely to go for ANC attendance [A.O.R=0.30, C.I (0.15-0.63), P=0.001] compared to those with the previous history of preterm delivery. Women who had previously been delivered at health facilities were 72% less likely to go for ANC attendance compared to their counterparts who were delivered at home [A.O.R=0.28, C.I (0.12-0.65), P=0.003].

Qualitative Data Results

On demographic and social factors that influence antenatal practices among first-time mothers in the Tamale Metropolis, most of the respondents mentioned factors such as facilities not available or being distant or far from homes, cultural rites to be performed before women can visit the facilities, lack of knowledge on ANC and financial problems to be able to have access to ANC services. Some other respondents mentioned negative attitudes of staff towards clients. During the interviews, one of them said

"*well, in this facility, we take care of people from some of the remote communities like Fushegu, Bilahabila, Kambong Naa Yili, Guunayili including others. And from these places to our facility*

is far, unless someone whose husband has a motorbike to bring the person. For those who use Yellow Yellow or a taxi, the last stop of these vehicles is a bit far from the facility hence 'it'sone of the problems. Another problem is we have a tradition they normally do in these communities and there is this culture errmm, they call it in the local dialect 'that's Dagbani as pirigibu. So once a woman has been married and 'she's pregnant, she has no right or nobody has the right, it is taboo for anyone to call her a pregnant woman until her sister in-law tells her or they perform that ritual on her. So after the ritual, the sister- in-law will have to be the first person to call her a pregnant woman, so after that, then she can now start her ANC. But if that ritual 'hasn't been performed, the lady has no right to call herself a pregnant woman not to talk about someone calling her a pregnant woman". (Respondent #1)

Another respondent also added this

"Ok, so I think the demographic and social factors influencing ANC attendance include, the attitude of some health care workers, frankly, some of we the health workers er our attitude towards clients 'isn'tsomething to write home about, although some of the clients can sometimes be annoying. To add to that, family instability can also be a factor and cultural permissiveness". (Respondent # 4)

When asked about how antenatal practice was associated with birth outcomes among first-time mothers in the Tamale Metropolis, some respondents mentioned that good birth outcomes or prognosis were associated with ANC attendance. Another group of respondents said ANC attendance could lead to healthy deliveries without complications and early detection of abnormalities. And another group mentioned that, ANC provides women with the necessary knowledge about pregnancy and hence will help reduce maternal and neonatal mortality. Below are some of their responses:

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"Pregnancy outcome is not predictable at all especially in first-time mothers but attending the antenatal clinic helps in detecting any risk or future problems during childbirth. Healthcare workers at the ANC run series of tests on pregnant women to be able to prevent and treat infections. Other checkups that helps in preventing complications during labour". (Respondent #6)

"Well, mothers who are regular attendance of ANC have good birth prognosis". (Respondent # 5)

In a bid to assess their views on some of the challenges to the adoption of antenatal practices among first-time mothers in the Tamale Metropolis, some of the respondents mentioned some challenges including, cultural rites and beliefs and lack of education on ANC or ignorance. Another group mentioned staff's poor attitude towards clients and pregnant women spending long hours in queues. Responses of some respondents have been shown below:

"Mmmm, they have some religious beliefs that errm, a first time or a mother in her first trimester will have to do these their cultural practices before she can attend ANC. And also the distance sometimes prevents them from coming. Then errmm they 'don'thave much knowledge in ANC so they 'don't know the importance of coming to ANC during the first trim". (Respondent # 1)

"Some of the challenges 'I'll mention is the poor attitude of midwives at the ANC when attending to mothers and spending long hours in a queue waiting for services". (Respondent # 8)

When respondents were asked to share their experiences on ways to improve ANC service, respondents mentioned that, if there is a positive attitude towards work and a good client and nurse relationship, it will help improve services at ANC. Another group mentioned ANC should

be made accessible and affordable for more patronage. And another group said focus ANC should be implemented to do away with long hours spent at the ANC.

