

Correlates of Utilization of Antenatal Care Services among Pregnant Women in a Tertiary Hospital in South-South Nigeria

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ABSTRACT

Access to quality healthcare still remains a major challenge in the efforts at reversing maternal morbidity and mortality. Despite the availability of established maternal health interventions, the health of the expectant mother and the unborn child remains poor due to low utilization interventions. The study aimed to identify the patterns and determinants of antenatal care services utilization among pregnant women in University of Benin Teaching Hospital (UBTH) in Edo State, using pregnant women between the ages of 15-49 years irrespective of their gestational age. Simple random sampling technique was adopted and 384 pregnant women were used. Questionnaire was the instrument used to collect data from respondents. Percentage, chi-square and Analysis of Variance (ANOVA) were used to analyze the data with the help of SPSS software. Majority of the respondents (40.2%) were aged 26-36 years; Christian (49.9%); had tertiary education (43.3%) and 30.9% were of the Esan ethnic group. In terms of income, 36.2% and 11% earn about 2,000,000 – 2,500,000 and 3,001,000 - 4,000,000 Naira annually respectively; most respondents (45.4%) come from a polygamous family and most (36.3%) have parity of 3-4; 47.8% of the women were married; 10.2% were Single. The results showed varying levels and patterns of utilization of Ante-Natal Care(ANC) Services which were mainly incongruous with WHO recommendations; chi-square analysis showed the pattern of utilization of ANC services was highly affected by Socio-cultural factors, distance, financial factors, long waiting hours and attitude of health workers; ANOVA result showed that there was significant difference in the pattern of utilization of ANC services between highly educated pregnant women compared to low educated pregnant women. Step up of interventions to channel resources in ensuring that the critical factors that tend to undermine the adequate utilization of ANC services among pregnant women are tackled.

Keywords: Antenatal care; Patterns; Utilization; Determinants; Southern Nigeria.

BACKGROUND

An important public health initiative to ensure a healthy pregnancy outcome is antenatal care . (UNICEF 2023).

It is strongly advocated that Pregnant women have access to a number of maternal health services, including high-quality preventive, curative, and promotion services is antenatal care (ANC) (WHO 2024).

To achieve the best results, every lady who has pregnancy must receive or make at least eight visits to the hospital (Nwabueze et al, 2023).

The antenatal period gives health professionals plenty of time to inform women, provide screening, diagnosis, and treatment services for problems connected to pregnancy, and refer women for specialized intervention (WHO 2018).

The maternal health care services a mother receives throughout her pregnancy are crucial for the mother's well-being.

In underdeveloped nations, problems associated with pregnancy are the main cause of death for women of reproductive age. It is believed that receiving adequate antenatal care can significantly lower the risk of maternal morbidity and mortality as well as newborn fatalities. Many studies have emphasized the value of maternal health services in lowering morbidity and death among mothers and newborns (WHO 2018).

Studies revealed that over fifty percent of all pregnant ladies worldwide are currently availing early prenatal healthcare (Nwabueze et al, 2023); Only 64% of gravid ladies had the necessary 4 prenatal care visits that are advised, and only 83% of pregnant women attending ANC once (WHO 2017). This shows that there is a need for more antenatal care usage on a global scale. The percentage goes from 80 to 100% in advanced countries like Canada, the United States, and France, but it is completely different in developing nations like India, Ethiopia, and Nigeria, where it is between 50 and 60% .(WHO 2017).

In underdeveloped nations, pregnancy-related deaths are 33% more common than in industrialized countries, according to the WHO's 2017 statistics. Low antenatal care service attendance rates among pregnant women are the cause of developing nations' poor maternal health indicators. Even though the WHO recommends that pregnant women undergo four prenatal care visits, more pregnant women in developing countries than ever before are not receiving early antenatal care services .(Nwabueze et al, 2023).

In spite of the fact that prenatal treatment is associated or linked to reduction in sicknesses and death of mothers, at least 40% of expecting mothers in low as well as middle income nations are unable to access it (Nwabueze et al, 2023). Considering that just 18% of gravid ladies or women make an initial antenatal care visit during the first three months of pregnancy, the study (Sebayang et al, 2019) concluded that the timing of ANC checkups is critical. This demonstrates the requirement for further strategies and studies with solid supporting data to boost ANC attendance.

In sub-Saharan Africa, the use of ANC has not increased significantly according to available data (Nwabueze et al, 2023; World Bank 2018). While the greatest proportion of women carrying pregnancy in Africa fail to keep to about four antenatal visits as required , 69% of them did receive at least one during their pregnancies . (Nwabueze et al, 2023).

Furthermore, the majority of Ethiopian women do not obtain the recommended number of prenatal care (ANC) visits, according to Hijazi et al,(2018).

