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UTILIZATION OF ANTENATAL CARE SERVICES AMONG WOMEN OF CHILD-BEARING AGE IN CHUKWUEMEKA ODUMEGWU OJUKWU UNIVERSITY TEACHING HOSPITAL (COOUTH), AWKA, ANAMBRA STATE

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ABSTRACT

This study examined the utilization of antenatal care (ANC) services among women of childbearing age attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State. Due to the researcher's observation on increased child birth complications and high mortality rate among pregnant women, the research assessed the extent to which pregnant women utilized ANC services. Specifically, it assessed the extent to which pregnant mothers utilized health education, immunization, family planning, and physical assessment services in relation to their age and educational level. A cross-sectional descriptive survey design was employed. The study population comprised 1,656 pregnant women, from which a sample of 166 respondents was selected. Data were collected using a validated researcher-developed questionnaire with high internal consistency (Cronbach's Alpha values ranging from 0.912 to 0.973). Statistical analysis was conducted using SPSS version 26, and hypotheses were tested with Analysis of Variance (ANOVA) at a 0.05 level of significance. Findings revealed that educational attainment significantly influenced the utilization of health education and physical assessment services, with women possessing higher education demonstrating greater usage. However, age had little impact on the utilization of health education services, as all groups reported high participation. In contrast, utilization of immunization services was not significantly differentiated by education but declined with increasing maternal age, suggesting higher adherence among younger women. Family planning service utilization showed minimal association with educational level but was more prevalent among older women, possibly due to accumulated reproductive experience and increased awareness of birth spacing benefits. Overall, the results suggest that education enhances informed engagement with specific ANC services, while age-related factors shape preferences for others. The study concludes that while ANC service utilization is relatively high, disparities exist across age and educational subgroups. It recommends intensified health education, targeted interventions for older mothers regarding immunization adherence, and continuous promotion of family planning and routine physical assessments among all women of childbearing age to improve maternal and child health outcomes.

Keywords: Utilization; Antenatal Care Services; Women of Childbearing Age

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Introduction

The protection of the health of the expectant mother and her children is of prime importance for building of a sound and healthy nation. Globally, antenatal care is advocated as the cornerstone for reducing children's deaths and improving maternal health. Antenatal care which is professionally shortened as ANC is a preventive healthcare given to a pregnant woman in order to ensure healthy mother and child. It is also known as prenatal care, pregnancy care or maternity care. According to Warri and George (2020), antenatal care is the care a mother gets from health professionals during pregnancy. In the views of Clarie and Emilla (2019), ANC is a means of identifying high risk pregnancies and educating mothers so that they may experience healthier delivery and outcome. This is to say that ANC is the healthcare provided to women who are pregnant. This is to monitor the progress of their pregnancy, to promote birth preparedness and tackle complication readiness to ensure optimal birth outcomes for both the mother and her baby.

According to World Health Organization (WHO, 2023) ANC is provided in the form of medical checkups, consisting of recommendations on managing a healthy lifestyle and the provision of medical information such as maternal physiological changes in pregnancy, biological changes, and prenatal nutrition including prenatal vitamins, which prevents potential health problems throughout the course of the pregnancy and promotes the mother and child's health alike. From the above definition it is clear that **ANC** serves as a key entry point for a pregnant woman to receive a broad range of health services.

ANC service is one of the core interventions for improving maternal outcomes. ANC services help pregnant women and care providers to identify early, complications associated with pregnancy. ANC services enable early identification of pregnancy related risks and complications; and ensure access of services including health education, vaccines, diagnostic tests and treatments. According to Muchie (2017) ANC services help to establish good relationship between pregnant women and service providers. It also provides pregnant women with access to micronutrient supplementation, treatment for hypertension to prevent eclampsia, as well as immunization against tetanus. In addition to diagnosing and managing pregnancy-related complications, ANC provides an opportunity to screen for and treat other chronic conditions and non-communicable diseases.