On recommendations for first-time mothers on ANC practices, so many varied opinions were gathered from the respondents. Some of them mentioned that pregnant women should do well in patronizing these ANC services since it will help them and their foetuses. Some also talked about the fact that pregnant women should adhere to advices given by midwives. One of the health workers was noted to have said;

"Mmmm, ANC practice is safe and effective when correctly attended, will help both the foetus and the mother hence the need for pregnant women to patronize these ANC services". (Respondent 3)

DISCUSSION

Adoption intensity of ANC practices

ANC is an essential part of safe childbirth and as a result, should be commenced at an early stage of pregnancy. ANC coverage seeks to measure how much care is available and used throughout pregnancy.

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Results from this study on the Prevalence of ANC Practices in the Northern Region revealed that most respondents attended ANC during pregnancy, with about 80%attending it 4+ times. These findings are in line with the findings of the GDHS 2014 [12]. Similar findings by another study on 'Women's knowledge and its associated factors regarding optimum utilization of antenatal care in rural Ghana, indicated that out of 86% of women attendingat least one ANC visit,only 62% of these women are able to attend fourglobally[4]. And even with this percentage, sub-Saharan Africa and South Asia have reported a lower ANC attendance rate. However, in the case

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of the participating health centres reported a majority of first-time mothers were frequent in their visits to healthcare facilities for checkups and other pregnancy-related activities[4].

A similar study in Tamale Metropolis, Sagnarigu District and Savelugu-Nanton Districtconcluded that approximately 81% of the respondents had ≥4 ANC visits during pregnancy, and coverage was over 99%[2]. other studies in the Tamale Metroplist revealed that the majority of the respondents for the study (69.9%) initiated ANC service late (95%; CI: 64-76) while the remaining (30.1%) initiated ANC services early (95%; CI: 23.9-36.9) [22].

Demographic and socio-economic factors that influence ANC attendance

Results from this study indicated that factors that influenced the patronage of ANC were: distance from facilities, support from family, and the educational level of pregnant women also influenced the increased patronage of ANC attendance. This was supported by [5] in their study that revealed that although the understanding of the procedures involved in ANC was limited, several factors were identified to influence ANC attendance. These factors, according to the authors,are categorized into accessibility, attitudes to ANC, and interpersonal issues. Respondents mentioned cost and distance under the accessibility factors. Under attitudes to ANC, respondents mentioned the quality of care, waiting times, and perceptions of preventive care and medical interventions during pregnancy. Some of the interpersonal factors mentioned include a relationship with healthcare providers, family conflict, distance to health facility and transportation problems, financial constraints, difficulties in crossing big rivers during the rainy season to go to seek healthcare, shame to visit the clinic with torn clothes or tight dresses, shame for having too many pregnancies or being over 40 years old and pregnant. Service-related reasons also mentioned included negative attitudes of service providers, long hours of

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waiting,and poor quality of care. Alsoharassment by healthcare providers, cost of medical care, and long-distance travel are all barriers to seeking healthcare[1].

Association between ANC and birth outcomes

Antenatal care-seeking among first-time mothers is an important component of childbirth; many authorities have asserted that the negative birth outcomes can be attributed to the low patronage of ANC services. From this study, most first-time mothers who patronized ANC servicesthroughout their respective pregnancy terms delivered full-term babies. From the analysis, the age of the respondent was significantly associated with ANC attendance. There was another significant association between occupation and then ANC attendance. Logistic regression was performed,and factors such as first pregnancy, birth outcomes and place of delivery were still significantly associated with ANC attendance. Adane et al. argue that the variety of unwanted birth outcomes is attributed to low ANC attendance, with effects such as low birth weight and premature are more prevalent in some countries[3]. Beeckman et al.studied the relationship between antenatal care and preterm birth: the importance of the content of care in Brussels, Belgium. Findings of the study show that caring for a woman during pregnancy is associated with preterm birth[7]. The results found that pregnant women who started care or ANC before the 14th week of gestation had a very low risk for preterm birth, compared to women who received less care. Chen et al., also indicated that married women who received good prenatal care, were educated, 'didn't smoke nor take alcohol were not at high risks of any adverse birth outcome[8]. Kuhnt and Vollmer alsorevealed in their study that, for at least one ANC visit, there is a 1.04% and 1.07% of reduced chance of neonatal mortality and lower probability of infant mortality respectively [16].