According to a recent study, (NDHS 2018), Nigeria as a nation has around 2% of all people in the world and is responsible for 10% of the projected rate of maternal mortality worldwide. Also within Nigeria, particularly villages and some areas in the north, prenatal care is still not widely used, according to a recent study (Jimoh et al, 2018). Further, low use rates are shared by those who are less educated and disadvantaged. Six times more people live in rural areas than cities, although only 50% of them attended ANC (Jimoh et al, 2018). However, a large percentage of women who receive ANC are not able to benefit from the advocated times of hospital visits by the WHO, which has increased the risk of maternal death (WHO 2018). According to the WHO's 2017 statistics, Nigeria is to blame for 36,000 maternal fatalities annually, or 13% of all maternal deaths globally. The underutilization rate was 46.5%, according to one research on the occurrences and reasons for under-use of pregnancy-related care or services in Nigeria (Adewuyi et al., 2018). The incidence of under-use of services relating to antenatal care in Nigeria was highest in the North-West, with rates of 69.3%, 76.6%, and 44.8% for urban, semi-urban and rural areas, respectively. The country's poor ANC utilization substantially jeopardizes the ability of the world and Nigeria to fulfill the Sustainable Development Goals (World Bank 2018).

A demographic health study in Nigeria found that thirty three percent of women who were pregnant in Edo state never attended ANC. Those assessing ANC frequently did not have satisfactory reports as regards number of times they visited, and treatment may not be given by qualified health professionals (NDHS 2018). Most notably, women from rural parts of the state of Edo do not use antenatal care facilities in any significant numbers (Okonofua et al, 2018). The low usage of antenatal care services is also influenced by poor treatment quality and inaccessible services in health facilities (Okonofua et al, 2018).

Egor Local Government Area, Edo State, has not made extensive use of antenatal care services. Once more, ladies who visited the antenatal or prenatal clinic at the Teaching Hospital in Benin arrived less frequently and later than usual (Okonofua et al, 2018). Unused prenatal care services and their detrimental effects on expectant mothers are a global health issue (UNICEF 2023). Understanding maternal mortality among pregnant women and the trends and elements that affect their usage and under-use of ANC services is important (Ntiomo et al, 2019).

There is still a lack of information regarding trends and other elements that may affect how frequently pregnant women utilize ANC at the University-based Hospital in Benin city. According to prior study (Okonofua et al, 2018), the majority of women in the Egor Local Government Area underutilized ANC services. Understanding the many ANC use scenarios is crucial for developing effective policies and strategic actions to raise the currently low maternal health indices.

Therefore, the essence for the research is to ascertain any variables that affect the way or pattern of women who have pregnancy make use of antenatal healthcare services in UBTH.

Objectives of the Study

To determine the patterns and determinants of utilization of antenatal care services among pregnant women attending ANC in University of Benin Teaching Hospital, Egor Local Government Area, Edo State

Specifically, the study attempts to answer the following questions:

1. What is the pattern of utilization of ANC services among pregnant women attending ANC in University of Benin Teaching Hospital, Egor Local Government Area Edo State?
2. What are the determinants of utilization of antenatal care services among pregnant women attending ANC in University of Benin Teaching Hospital, Egor Local Government Area, Edo State.
3. What is the relationship between demographic factors like Age, Socio-economic and the level of education and utilization of ANC services among pregnant women attending ANC in University of Benin Teaching Hospital, Egor local Government Area, Edo State?

The following hypotheses were formulated to be tested in this study:

1. There is no significant relationship in ANC service utilization among pregnant women of different age groups attending ANC in UBTH, Egor Local Government Area, Edo State
2. There is no significant relationship between socioeconomic status (financial factors) and ANC service utilization among pregnant women attending ANC in UBTH, Egor Local Government Area, Edo State
3. There is no significant relationship in the level of education and utilization of ANC services among pregnant women attending ANC in UBTH, Egor Local Government, Edo State.

Significance of the Study

The findings of this survey may provide the much needed data that would guide the creation of appropriate maternal health programs and services, which may help to improve antenatal care services in the healthcare sector.

Additionally, it may support future study and the development of policies.

This may give the medical professionals the ability to identify what is driving poor or irregular ANC service utilization as well as the means of stopping them.

Additionally, governments may be provided a basis to form and enforce rules to encourage adequate ANC care utilization, which will reduce the rate at which mothers and babies become sick and die.

Understanding of patterns of ANC services, the arguments in favor of and against ANC adoption, as well as the future, is crucial for developing plans for effective interventions.

Additionally, this study will be used to dispel myths and erroneous assumptions regarding ANC services and to increase knowledge and awareness of these services.

The following specific advantages for pregnant women are anticipated from this study: increased usage of ANC services, reduced maternal morbidity and mortality rates by establishing the foundation for healthy motherhood; place pregnant women at the center of care, enhancing their pregnancies and making sure that their offspring begins life in the best form possible; make pregnant women aware of the benefits of utilizing prenatal care services, assist them in understanding their legal entitlement to such care, and promote efficient resource use so that money that would have been spent on a complicated pregnancy and its outcome in the event that antenatal care was not used can instead be put to use in more lucrative endeavors.