Health education services are the type of ANC services for promotion of health and wellbeing through teaching about nutrition, cessation of substance abuse, recognition of danger signs and birth preparedness. These are included as essential components of ANC services (McCauley, 2022). A pregnant woman visiting health facilities for health education will get advice and support, and would be more informed about health needs and self-care, which will lead to an increased utilization of pregnancy care services (Morse, 2011).

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ANC immunization services provide pregnant mothers with resistance to diseases through the administration of vaccine. The aim of ANC immunization services is to fortify the pregnant mother against infectious agent or from vaccine-preventable diseases. Examples of ANC immunization service include). Immunization against tetanus, providing HIV testing and medications to prevent mother-to-child transmission of HIV. In areas where malaria is endemic, health personnel can provide pregnant women with medications and insecticide-treated mosquito nets to help prevent this debilitating and sometimes deadly disease (UNICEF, 2022).

Family planning services are given to pregnant mother to aid in considering the number of children they wish to have, including the choice to have no children, and the age to have them. According to the World Health Organization (WHO, 2023), family planning is defined as the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. Examples of *f*amily planning services include; use of or natural techniques or modern contraceptives such as pills, implants, injectables, patches, vaginal rings, intra uterine devices and condoms among others.

Physical assessment service is the type of ANC service that requires frequent visits where health providers deliver care and give support and information to pregnant women, as well as identify and prevent adverse pregnancy outcomes. WHO (2009) recommends a minimum of four visits to undertake blood pressure measurement, urine testing, iron tablet supplementation, body weight measurement and counseling about danger signs.

Although timely and quality antenatal care services is a crucial determinant to optimal healthcare for both mother and child, unfortunately, it appears that most child bearing complications and mortality are as a result of either poor access or underutilization of ANC services by pregnant mothers. In agreement, Rustagi, Basu, Garg, Singh and Mala (2021) Stated that poor access to ANC contributes to more than 99% of maternal deaths worldwide. Similarly, United Nations Children's Fund (2023) Stated that Nigeria's 40 million women of childbearing age (between 15 and 49 years of age) suffer a disproportionally high level of health issues surrounding birth. While the country represents 2.4 percent of the world's population, it currently contributes 10 percent of global deaths for pregnant mothers. Pregnancy and childbirth are essential for existence of the entire human race. Women die as a result of complications following pregnancy and childbirth. Most of these complications develop during pregnancy and most are preventable and treatable. Jesuyajolu, (2022) reviewed that some complications may exist before pregnancy but are worsened during pregnancy especially if not managed as part of the woman's care.

The major complications that accounted for nearly 75% of all maternal deaths are severe bleeding (mostly after childbirth), infections (usually after

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childbirth), high blood pressure during pregnancy (Pre-eclampsia and eclampsia) delivery complications and unsafe abortion. Some are caused by or associated with infections such as malaria or related to chronic conditions like cardiac diseases or diabetes (Leta, 2022). Eagly and Chaiken (2021) also opined that most maternal deaths are preventable, as the health care solutions to prevent or manage complications are well known. The findings of this study would benefit the women of child bearing age, healthcare providers, governments and non-governmental organization and future researchers. The study was delimited to only the level of utilization of antenatal care services among pregnant women in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State. The study was further delimited to only moderator variables of level of education and age of the child bearing women.

In view of these ugly observations and findings, one begins to doubt the level of utilization of ANC services and other factors that are responsible for mother and child mortality such as age and level of education of the mother. Therefore, the researcher intends to determine the extent of utilization of antenatal care services among pregnant mothers in teaching hospitals in Anambra State based on their level of education and the age of the pregnant mother.

Statement of Problem

Antenatal care services are targeted at promoting optimal healthcare for both mother and child. It enables early identification of pregnancy related risks and complications; and ensure access of services including health education, vaccines, diagnostic tests and treatments. As part of effort to reduce maternal mortality in the country, the Federal Government (FGN) in 2020 launched the Nigeria Reproductive, Maternal, Newborn, Child, Adolescent and Elderly Health plus Nutrition (RMNCAEH+N) platform. Some of the non-governmental organizations including the Society for Family Health (SFH) has also put in their own effort in sensitizing the women on the need to access ANC services.