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Challenges of adopting ANC practices

Antenatal care, a component of reproductive health, remains one of the Safe Motherhood Interventions. When ANC is practicedproperly, it will help reduce maternal and perinatal deaths. Which will in turn help the country meet the Sustainable Development goal agenda 2030. That is Ending Preventable Maternal Mortality (EPMM) by 2030, according to the Maternal Health Task Force report. From the study, the prevalent challenges that were identified in adopting ANC practices include; cultural rites, homes far from the facility, attitude of staff, financial problems, and lack of education on ANC. Afaya et al., assert that women and adolescent girls die worldwide as a result of pregnancy and childbirth-related problems[4]. The Multi-Indicator Survey (MICS), indicates that over the past 5 years, the northern region of Ghana has been the only region that has recorded a lower percentage of less than 50% of pregnant women attending health facilities for antenatal care. And this is a result of the attitudes of health professionals, financial problems, distance, including others[13].

Conclusion

This study was conducted to examine the factors that influence ANC practices among pregnant women in Northern Ghana (Tamale). The study indicated an increase in patronage of ANC services in the study area due to the region's increased awareness through the realization that commitment to ANC attendance schedules helps control and manage some factors that might adversely affect the outcomes of pregnancy. This is further attributed to several other factors such as the demographic and social factors that influenced patronage of ANC: distance from facilities, support from family and the educational level of pregnant women also influenced the

increased patronage of ANC attendance. Moreover, the majority of first-time mothers who were dedicated and were able to complete the prescribed ANC schedules during the trimesters of the pregnancies delivered full-term babies although the major challenges of patronage across the study area remained, cultural rites, location of patients, and the distance from the facility, whiles others indicated that the attitude of the staff as well as the financial problems and lack of education on ANC, were also factors that mitigated against the patronage of ANC services. The overall significance of this study is to contribute to the existing literature and assist in allocating resources to benefit respondents based on socio-cultural demographic settings.

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TABLES OF RSULTS

Table 1. Demographic characteristics of Respondents

Residence	**Frequency**	**Percent**
Rural	208	53.3
Urban	182	46.7
Age of respondents		
10-20	53	13.6
21-30	230	59.0
31-40	98	25.1
40+	9	2.3
Ethnicity		
Dagomba	270	69.2
Mampurli	76	19.5
Gonja	16	4.1
Others	30	7.3
Religion		
Muslim	299	76.7

Christian	86	22.1
Traditional	5	1.3
Marital status		
Single	56	14.4
Married	312	80.0
Widow	14	3.6
Cohabiting	8	2.1
Employment status	**Frequency**	**Percent**
Unemployed	168	42.9
Employed formal sector	129	33.2
Employed informal sector	93	23.9

What is the level of your education?	**Frequency**	**Percent**
Basic	81	20.8
Secondary	125	32.1
Tertiary	150	38.5
Non	34	8.7

Source: Field Survey, 2021

Table 2. Practices of ANC

Have you heard of ANC before?	**Frequency**	**Percent**
Yes	386	99
No	4	1
If yes, from which source?		
Friends	58	14.9
Parents	39	10.0
School	38	9.7
Health facility	230	59.0
Media	25	6.4
Which categories of people go for ANC?		
Women	31	7.9
Pregnant women	359	92.1

Source: Field Survey, 2021

Table 3.Issues discussed during ANC

Issues discussed during ANC: Importance of ANC	**Frequency**	**Percent**
Yes	189	48.5

No	201	51.5
Issues discussed during ANC: Nutrition		
Yes	307	78.7
No	83	21.3
Issues discussed during ANC: Services available		
Yes	211	54.1
No	179	45.9
Issues discussed during ANC: Need for early ANC initiation		
Yes	197	50.5
No	193	49.5
Issues discussed during ANC: Management of pregnancy-related complications		
Yes	131	33.6
No	259	66.4
Issues discussed during ANC: Importance of postnatal care		
Yes	90	23.1
No	300	76.9
How effective are issues discussed?		
Below average	49	12.6
Average	264	67.7
Above average	77	19.7

