

Perception of and Adherent to Anaemia Preventive Strategies among Pregnant Women Attending Antenatal Clinics in Selected Hospitals in Benin city, Edo State, Nigeria

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ABSTRACT: This study examined the perception of and adherence to anaemia preventive strategies among pregnant women attending antenatal clinics in selected hospitals in Benin City, Edo State, Nigeria. The survey research design was adopted in this study. The accidental sampling technique was adopted in selecting the 598 respondents sampled for the study from the population. A validated 20 items four-point modified Likert scale questionnaire was the instrument used for data collection. The face and content validity of the instrument was established by experts. The reliability estimates of 0.86 of the instruments were established using the test-retest method. Multiple linear regression statistical tools were used to test the hypothesis formulated for the study. The hypothesis was tested at a 0.05 level of significance. The results obtained from the data analysis revealed that there is a significant influence of the predictor variables (perception of and adherence to anaemia preventive strategies) among pregnant women attending antenatal clinics in selected hospitals in Benin City, Edo State, Nigeria. The finding concludes that there is a significant influence of the predictor variables (perception of and adherence to anaemia preventive strategies) among pregnant women attending antenatal clinics in selected hospitals in Benin City, Edo State, Nigeria. Based on the finding of the study it was recommended that the presence of low knowledge and adherence to anaemia prevention suggests the need for an intensification of education on anaemia and its prevention strategies by health professionals and collaborators at all levels of health delivery services to all women in reproductive age. This should include more education and sensitization on good nutritional practices in the diet of pregnant women.

Keywords: Perception, adherent to anaemia, preventive strategies, pregnant women, antenatal

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INTRODUCTION

Anaemia is one of the topmost causes of death globally and has been of a grave public health worry for both developing and developed countries affecting people of different age groups (Pasricha et al., 2023). However, it is more prevalent in pregnant women, young children, and other women in reproductive age (McLean et al., 2019). Globally, anaemia prevalence is about 29% in non-pregnant women, 38% in pregnant women, and 43% in children with the highest prevalence in South Asia and Central and West Africa (Stevens et al., 2023). The commonest cause of anaemia is iron deficiency with evidence suggesting that up to 90% of maternal anaemia

are due to inadequate intake of dietary iron. However, worm infestations (hookworm and schistosomiasis), bleeding haemorrhoids, vitamin B6 and B12 deficiencies, human immunodeficiency virus (HIV) infection, and genetic disorders such as sickle cell anaemia are other factors that cause anaemia in pregnancy (Ouedraogo et al., 2022). A cry of a baby immediately after birth gives joy to the mother.

This means that a healthy mother and child after delivery is the ultimate outcome that the pregnant mother, her family, and the entire community expect. However, anaemia is associated with increased maternal and

newborn health problems as well as death. Nigeria, through the Ministry of Health has been at the forefront with interventions and strategies to control anaemia in pregnancy. These strategies include education and awareness creation, nutrient (iron) supplementation, and control and prevention of parasitic infections in pregnancy. Additionally, the use of insecticide-treated nets (ITNs) and intermittent preventive treatment (IPT) against malaria, effective de-worming, and provision of improved water, sanitation, and hygiene services are also being implemented to prevent anaemia among pregnant women. These strategies are meant to address common preventive causes of anaemia such as iron deficiency, worm infestation, and malaria control in the country. However, data available indicates that 44.6% of pregnant women in Nigeria are anaemic.

Purpose of the study

The purpose of this study is to examine the perception of and adherence to anaemia preventive strategies among pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria.

Research question

The following research question was posed; what is the perception of and adherence to anaemia preventive strategies among pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria?

Statement of hypothesis

There is no significant influence of perception of and adherence to anaemia preventive strategies among pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria.

Literature review

Anaemia is considered as harmful and compelling as epidemics of infectious diseases, which generally affect all but the worst affected are infants, school-age children, and women of reproductive age (Onyeneho et al., 2019). It is, however, preventable when access to supplements is guaranteed and when they are provided with minimum, consistent, and easily understandable information and counselling, indicating that these are key elements to ensure effective programmes (Aguayo et al., 2021). Unfortunately, only 21 % of women took iron tablets daily for 90 or more days during their last pregnancy in Nigeria (National Population Commission (NPC), 2013).

Perception takes a central position in determining health-seeking behavior (Roberts et al., 2018). People's perceptions and judgement are often conditioned by

assessing factors their traditions and culture consider important such as courtesy, responsiveness, attentiveness, and perceived competence of the health staff. According to the health belief models, response to health conditions depends largely on the perception of the severity of the health condition as well as susceptibility and efficacy of remedies (Rosenstock, 1974). This is critical in developing appropriate promotional messages and campaigns, aimed at creating demand for particular health interventions.