Unfortunately, it appears that there is increase in child birth complications contributing to high maternal and infant mortality in Nigeria, Anambra State inclusive. Sequel to this, this study distinguished utilization by service category, providing sharper insights to inform specifically targeted intervention. It is against this that the study was set to provide a benchmark that will be useful to monitor progress and to reduce mortality rate among women of childbearing age within Anambra State.

Purpose of the study

The main purpose of this study was to determine the level of utilization of antenatal care services among pregnant mothers in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State. Specifically, the study determined;

1. The level of utilization of health education services among pregnant

women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their level of education.

2. The level of utilization of immunization services among pregnant women in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their age.
3. The level of utilization of family planning services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their level of education.
4. The level of utilization of physical assessment services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their age.

Research Questions

The following research questions guided the study;

1. What is the level of utilization of health education services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their level of education?
2. What is the level of utilization of immunization services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their age?
3. What is the level of utilization of family planning services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their level of education?
4. What is the level of Utilization of Physical assessment Services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their age?

Hypotheses

The following null hypotheses were formulated for this study and was tested at 0.05 level of significance

1. There was no significant difference in the level of utilization of health education services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their different levels of education.
2. There was no significant difference in the level of utilization of immunization services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital

(COOUTH), Awka, Anambra State based on their different ages.

3. There was no significant difference in the level of utilization of family planning services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their different levels of education.
4. There was no significant difference in the level of utilization of physical assessment services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their ages.

Methodology

The study adopted a cross-sectional research design; a form of descriptive survey. Cross-sectional studies look at a population at a single point in time, like taking a slice or cross-section of a group, and variables is recorded for each participant (Deakin University 2023). The study was carried out in Chukwuemeka Odumegwu Ojukwu Teaching Hospital Awka Anambra State (COOUTH). The population of the study consisted of 1,656 pregnant women attending antenatal clinics in Chukwuemeka Odumegwu Ojukwu Teaching Hospital, Awka (Nwankwo, 2024). The sample size of the study consisted of 166 pregnant women attending antenatal clinics in Chukwuemeka Odumegwu Ojukwu Teaching Hospital, Awka. The instrument for data collection was a researcher-developed questionnaire titled Level of Utilization of Antenatal Care Service Questionnaire (LUACSQ). The instrument was developed by the researcher based on experience, interviews and following review of related literature. Content and face validity of the instruments were established with the help of three experts, the reliability of the items was analyzed using Cronbach Alpha's method and the value was 0.973 and 0.912, 0.959 and 0.931, which are all high; therefore, the questionnaire is acceptable for use. The instrument was administered by the researcher with the help of research assistants who are nurses from the hospital; were briefed on what to do. 166 questionnaires were administered and 143 was returned, the data collected was analyzed using Statistical Package for objective Social Sciences Version 26 (SPSS), Frequency, percentage, mean and standard 1deviation was used to answer research questions. Also, Analysis of Variance (ANOVA) was used to test all the hypotheses stated in the study at 0.05 level of significance.

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Results and Discussions

Research Question one: What is the level of utilization of health education services among pregnant women attending teaching hospitals in Anambra state based on their level of education?

Table 4.1: Mean Utilization Score of Health Education Services Based on Level of Education

Level of Education	n	Mean	SD	Decision
Primary	2	1.73	0.66	Low Extent
Secondary	25	2.53	0.33	High Extent
Tertiary	116	2.63	0.37	High Extent

Table 4.1 indicates that education level influenced health education service utilization by pregnant mothers. The mean utilization score of mothers with primary education was 1.73 with low extent of utilization. On the contrary, mothers with secondary and tertiary education levels had mean utilization scores of 2.53 and 2.63 respectively, with high extent of utilization. The standard deviation of the primary education category was 0.66, which is quite high given the small sample size (n=2), while secondary and tertiary education groups had higher consistent responses with a standard deviation of 0.33 and 0.37 respectively. The result of this study therefore indicates that higher education is associated with higher utilization of health education service during antenatal care.