Source: Field Survey, 2021

Table 4.Prevalence of antenatal care (ANC) attendance and services provided by health workers

Mode of delivery	**Frequency**	**Percent**
Caesarian Section	80	20.5
Vaginal delivery	310	79.5
What was the birth outcome?		
Delivered a full term healthy baby	340	87.2
Delivered a pre term baby	50	12.8
Did you attend ANC during your pregnancy?		
Yes	386	99.0
No	4	1.0
How many times did you attend ANC in your last pregnancy?		
1-3	72	18.5
4+	314	80.5
None	4	1.0
When did you initiate ANC during your last pregnancy?		

First three months of the pregnancy	288	73.8
Second three months of the pregnancy	81	20.8
Third three months of the pregnancy	17	4.4
None	4	1.0
What prevented you from initiating ANC during the first three months?		
	288	73.8
Health facility far from home	28	7.2
Unfriendly health staff	4	1.0
Cumbersome process to go through at the health facility	9	2.3
Had to undergo cultural rituals	49	12.6
Others	12	3.1

Was your urine sample taken?	**Frequency**	**Percent**
Yes	385	98.7
No	4	1.0
Don't know	1	.3
Was your blood sample taken?		
Yes	381	97.7
No	6	1.5
Don't know	3	.8
Were you given an injection on your upper arm?		
Yes	381	97.7
No	6	1.5
'Don't know	3	.8
How many times were you given the injection?		
Once	24	6.2
Twice or more	341	87.4
Don't know	17	4.4
None	8	2.1
Were you given SP tablets to take?		
Yes	369	94.6
No	20	5.1
Don't know	1	.3
How many times were you given the tablet?		
Once	25	6.4
Twice	100	25.6
Thrice	241	61.8

Don't know	7	1.8
None	17	4.4
Why were you not given?	**Frequency**	**Percent**
	364	93.3
Allergic to drug	11	2.8
Drug unavailable	13	3.3
I don't know why	2	.6
Where did you deliver your baby?		
Home	31	7.9
Community-Based Health Planning and Service/Health Centre/Hospital	359	92.1
Who assisted in the delivery?		
Traditional Birth Attendant	32	8.2
Dr. /Nurse/Midwife/Community Health Nurse	358	91.8

Source: Field Survey, 2021

Table 5. Bivariate analysis of factors associated with ANC attendance

Variables	**ANC Attendance**		
Age of Respondent	Sub-Optimal (ANC < 4) N (%)	Optimal (ANC ≥ 4) N (%)	Test Statistic/P-value
10-20	17 (32.1)	36 (67.9)	
21-30	41 (17.8)	189(82.2)	**X2=7.737,**
31-40	15(15.3)	83 (84.7)	***P=0.043***
40+	3(33.3)	6 (66.7)	
Marital Status			
Single	13(23.2)	43(76.8)	**X2=2.119,**
Married	61(19.6)	251(80.5)	*P=0.544*
Widow	2(14.3)	12(85.7)	
Cohabiting	0(0.0)	8 (100)	
Religion			
Muslim	62(20.7)	237(79.3)	
Christian	14 (16.3)	72 (83.7)	**X2=1.373,**
Traditional	0(0.0)	5 (100.0)	*P=0.517*
Occupation			

Unemployed	45 (26.8)	123(73.2)	**X2=12.985 P=0.002**
Employed formal sector	13(10.1)	116(89.9)	
Employed informal sector	18(19.4)	75(19.2)	