METHODOLOGY

Study Area

This study was conducted at the University of Benin Teaching Hospital (UBTH) located in Egor Local Government Area of Edo State, in South South Nigeria. It is a tertiary institution founded in 1973, and since then, it has received referrals from all regions of the state as well as from other states. The ANC clinic is located in the obstetrics and gynecology department, and it serves as a resource for women with gynecological issues as well as pregnant and recently delivered women.

Study Design

The investigation was conducted using a descriptive cross-sectional study approach.

Population of the Study

All booked pregnant women attending ANC clinic in UBTH between January and June 2022.

The target population for pregnant women visiting the ANC clinic at UBTH between January and June 2021 was 2689.

Sample Size

The sample size for the investigation was determined using Taro Yemen's minimum sample determinant formula: $MSS = N / (1 + N(X)^2)$

Where N= Target population, X= alpha Level of significance (0.05).

The sample size calculated to be $349 + 35$ (10% attrition) =384.

Sampling Technique

For this study, simple random sampling technique was applied. A subset of the participants was chosen at random by the researcher from the entire population. Then information was gathered from the chosen subgroup.

Inclusion Criteria

Regardless of gestational age, health state, or the number of fetuses in the womb, pregnant women between the ages of 15 and 49 who were booked at the ANC clinic at UBTH, willing to participate in the study, and who gave their informed consent.

Exclusion Criteria

Pregnant women who were not attending ANC services in UBTH, and were not within the ages of 15 – 49 years during the period of the study. Women who were not pregnant, but attend ANC for other purposes and pregnant women who could not provide informed consent.

Instrument of Data Collection

A questionnaire created by the researchers and based on a review of relevant literature served as the research instrument. Likert scales and dichotomous questions were used to measure the items in the instrument, which has multiple of them. Section A of the questionnaire deals with demographic information, Section B with patterns of antenatal care service use, and Section C with factors influencing ANC service use.

Validity of Instrument

The instrument was adequately validated by Experts in the field.

Reliability of the Instrument

A test-retest methodology was utilized to assess the instrument's reliability. Using Irrua Expert Teaching Hospital, Irrua, Edo State, 38 pregnant women who did not participate in the research (10% of the required sample size) were chosen. The instrument was administered and retrieved with the consent of the chosen participants for the test-retest assessment. After the initial administration of the procedure lasted two weeks, it was repeated. To ascertain the instrument's dependability, the Pearson product moment correlation coefficient index value of 0.85 was obtained.

METHOD OF DATA COLLECTION

Over the course of the study's six-month duration, 384 questionnaires were given to respondents on each clinic day and retrieved immediately

Method of Data Analysis

The statistical package for social sciences (SPSS Version 21) was used to evaluate the data using descriptive statistics, mean, and standard deviation. In order to examine the respondents' biodata, frequencies, percentages, and mean scores were employed. Similarly, in order to analyze the research questions posed for the study, at a significance level of 0.05, the hypotheses were tested using ANOVA and chi-square.

Ethical Consideration

The ethical committee of UBTH approved the research study vide ADM/E22/A/VOL.VII/14831295 of 11/04/2022.

The participants were provided full explanations of the study's details without being misinformed or given incomplete information on a topic that was crucial to the participants.

The participants were given an informed consent form to sign after receiving a thorough explanation of the study, being urged to ask clarification questions, and being given information that they felt comfortable receiving.

The researchers took care to ensure that the participants weren't harmed in any manner, whether it was physically, psychologically, emotionally, socially, or in any other way.

The researchers only used the information given for research purposes and did not share it with anyone who was not a direct participant in the study. Anonymity was also maintained by leaving participant names off transcripts since they were given only numbers rather than names.

There was no outside control, pressure, exploitation, or influence because the researchers respected the participant's right to participate in the research project. Also, the researchers made sure that participants had the mental and psychological competence to make decisions.

RESULTS

A total of 384 pregnant women were approached to complete the survey for the study. A response rate of 99.2% was achieved.

Demographic Data

Table 1 details the demographic data of the respondents. Majority (40.2%) are between the ages of 26 and 36 whilst 14.4% are 48 years of age or older; majority (43.3%) have tertiary education; 49.4% are Christians; 30.9% are of the Esan ethnic group and majority (30.9%) are civil servants. In terms of income, 36.2% and 11% earn about 2,000,000 – 2,500,000 and 3,001,000 - 4,000,000 Naira annually respectively. Most respondents (45.4%) come from a polygamous family and most (36.3%) have gravity of 3-4; 47.8% of the women are married; 33.1% are separated /divorced and 10.2% are Single (unmarried). See Table 1.