Research Question Four: What is the level of utilization of immunization services among pregnant women attending teaching hospitals in Anambra state based on their age?

Table 4.4: Mean Utilization Score of Immunization Services Based on Age

Age Group	n	Mean	SD	Decision
15-25	25	2.53	0.48	High Extent
26-35	78	2.29	0.66	Moderate Extent
36-45	28	2.43	0.54	Moderate Extent
45 and above	6	2.36	0.40	Moderate Extent

Table 4.4 shows differential utilization of immunization service by various age groups. The utilization was maximal among the women of age between 15-25 years with a mean of 2.53 (high extent), while utilization by older aged groups (26-35, 36-45, and 45 and above years) was of a moderate extent with mean utilization of 2.29, 2.43, and 2.36, respectively. The standard deviation was between 0.40 and 0.66, and the highest variability was among the aged between 26-35 years. The trend reveals that younger antenatal mothers may be better adherent to the advice on immunization during antenatal care, and utilization decreases with increasing older age.

Research Question Five: What is the level of utilization of family planning services among pregnant women attending teaching hospitals in Anambra state based on their level of education?

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Table 4.5: Mean Utilization Score of Family Planning Services Based on Level of Education

Level of Education	n	Mean	SD	Decision
Primary	2	1.88	0.35	Moderate Extent
Secondary	21	2.30	0.58	Moderate Extent
Tertiary	112	2.41	0.48	Moderate Extent

Table 4.5 shows that pregnant mothers of all educational backgrounds made use of family planning services to a moderate degree. The lowest mean score of 1.88 was recorded with primary education, and then secondary education (2.30) and tertiary education (2.41) followed. The standard deviation varied between 0.35 and 0.58. Although with higher educational attainment, the mean scores showed a progressive increase, all groups were below the moderate utilization category, and thus educational background generated limited effect on utilization of family planning service during antenatal care.

Research Question Eight: What is the level of utilization of Physical assessment Services among pregnant women attending teaching hospitals in Anambra state based on their age?

Table 4.8: Mean Utilization Score of Physical Assessment Services Based on Age

Age Group	N	Mean	SD	Decision
15-25	26	2.47	0.42	High Extent
26-35	77	2.56	0.42	High Extent
36-45	29	2.39	0.51	Moderate Extent
45 and above	6	2.39	0.48	Moderate Extent

Table 4.8 reveals that younger pregnant mothers accessed the service of physical assessment to a higher extent than older mothers. The women between the ages of 15-25 and 26-35 years recorded mean scores of 2.47 and 2.56 respectively (high extent), while those between the ages of 36-45 and 45 years and older recorded mean scores of 2.39 each (moderate extent). The standard deviations were between 0.42 and 0.51, with relatively consistent answers. The trend indicates that younger mothers might be open to or compliant with physical assessment procedures during antenatal care visits, probably because of first-time pregnancy or better health-seeking attitudes.

Test of Hypotheses

Hypothesis One: There is no significant difference in the level of utilization of health education services among pregnant women attending teaching hospitals in Anambra State based on their level of education.

Table 4.9: ANOVA Summary for Health Education Services Based on Level of Education

Source of Variation	Sum of Squares	Df	Mean Square	F	P-value
Between Groups	1.733	2	0.866	6.524	0.002

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Within Groups	18.592	140	0.133
Total	20.324	142	

Above is the result of ANOVA of health education service utilization by educational level (Table 4.9). The F-value of 6.524 with p-value of 0.002 ($p < 0.05$) indicates that there exists a significant difference between the extent of health education service utilization among female individuals with varying educational levels. The null hypothesis can therefore be rejected.

Post Hoc Test of Hypothesis One

In order to determine where the specific difference lies, a post hoc test using the Least Significant Difference (LSD) procedure was used.