Which categories of people go for ANC?	Sub-Optimal (ANC < 4) N (%)	Optimal (ANC ≥ 4) N (%)	Test Statistic/P-value
Women	10(32.3)	21(67.7)	**X2=3.501**
Pregnant women	66 (18.4)	293 (81.6)	P=0.061
What issues are discussed during ANC?_ Importance of ANC			
Yes	32(16.9)	245(83.1)	**X2=1.527**
No	44(21.9)	157 (78.1)	P=0.217
What issues are discussed during ANC? _Nutrition			
Yes	61(19.9)	246(60.1)	**X2=0.135,**
No	15 (18.3)	68(82)	P=0.714
What issues are discussed during ANC? _Services available			
Yes	47(22.3)	164(77.7)	**X2=2.277,**
No	29(16.2)	150(83.8)	P=0.131
What issues are discussed during ANC? _Need for early initiation			
Yes	42(21.3)	155(78.7)	**X2=0.852**
No	34 (17.6)	159 (82.4)	P=0.356
What issues are discussed during ANC? _Management of pregnancy related complications			
Yes	26(19.8)	105(80.2)	**X2=0.16**
No	50(19.3)	209(80.7)	P=0.898
What issues are discussed during ANC? _The Importance of postnatal care			
Yes	11(12.2)	79(87.8)	**X2=3.936**
No	65(21.7)	235(78.3)	P=0.047
How effective are issues discussed?			
Below average	15(30.6)	34(69.4)	**X2=6.858**
Average	52(19.7)	212(80.3)	**P=0.032**
Above average	9(11.7)	68(88.3)	

No	8(29.6)	19(70.4)	
Is this your first pregnancy (Gravidity)?			
Yes	61(17.8)	281(82.2)	**X2=4.827**
No	15(31.2)	33(68.8)	**P=0.028**
Mode of delivery			
CS	16(20.0)	64(80.0)	**X2=0.017**
Vaginal Delivery	60(19.4)	250(80.6)	P=0.897

Did you attend ANC during your pregnancy?	Sub-Optimal (ANC < 4) N (%)	Optimal (ANC ≥ 4) N (%)	Test Statistic/P-value
Yes	72(18.7)	314(81.3)	
No	4(100.0)	0(0.0)	***P=0.001***
When did you initiate ANC during your last pregnancy?			
First three months of the pregnancy	21(7.3)	267(92.7)	**X2=99.597**
Second three months of the pregnancy	45(55.6)	36(44.4)	***P< 0.001***
Third three months of the pregnancy	6(35.3)	11(64.7)	
None	4(100.0)	0(0.0)	
Where did you deliver your baby?			
Home	16(51.6)	15(48.4)	**X2=22.153**
CHPs compound/Health Centre/Hospital	60(16.7)	299(83.3)	**P< 0.001**
Who assisted in the Delivery?			
Traditional Birth Attendant	16(50.0)	16(50.0)	**X2=20.686**
Dr./Nurse/Midwife/Community Health Nurse	60(16.8)	298(83.2)	**P< 0.001**
Where did you attend ANC during your last pregnancy?			
CHPs Compound	9(30.0)	21(70.0)	**X2=5.864**
Health Centre	26(24.8)	79(75.2)	**P=0.053**
Hospital	41(16.1)	214(83.9)	
What was the birth outcome?			
Delivered a full-term healthy baby	56(16.5)	284(83.5)	**X2=15.381**
Delivered a pre term baby	20(40.0)	30(60.0)	**P< 0.001**

Source: Field Survey, 2021

Table 6.Multivariate analysis of factors that predict ANC attendance

Variables	P-value	Adjusted Odds Ratio (A.O.R)	95%C.I.for A.O.R	
			Lower	Upper
Occupation (Reference= Employed informal sector)	.041			
Unemployed	.533	.810	.418	1.570
Employed in government sector	.089	2.019	.899	4.532
Issues discussed (Importance of ANC) (Reference=Yes)	.722	.901	.508	1.599
Effectiveness of issues discussed at ANC (Reference= Above average)	.298			
Below average	.125	.453	.165	1.247
Average	.228	.610	.273	1.363
First pregnancy (Reference= Yes)	.006	.363	.176	.748
Where did you attend ANC (Reference= Hospital)	.243			
CHPs compound	.164	.513	.201	1.313
Health center	.211	.679	.370	1.246
Birth outcome (Reference= Full term)	.001	.303	.146	.630
Place of delivery (Reference= Health facility)	.003	.281	.122	.647
Constant	.000	12.436		
Constant	.000	12.436		

Source: Field Survey, 2021