Table 1: Demographic Data of Respondents

Variables		No	%
Age	15-25	90	23.6
	26-36	153	40.2
	37-47	83	21.8
	48 and above	55	14.4
	Total	381	100.0
Education	Primary	87	22.8
	Secondary	129	33.9
	Tertiary	165	43.3
	Total	381	100
Religion	Christianity	188	49.4
	Islam	110	28.9
	Traditional	28	7.3
	Others	55	14.4
	Total	381	100
Ethnicity	Bini	70	18.4
	Esan	118	30.9

	Etsako	83	21.8
	Others	110	28.9
	Total	381	100
Occupation	Civil Servant	118	30.9
	Business	97	25.5
	Unemployed	83	21.8
	Others	83	21.8
	Total	381	100
Annual Income	3,001,000 - 4,000,000	42	11.0
	2,501,000- 3,000,000	56	14.7
	2,000,000 – 2,500,000	138	36.2
	Others	145	38.1
	Total	381	100
Family	Monogamous	208	54.6
	Polygamous	173	45.4
	Total	381	100
Parity	1-2	63	16.5
	3-4	138	36.3
	5-6	90	23.6
	Others	90	23.6
	Total	381	100
Marital Status	Single	39	10.2
	Separated/ Divorced	126	33.1
	Married	182	47.8
	Widow	34	8.9
	Total	381	100

Patterns of ANC Utilization

Table 2 shows that 39.4%, 29.1% of respondents have delivered baby in the hospital 3 and 4 times respectively. In their previous pregnancy, 34.6% and 31.8% respectively attended ANC Clinic 2 and 4 times; 11.3% attended only once. With regards to keeping ANC appointments, 30.9%, 25.5% and 24.4% did so 2,3, and 4 times respectively.

For the current pregnancy, 31.8%, 31.2% and 22.8% attended ANC clinics 3, 4 and 2 times whereas for the last pregnancy, 39.4%, 29.7% and 26.5% attended ANC clinics 3, 4 and 2 times respectively. In summary, 32.3%, 29.4% 28.3% and 10% respectively ever booked any of their pregnancies within the first 12 weeks 4 times, 3 times, 2 times and 1 time.

Regarding the time for booking ante-natal care, 33.9%, 24.9% and 24.1% made booking at the 13-24 weeks, 25-36 weeks and 37-40 weeks of gestation respectively; only 17.1% booked at 1-12 weeks of gestation (1st Trimester).

On the average, 14.04% of respondents utilize antenatal services just once, 27.91% use them twice, 29.1% use them three times, and 28.94% use them four times or more. See Table 2.

Table 2. Patterns of antenatal care utilization by expecting mothers.

(1 - once; 2 - twice; 3 - three times; 4 - four and above).

S/N	Items		1	2	3	4
1	How many times have you delivered in the hospital?	No	67	70	133	111
		%	17.6	18.4	34.9	29.1
2	How many times did you attend ante-natal care clinics in your previous pregnancy?	No	43	132	85	121
		%	11.3	34.6	22.3	31.8
3	How many times did you keep to ANC appointment?	No	73	118	97	93
		%	19.2	30.9	25.5	24.4
4	During your last pregnancy, how many times did you attend ante-natal clinics?	No	34	101	133	113
		%	8.9	26.5	34.9	29.7
5	How many times did you book any of your pregnancies within the first 12 weeks?	No	38	108	112	123
		%	10.0	28.3	29.4	32.3
6	How old was your last pregnancy when you booked it?		1-12weeks	13-24weeks	25-36 weeks	37-40 weeks
		No	65	129	95	92
		%	17.1	33.9	24.9	24.1
	Average ANC Utilization		14.04%	27.91%	29.1%	28.94%

Determinants of ANC Utilization

Table 3 reveals that factors such as Finance (75.9%), Distance (73.2%), Poor attitude of health care workers (71.1%), Socio-cultural factors (68.5%). Long waiting hours (66.7%), Unavailability of Transport (64%), Schedule of ANC (63.5%), Availability of facilities (63%), Religion (62.4%) and Accessibility (61.9%) were reported (strongly agreed or agreed) to be strong determinants of ANC utilization by the respondents. On the other hand, respondents strongly disagreed/disagreed that Cultural acceptance (64.6%), Language barrier (63%), and Lack of knowledge about existing services (63%) constituted barriers to ANC utilization.

On the average, 59.4% of the respondents opined that there are barriers to ANC utilization as enumerated above.

Table 3: Determinants of the utilization of ante-natal care services among pregnant women.