Table 4.10: Post Hoc Test Results for Health Education Services

(I) Education Level	(J) Education Level	Mean Difference (I-J)	Std. Error	Sig.	95% CI Lower	95% CI Upper
Primary	Secondary	-0.80*	0.27	0.003	-1.33	-0.27
Primary	Tertiary	-0.90*	0.26	0.001	-1.41	-0.39
Secondary	Primary	0.80*	0.27	0.003	0.27	1.33
Secondary	Tertiary	-0.10	0.08	0.221	-0.26	0.06
Tertiary	Primary	0.90*	0.26	0.001	0.39	1.41
Tertiary	Secondary	0.10	0.08	0.221	-0.06	0.26

**Significant at p < 0.05*

The post-hoc comparison of the test indicates that health education service utilization by women with only primary education significantly lagged behind service utilization by secondary ($p = 0.003$ with mean difference = -0.80) and tertiary ($p = 0.001$ with mean difference = -0.90) educated women. There was, however, no significant difference of utilization between service utilization of secondary and tertiary educated women ($p = 0.221$). That is, the answer lies with primary education and that higher educational attainments were correlated with higher utilization of health education services.

Hypothesis Three: There is no significant difference in the level of utilization of immunization services among pregnant women attending teaching hospitals in Anambra State based on their level of education.

Table 4.12: ANOVA Summary for Immunization Services Based on Level of Education

Source of Variation	Sum of Squares	df	Mean Square	F	P-value
Between Groups	0.738	2	0.369	1.023	0.362
Within Groups	48.295	134	0.360		
Total	49.033	136			

Table 4.12 is the result of ANOVA of utilization of immunization service by educational attainment. The F-value of 1.023 with p-value of 0.362 ($p > 0.05$) signifies that

there is no statistical significance in the extent of utilization of immunization services between women with varying educational backgrounds. The null hypothesis thus holds and this further translates to educational background not being significant in the utilization of immunization service.

Hypothesis Five: There is no significant difference in the level of utilization of family planning services among pregnant women attending teaching hospitals in Anambra State based on their level of education.

Table 4.14: ANOVA Summary for Family Planning Services Based on Level of Education

Source of Variation	Sum of Squares	df	Mean Square	F	P-value
Between Groups	0.777	2	0.388	1.575	0.211
Within Groups	32.549	132	0.247		
Total	33.326	134			

Table 4.14 provides the ANOVA of utilization of the family planning service by educational attainment. The fact that the F-value of 1.575 had a p-value of 0.211 ($p > 0.05$) indicates that there was not any statically significant difference between the amount of utilization of the family planning service across various educational groups of women. Thus, the null hypothesis holds, that educational attainment was not significantly related to utilization of the family planning service.

Hypothesis Eight: There is no significant difference in the level of utilization of physical assessment services among pregnant women attending teaching hospitals in Anambra State based on their age.

Table 4.17: ANOVA Summary for Physical Assessment Services Based on Age

Source of Variation	Sum of Squares	df	Mean Square	F	P-value
Between Groups	0.740	3	0.247	1.265	0.289
Within Groups	26.124	134	0.195		
Total	26.864	137			

Table 4.17 reveals the ANOVA of physical assessment service utilization by age. The F-value of 1.265 with p-value of 0.289 ($p > 0.05$) reveals that there exists no statistically significant disparity in the utilization of physical assessment service among various female age groups. Thus, the null hypothesis holds, and this indicates that the utilization of physical assessment service is not significantly affected by the attribute of age.

Discussions of the Findings

The findings of the study are discussed as follows:

1. The level of utilization of health education services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka,

Anambra State based on their level of education.
2. The level of utilization of immunization services among pregnant women in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their age.
3. The level of utilization of family planning services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their level of education.
4. The level of utilization of physical assessment services among pregnant women attending Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State based on their age.