SNO	Variables		Strongly Agreed	Agree	Disagree	Strongly Disagree
1	Distance	No	136	143	61	41

		%	35.7	37.5	16	10.8
2	Socio-cultural factors	No	136	125	66	54
		%	35.7	32.8	17.3	14.2
3	Financial factors	No	156	133	56	36
		%	41	34.9	14.7	9.4
4	Occupation	No	111	88	104	78
		%	29.1	23.1	27.3	20.5
5	Lack of knowledge about existing services in ante-natal care	No	54	87	121	119
		%	14.2	22.8	31.8	31.2
6	Availability of facilities/equipment	No	119	121	87	54
		%	31.2	31.8	22.8	14.2
7	Language barrier	No	67	74	116	124
		%	17.6	19.4	30.4	33
8	Schedule of antenatal care	No	104	138	74	65
		%	27.3	36.2	19.4	17.1
9	Accessibility to ante-natal clinic	No	127	109	77	68
		%	33.3	28.6	20.2	18
10	Cultural acceptance	No	34	101	133	113
		%	8.9	26.5	34.9	29.7
11	Religious acceptance of ante-natal care services	No	111	127	76	67
		%	29.1	33.3	20	17.6
12	Husbands' acceptance of the services rendered	No	108	113	88	72
		%	28.3	29.7	23.1	18.9
13	Unavailability of transport	No	136	108	92	45
		%	35.7	28.3	24.1	11.8
14	Long waiting hours	No	121	133	93	34
		%	31.8	34.9	24.4	8.9
15	Poor attitude of the health providers	No	125	146	67	43
		%	32.8	38.3	17.6	11.3
	Total responses	No	1645	1746	1311	1013
	Average	No	109.7	116.4	87.4	67.5
		%	28.8	30.6	22.9	17.7

Hypothesis Testing

Three hypotheses served as the foundation for the investigation. On the basis of the questionnaire results, these hypotheses were examined and explained using chi square statistics.

Decision Rule

In the event that the computed value is smaller than the tabular value, the null hypothesis is accepted; otherwise, it is rejected.

Test for Hypothesis One

H₀: There is no significant relationship in ANC service utilization among pregnant women of different age groups attending ANC in UBTH, Egor Local Government Area, Edo State

H₁: There is a significant relationship in ANC service utilization among pregnant women of different age groups attending ANC in UBTH, Egor Local Government Area, Edo State

At α level of 0.05, the tabulated value of χ^2 was 7.82.

The Chi-square computed value (χ^2_C) was 16.55, which is higher than the tabulated value of 7.82 (with three degrees of freedom and a 0.05 alpha level). Thus, we reject the alternative hypothesis and accept the null hypothesis; accordingly, there is no correlation in ANC service utilization among gravid women of different age groups attending ANC at UBTH.

Test for Hypothesis Two

H₀: There is no significant relationship between socioeconomic status (financial factors) and ANC service utilization among pregnant women attending ANC in UBTH, Egor Local Government Area, Edo State

H₁: There is a significant relationship between socioeconomic status (financial factors) and ANC service utilization among pregnant women attending ANC in UBTH, Egor Local Government Area, Edo State

At α level of 0.05, the tabulated value of χ^2 was 7.82

The computed Chi-square value (χ^2_C) was 7.66, which is lower than the tabulated value (with 3 degrees of freedom and an alpha level of 0.05) of 7.82. Thus, the alternative hypothesis that claims there is a strong association between socioeconomic status (financial factors) and ANC service use among pregnant women is accepted.

Test for Hypothesis Three

H₀: There is no significant difference in the level of education and utilization of ANC services among pregnant women attending ANC in UBTH.

H₁: There is significant difference in the level of education and utilization of ANC services among pregnant women attending ANC in UBTH.

The data analysis demonstrated that pregnant women with higher levels of education use antenatal care services more frequently than pregnant women with lower levels of education.

Further, ANOVA test results showed that F has a value of 0.021, and a p-value of 0.0315, which is lower than the 0.05 alpha level, indicating significance. This implies that pregnant women's level of education and use of antenatal care services vary widely. The null hypothesis is thus rejected.

DISCUSSION

Antenatal Care (ANC) Services is an umbrella term used to describe medical care and procedures that are carried out to and for pregnant women. It is the health care that is rendered to the pregnant women throughout pregnancy until the child's birth and is aimed at detecting the already existing problems and the problems that can develop during pregnancy, affecting the pregnant woman or her unborn baby.

Utilization of antenatal care services is the act of making practical and effective use of antenatal care services available to pregnant women.

The effectiveness of antenatal care is best when it is sought early in pregnancy and continues through to delivery.

Starting antenatal care early is advantageous especially within the first three months of pregnancy since it enables assessment of the woman's baseline health (NDHS 2018); this aids in early detection of abnormality in the woman and the fetus health, also assisting the health workers in taking necessary corrective actions (NDHS 2018).

The standard number of visits for antenatal care recommended by the World Health Organization is a minimum of four visit before delivery, this is in line with Nigerian policy on antenatal care; the focused antenatal care (FANC).

FANC emphasizes the quality of health, antenatal schedule for the four visits states that the first should be by the end of the 16th week of pregnancy, the second would be between the 24th and 28th week of pregnancy, the third is by the end of the 32nd week, while the fourth visit should be undergone at the 36th week of the pregnancy.

However, additional visits could be undertaken for women with basic needs and where complications occur.

Demographics

In our study, majority (40.2%) of the respondents were between the ages of 26 and 36; this is comparable to studies by Edgard- Marius, (2021) that reported a mean age of 28 and majority < 30 years; Ahmed et al, (2022) that reported respondents aged 25-34 years and Elkhatib et al, (2020) that reported Mean age of 29.6.

Majority (43.3%) of respondents in our study had tertiary education; 33.9% and 22.8% respectively had secondary and primary education. This is in contrast to the study by Ahmed et al, (2022) that reported 21.5% respondents had tertiary, 26.5% had secondary and 32.4% had primary education.

Regarding religion, 49.4% of the respondents in our study were Christians while 28.9% were Muslims. This is at variance to study by Edgard- Marius (2021) where 67.5% were Christians but closer to the study by Ahmed et al, (2022) where 53.9% were Christians but 40.2% were Muslims; a study by Elkhatib et al, (2020) reported 61.9% as Muslims

About one-third (30.9%) of respondents in this study were of the Esan ethnic group; 21.8% were Etsako and 18.4% were Bini.

About a third (30.9%) of respondents in our study worked as Civil Servants; slightly lower than 47.1% reported by Ahmed et al, (2022).

In terms of income, 36.2% and 11% earn about 2,000,000 – 2,500,000 and 3,001,000 - 4,000,000 Naira annually respectively; this translates to an average monthly income of 250, 000 Naira

In our study, most respondents (45.4%) came from a polygamous family and 54.6% from monogamous family; the study by Elkhatib et al, (2020) revealed that 68.3% were from monogamous family.

In our study, about a third (36.3%) of respondents had gravity of 3-4 whereas a study by Ahmed et al (2022) reported that about three-quarters (72.5%) had below 3 children.

Further, data from our study revealed that a little less than half (47.8%) of the women were married in contrast to 93.5% reported by Edgard- Marius (2021) and 67.6% reported as married by Ahmed et al, (2022).

The demographic variations may not be unrelated to differences in respondents' background.

The literature is awash with reports that demographic, cultural and socio-economic factors [like age; education, marital status, ethnicity, religion, wealth, tradition belief system, cultural beliefs and customs etc] have a way of influencing uptake of ANC services by pregnant women. (WHO 2018; Arthur et al, 2019; Dapaah and Nadrinaab, 2019; Ononokpono 2019; Jat et al, 2020; Nwosu et al, 2020; Edgard- Martins et al, 2021; Fagbamigbe & Idemudia, 2021)

Patterns of ANC Utilization

Patterns of ANC Utilization refer to issues relating to the frequency of attendance at ANC clinic, how often pregnant women make use of facilities available to them. The previously recommended utilization of care model of four visits for duration of the pregnancy with the first contact, occurring within the first 12 weeks gestational period and subsequent ones occurring at 4 weeks intervals. Timely ANC is generally acknowledged to be an effective method of preventing adverse pregnancy outcomes.

Focus Antenatal care which is goal directed and a client-oriented service requires a minimum of four ANC visits for pregnant women. Presently, World Health Organization (WHO) requires that all pregnant women should have minimum of four ANC visits in order to identify early complications and reduce maternal morbidity and mortality.

The usual recommendation by Obstetricians for antenatal visit by pregnant women is every month visitation from the beginning of the pregnancy till the 7th month, fourth nightly in the 8th month and then weekly until child delivery (NDHS, 2018).

Globally, 36% of pregnant women worldwide still have less than four ANC visits while some don't attend ANC at all despite the importance and availability of this service (Nwabueze et al, 2023).

Various patterns of ANC utilization were reported by our cohort of respondents.

In the first instance, our data revealed that only 39.4% and 29.1% of respondents ever delivered a baby in the hospital 3 and 4 times respectively.

Further, regarding frequency of attendance of ANC clinics in their previous pregnancy, only about a third of the respondents attended ANC clinics 2 and 4 times whereas one-tenth of respondents attended only once. About a third (30.9%) of respondents ever kept ANC appointments twice; and about a quarter of them 3 and 4 times. For the current pregnancy, 31.8%, 31.2% and 22.8% attended ANC clinics 3, 4 and 2 times whereas for the last pregnancy, 39.4%, 29.7% and 26.5% attended ANC clinics 3, 4 and 2 times respectively. In summary, 32.3%, 29.4% 28.3% and 10% respectively ever booked any of their pregnancies within the first 12 weeks 4 times, 3 times, 2 times and 1 time

Regarding the time for booking ante-natal care, 33.9%, 24.9% and 24.1% made booking at the 13-24 weeks, 25-36 weeks and 37-40 weeks of gestation respectively; only 17.1% booked at 1-12 weeks of gestation (1st Trimester).