Level of Utilization of Health Education Services

Educational level, had a significant effect on health education service utilization ($F = 6.524$, $p = 0.002$). The women with only primary education utilized the health education services significantly less than the women with secondary and tertiary education. This result is supported by the findings of Prajapati *et al.* (2022), who observed that antenatal care provides a mechanism of identifying and following up with high-risk pregnancy cases and educating mothers to achieve healthy delivery outcomes. The utilization was lower among the women with only primary education and can be due to lack of health literacy, poor ability to understand the significance of health education, or cultural and socioeconomic factors that keep the mothers distant from comprehensive involvement with health care givers. Babalola (2014) explains that antenatal care service ensures good rapport between the service provider and pregnant mothers, and this rapport is compromised by a lack of educational background to understand and enjoy the information being offered to the mothers.

The post hoc test showed that the key educational threshold is primary education, because no significant difference was found between secondary and tertiary educational levels. This indicates that secondary education is enough to make women knowledgeable and aware of the usefulness of health education services (Raghupathy, 1996). This result is of significant policy relevance, because it emphasizes that special efforts should be made to target women with low educational levels. The health care service providers should consider that their health education strategies should be adjusted to better provide health education to those with limited formal education, possibly with the addition of more visual aids, local dialects, and simpler language.

Level of Utilization of Immunization Services

The study found that younger women (15-25 years) utilized immunization services to a high extent, while older age groups showed moderate utilization. However, these

differences were not statistically significant (F = 1.100, p = 0.351). This finding suggests that while there may be a trend toward better immunization uptake among younger women, age alone does not create a significant barrier to immunization service utilization. The finding partially aligns with UNICEF (2022), which emphasized that in areas where malaria is endemic, health personnel can provide pregnant women with medications and insecticide-treated mosquito nets, along with immunization services, to prevent diseases. The moderate utilization of immunization services among all groups is of concern, considering the significant role of immunizations to prevent vaccine preventable diseases during pregnancy. The World Health Organization (2023) asserts that immunization services offer resistance to disease to pregnant mothers through vaccine injection, offering protection to both mother and child against infectious agents. The moderate utilization recorded in this study indicates that this might be associated with obstacles to immunization uptake, including fears of adverse effects, vaccine safety myths during pregnancy or logistical difficulties to access vaccine.

Utilization of Family Planning Services

Level of educational attainment also didn't significantly influence utilization of family planning services (F = 1.575, p = 0.211), though utilization rose increasingly with higher educational attainment. The low and stable utilization among the groups might be attributed to multiple factors. Firstly, cultural and religious beliefs about controlling families might take precedent over education. Secondly, The Challenge Initiative (2019) asserts that 174,200 of the childbearing-age women throughout Anambra State experience unmet need for contraceptive services and of those that have access to it get deprived of receiving the services due to their inability to pay service fees. This may suggest that financial inhibitors instead of educational attainment might be playing a larger part in utilization of family planning services. The appropriate use of family planning services during antenatal care consultations is a lost chance to provide contraceptive counselling and postpartum family planning. Health education services that provide information about future contraception should be integral to antenatal care, according to Cooper *et al.* (2024). Family planning counselling should be intensified by health care workers during antenatal consultations to eliminate myths and ensure that females have access to contraceptive care shortly after their delivery to achieve optimal child spacing.

Utilization Physical Assessment Services

The findings showed that younger women (15-25 and 26-35 years) utilized physical assessment services to a high extent, while older women (36-45 and 45+ years) showed moderate utilization. However, these differences were not statistically significant (F = 1.265, p = 0.289). Physical assessment services, according to WHO (2016), require frequent visits and provide a critical opportunity for health providers to deliver care, support, and information to pregnant

women. The recommended minimum of four visits should include blood pressure measurement, urine testing, iron tablet supplementation, body weight measurement, and counselling about danger signs.

The increased uptake among younger women can be accounted for by various factors. Younger women, and primiparas specifically, might be particularly concerned about their pregnancy and be more motivated to take advice based on evaluations (Hämeen-Anttila *et al.*, 2015). They would otherwise have less other demands than older women who would have other demands and home commitments. Younger women might also be open to new medical practice and less biased by older attendants during delivery (Benyamini *et al.*, 2017).