On the average, about a tenth (14.04%) of respondents utilized antenatal services just once, 27.91%; used them twice, 29.1% used them three times, and 28.94% used them four times or more.

There is much to be desired and improved upon with this level of ANC uptake as the reported patterns were well off the recommended patterns by WHO.

In terms of comparisons with literature studies, these findings are at variance with some studies in many different respects and similar to others in many respects depending on demographic and Socio-cultural characteristics of respondents.

For example, in The Netherlands, it has been reported that pregnant women initiate antenatal care during the first trimester (within the 12 weeks of pregnancy) and make five or more ANC visits. (Zhao et al, (2018), perhaps the best situation available. This is at variance with our study where only 17.1% booked at 1-12 weeks of gestation (1st Trimester); our study finding is however very similar to the Sebayang et al, (2019) report that only 18% of women had their first ANC visits in the first trimester.

In India, Kumar et al, (2019) reported that 21% of pregnant women utilized the antenatal care services fully, ranging from 21.3-65.9% across the states, and overall, about 51.6% had four or more ANC visits.

Further, a study carried out in Bangladesh by Islam and Masud (2018) showed that women received less than three visits to ANC while only 6% received the recommended four or more ANC visits and 21% of the pregnant women never received ANC visit.

A study reported that pregnant women in Zimbabwe booked late for antenatal care services (14 gestational weeks before booking ANC). (Tesema and Tesema, 2020).

In Sub-Saharan Africa, up-take of ANC utilization has been reported to be low (Nwabueze et al, 2023; World Bank, 2018)

A study that was carried out in Sub-Saharan Africa indicated that women often only initiated ANC after the first trimester and did not achieve the recommended number of ANC visits, (Pell et al, (2018).

In Africa, 69% of pregnant women had at least one antenatal visit during pregnancy, but majority did not attend the required minimum number of four ANC visit (Nwabueze et al, 2023).

Also, in Ethiopia, most women did not make the minimum number of ANC visits recommended for pregnant women (Hijazi et al, 2018).

A study by Jimoh et al, (2018) revealed that the utilization of antenatal care is still very low in Nigeria, especially in the rural areas and the Northern part of the country.

There is a report that the underutilization of ANC in Nigeria was 46.5%; North-West region had the highest prevalence of ANC under-use in Nigeria at 69.3%, 76.6% and 44.8% for overall, urban and rural respectively. (Adewuyi et al, 2018).

In Edo state, according to NDHS, 2018, 33% of pregnant women in Edo state did not attend ANC at all, those accessing ANC in many cases did not have adequate number of visits and the care might not have been provided by skilled health providers.

Summarily, it is on record that globally, 36% of pregnant women still have less than four ANC visits while some do not attend ANC at all (Nwabueze et al, 2023). Utilization of ANC services is said to be low in developing countries like Nigeria as evidenced by the reported patterns of ANC utilization in our study; such patterns often result in poor maternal health indices compared to the developed countries (Ademuyiwa, 2020; Gebremeskel et al, 2018; Mulondo and Khoza, 2018).

Without hesitation, it is very clear that the likelihood of receiving effective maternal health interventions throughout the antenatal period is increased by receiving ANC at least four times (Nwabanne et al, 2021).

There is no gainsaying the fact that poor utilization of ANC in Nigeria is a serious threat to the attainment of the sustainable Development Goals in Nigeria and the world at large (World Bank, 2018).

Non-utilization of antenatal care services and its negative effect on pregnant women is a global health problem (UNICEF, 2023); this means there is a global need for increase in antenatal care utilization especially in Egor LGA of Edo state

It is vitally important to significantly enhance the current ANC uptake in this community.

Determinants of ANC Utilization

Determinants are seen as factors that influence the utilization of ANC services positively or negatively. Determinants of utilization identified are predisposing factors (such as age, education, religion, husband/partner, education, maternal occupation, parity, culture and tradition) enabling factors (such as income status, place of residence, distance from the health facility etc.(WHO, 2018; Elkhatib et al, 2020; Nwosu et al, 2020; Arthur et al, 2019; Edgard- Martins et al, 2021; Fagbamigbe & Idemudia, 2021; Jat et al, 2020; Ononokpono, 2019; Dapaah and Nadrinaab, 2019)

This study revealed the following as determinants of ANC utilization: Finance (75.9%), Distance (73.2%), Poor attitude of health care workers (71.1%), Socio-cultural factors (68.5%). Long waiting hours (66.7%), Unavailability of Transport (64%), Schedule of ANC (63.5%), Availability of facilities (63%), Religion (62.4%) and Accessibility (61.9%). Various literature studies as cited above give credence to our findings.

Definitive government policies may help to overcome some of these hindrances to ANC uptake like distance, long-waiting hours, transportation issues, availability of facilities, and accessibility. Appropriate training and orientation of health care workers may alter their negative attitudes.WHO (2018) suggested that efforts to reduce maternal mortality must focus on adequate ANC services and medical management.

Hypothesis testing

For Hypothesis one; our data demonstrated that patterns of antenatal care service consumption among pregnant women do not significantly correlate. This result is consistent with literature studies:

Elkhatib et al, (2020) showed that women started their ANC visits appropriately when they had issues with prior pregnancies, were better educated, and had undergone reproductive therapy in the past;

Zhao et al, (2018) showed that 90% of educated pregnant women started receiving ANC in the first trimester (during the first 12 weeks of pregnancy), and made five or more ANC visits.

For the second hypothesis, data showed a substantial correlation between the factors influencing ANC use among pregnant women visiting the ANC clinic at UBTH. The results of the investigation made it evident that the top five most important factors influencing how frequently pregnant women use antenatal care services are financial reasons, geographic distance, the clinicians' negative attitudes, Socio-cultural factors, and lengthy waiting times.

Numerous studies provide strong support for these results.

NDHS , 2018 stated that the likelihood of ANC under-utilization was raised by distance.

WHO reported that a variety of variables, including insufficient maternal knowledge and cultural considerations, affect the use of ANC services globally. (WHO, 2018).

Guevarra et al, (2018) revealed that poor ANC service utilization is related to poverty, unemployment, and low levels of education.

Majrooh et al, 2018 noted that Socio-cultural factors, such as poverty and the remote locations of health facilities, increased the inaccessibility of ANC by pregnant women in the Punjab province of Pakistan.

Hijazi et al, 2018 revealed that using a car as a means of accessing the facility decreases the chances of regular visits as opposed to walking to the health facility.

For Hypothesis three, data revealed that pregnant women with higher levels of education tend to use antenatal care services differently than pregnant women with lower levels of education. Several studies corroborate this finding (Dapaah and Nadrinaab, 2019; Ukachi, 2019 ; Ali et al, 2020 ; Elkhatib et al, 2020).

CONCLUSION

The pattern, utilization uptake and factors dictating ANC services utilization among pregnant women in UBTH have been thoroughly explored in this study.

Overall results of the study demonstrated that pregnant women getting prenatal care at the University of Benin Teaching Hospital in the Egor Local Government Area of Edo State are moderately utilizing ANC services which fall short of WHO recommendations; there is a lot of room for improvement. Furthermore, the main factors affecting how pregnant women who get antenatal care at the University of Benin Teaching Hospital use antenatal care services are financial factors, travel distance, the unfavorable attitude of the healthcare providers, sociocultural considerations, and lengthy waiting times. Also, this study found that education was a crucial determinant of ANC services utilization; pregnant women with adequate or higher education seem to use antenatal care services more frequently than pregnant women with low education levels.

The results of this study point to the necessity for the relevant governmental agencies and non-governmental organizations (NGOs) to direct resources toward ensuring that the main issues that tend to prevent pregnant women from using antenatal care services appropriately are addressed.

RECOMMENDATIONS

Strengthening ANC coverage initiatives should concentrate on universal coverage by overcoming financial and cultural barriers to reach vulnerable groups, quality improvement to lower dropout rates, and program integration to increase the amount of time a woman spends in contact with health care. The effectiveness of ANC services, qualified staff, the geographic placement of the health centers, and other criteria are also mediated by the aforementioned parameters.

In order to increase the use of ANC in UBTH, ANC practitioners should get training and supervision in order to deliver the whole package of ANC, with the health education message being the most underappreciated element.

Greater acceptability and ongoing use of ANC would arise from strengthening the involvement of healthcare professionals in counseling and health education.

The results highlighted the need to increase women's awareness through formal education, exposure to mass media, and other avenues of behavior change communication.

Healthcare initiatives should promote the beginning of prenatal care early and should be developed or strengthened to increase the coverage of ANC contacts in UBTH.

Contributions to Knowledge

The research has advanced our understanding of the correlates of ANC utilization that provide very useful data for strategic policy formulation on the subject.

Findings will be used to develop targeted and effective interventions to raise the present low maternal and child health indices.

Specifically, findings will lead to an improvement in how pregnant women in UBTH use ANC services

For subsequent research, the generated data will become very handy as database to build upon.

Limitation of the Study

Information bias cannot be ruled out in this study since many women may not have provided the information in its whole due to privacy concerns or other factors.

Areas of Further Research

More research is required to determine how various traditional, cultural, and other pertinent traditions affect how antenatal care is used by ethnic groups in the area.

Further, qualitative research is required to examine how women's pleasure, autonomy, and gender role affect their decision-making.

Comparable research on usage patterns and variables for postnatal women within 6 weeks after birth should be carried out in UBTH.

Similar study should be replicated in rural communities that will display characteristics of African region

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