Summary of the Findings

From the analysis the following findings were made:

Research Question 1 established that health education services were utilized by women with only primary education to a low degree (mean = 1.73), while the services were utilized by those with secondary and higher education to a very high degree (means = 2.53 and 2.63 respectively). The corresponding Hypothesis 2 established a significant difference between the utilization degree of health education services among women by their education level ($F = 6.524$, $p = 0.002 < 0.05$). By post hoc analysis, health education service utilization among women with only primary education was found to be significantly lower compared to those with secondary and higher education, but not significantly different between secondary and higher education.

Results of Services Relating to Immunization:

Research Question 3 determined that female individuals of younger age (15-25 years) made use of immunization services to a very large degree (mean = 2.53), while female individuals of older-age groups (26-35, 36-45, and older than 45 years) made use of these services to a moderate degree (means = 2.29, 2.43, and 2.36 respectively). Contrary to this, however, Hypothesis 3 revealed that there was not any significant difference observed between the utilization of immunization service extent by the women and their age ($F = 1.100$, $p = 0.351 > 0.05$).

Research Results on Family Planning Services

Research Question 6 established that pregnant mothers across all education classes (primary, secondary, and tertiary) utilized family planning services to a moderate extent with mean ratings of 1.88, 2.30, and 2.41 respectively. The respective Hypothesis 6 established that there were no significant differences across the extent of utilization of family planning services among females by their education ($F = 1.575$, $p = 0.211 > 0.05$).

Finding about Physical Assessment Services:

The Research Question 7 found that younger women between 15-25 and 26-35 years accessed the service of physical assessment to a very high degree (means = 2.47 and 2.56 respectively), whereas those between the

ages of 36-45 and those between 45 years and older accessed these services to a moderately high degree (means = 2.39 and 2.39 respectively). But Hypothesis 7 indicated that none of the levels of access of physical assessment services by the women was significantly different by their age ($F = 1.265$, $p = 0.289 > 0.05$).

Conclusion

The study concluded that the level of education is a more powerful determinant in antenatal care use than women's age, especially in regards to health education use. Primary schooled women systematically underutilize health education compared to secondary and tertiary-educated women.

The study also concludes that physical assessment services and health education show relatively high use by the majority of women, but immunization and family planning services show only moderate use by all groups. The study also concludes that physical assessment services and health education show relatively high use by the majority of women, but immunization and family planning services show only moderate use by all groups. System-level factors instead of individual attributes might be the main determinants against optimal utilization of immunization as well as family planning services. This implies that deficiencies from the hospitals also contributes to low level utilization of these ANC services. Hence, health education uptake improvement interventions need to focus on women with primary schooling or no schooling at all by employing simplified approaches that suit limited literacy levels, younger women show positive utilization patterns for some but not all services. The research concludes that attendance in antenatal clinics does not automatically translate to uptake of comprehensive services.

Recommendations

Based on the findings of the study the following recommendations were made towards improving the utilization of antenatal care services by pregnant women in Anambra State

1. Specialized Health Education Initiatives for Illiterate or Poorly Literate Females. The Federal Ministry of Health, State Ministry of Health, as well as hospital administration, need to prepare and apply specific health education interventions for pregnant women who lack primary or primary schooling.
2. Strengthening the Health System for Improved Immunization Services Delivery. This finding responds to the observation that immunization services demonstrate weak utilization across every age and educational group such that system-level barriers call for a series of interventions across the health system instead of individual-level interventions by themselves.
3. Enhance Family Planning Counselling in the Antenatal Care Protocol. Healthcare specialists and hospital administrators must

incorporate complete family planning counselling as a part of every antenatal care visit by:4

4. Establish Complete Quality Assurance Systems for Services in Antenatal Care. Hospital administrators and the State Ministry of Health need to set up thorough quality assurance systems to keep a watch on and enhance antenatal care service delivery.This recommendation responds to the general finding that although women visit antenatal clinics, they do not always access all the services provided, indicating areas of inadequate service delivery that need systematized monitoring and quality improvement interventions.

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