A study by Prince, Daniel, and Duut (2020) examined Knowledge of and Adherence to Anaemia Prevention Strategies among Pregnant Women Attending Antenatal Care Facilities in Juaboso District in Western-North Region, Ghana. A descriptive cross-sectional data on knowledge of and adherence to anaemia prevention strategies among pregnant women was collected. Pearson's chi-square and logistic regression models were used to assess associations between predictor and outcome variables. A p value <0.05 was considered as statistically significant. About 13.5% of the pregnant women had high knowledge on anaemia, while 58.4% and 28.1% had moderate and low knowledge, respectively. Less than half (39.1%) of the women adhered to anaemia prevention strategies. There were significant associations between knowledge of anaemia and where pregnant woman resides in the district (AOR: 2.04, 95% CI: 2.16-9.83, $p = 0.003$), woman's educational (AOR: 10.43, 95% CI: 6.14-51.63, $p = 0.002$), and occupational status (AOR: 15.14, 95% CI: 13.57-18.43, $p < 0.001$). Again, there were significant associations between adherence to anaemia prevention strategies and the woman's ethnicity (AOR: 0.61, 95% CI: 0.04-0.92, $p = 0.001$) and her knowledge of anaemia (AOR: 3.88, 95% CI: 1.32-7.93, $p = 0.001$).

Pregnant women's knowledge of anaemia and adherence to anaemia prevention strategies are not encouraging. However, anaemia in pregnancy and its consequences could be devastating to all stakeholders if actions are not taken to reduce the phenomenon. Therefore, we recommend that more education and sensitization programs including good nutritional practices in the diet of pregnant women be promoted to increase awareness and adherence to anaemia prevention strategies among pregnant women in the Juaboso District.

MATERIALS AND METHODS

Experimental setting

Research design

The study utilized a survey research design to collect data from pregnant women on adherence to anaemia prevention strategies. According to Salaria (2012), it is a research design that is used when the goal of a survey is

to gather information about the examined phenomena from a representative of the entire population with the hope of generalizing the findings to the entire population.

The study was carried out in Benin city, Edo State, Nigeria. Benin City is the capital and largest city of Edo State, southern Nigeria. It is the fourth-largest city in Nigeria according to the 2006 census, after Lagos, Kano, and Ibadan. It is situated approximately 40 kilometres (25 mi) north of the Benin River and 320 kilometres (200 mi) by road east of Lagos. Benin City is the centre of Nigeria's rubber industry, and oil production is also a significant industry. The city has three government hospitals which include the military hospital, national medical centre (General hospital) and Ezomo memorial hospital providing health care services including information, education, and communication (IE&C) to the people.

Participants/Sample

The population for the study comprised of 2,897 pregnant women. (Source: Ministry of Health (Headquarters), Benin City, 2023). Five hundred and ninety-eight (598) participants were involved; this was determined using the formula: $n = z^2 \times p(q) \div d^2$. For a 5% nonresponse rate of 569.52, the sample size was upwardly adjusted and rounded to 598. This sample size ensured, with a probability of 95%, that the estimated prevalence was within $\pm 5\%$ of the true population coverage. The study used the accidental sampling approach in administering the research instrument on the respondents as at the time of administration of the instrument.

Instrumentation

Data was collected through administration of a semi-structured questionnaire using a face-to-face interview technique. The questionnaire was pretested on 20 pregnant women with similar characteristics of the study participants from a different Local Government Area for necessary modifications before being administered to the study participants. Data collection tool was a semi-structured questionnaire comprised of demographic characteristics of the participants, women's knowledge of anaemia (causes, signs and symptoms, and available preventive strategies), and adherence to anaemia preventive strategies sections. Participants' ages were accessed using their birth certificates and ANC record cards. Participants contact information obtained from the facilities were used to trace to their homes and residence for data collection. Field assistant used these methods and tools to collect data from the pregnant women between October, 2023. Data collected from each participant averaged 20 minutes but this was done simultaneously. Knowledge of anaemia was assessed based on five (5) questions while adherence to preventive

strategies was accessed using five questions (5).

Ethical consideration

The study conformed to the required ethical regulations regarding the use of humans as approved by the Ethical Review Committee of Health Services, Research and Development. Participation in the study was voluntary; consent and assent were sought from the participants and guardians after the study processes had been explained to them.

Statistical analysis

Double data entry was performed and checked for completeness and consistency using Epi data version 3.1. and SPSS version 26 for data analysis, with illustrations in tables and charts. In addition to descriptive statistics, associations between dependent and independent variables were analyzed using Multiple linear regression. A p-value < 0.05 was considered as statistically significant.

RESULTS

From the result of 598 respondents used in the research, 265 respondents (44.31%) were 30 years old or younger, 182 (30.43%) were in the range of 31-40 years old, while 15 respondents (25.25%) were 41 years of age or older. Going forward, the results of respondents' on marital status showed that out of the 598 respondents used in the research, 56 (9.36%) are single, 389 (65.05%) are married, while 153 (25.59%) are divorced. In terms of the educational status, the results showed that out of the 598 respondents used in the study, 60 (10.03%) have no formal education, 128 (21.40%) have primary education, 154 (25.75%) have secondary education, 256 (42.81%) have tertiary education (Table 1).

In terms of gestational age of pregnancy, out of 598 respondents, 342 respondents (57.19%) are in their 1st trimester, 112 (18.72) are in their 2nd trimester, while 144 (24.08) are in their 3rd trimester. In respect to the perception of anemia, out of 598 respondents, 154 respondents (25.75%) agreed that it is caused by inadequate dietary intake, 169 (28.26) agreed that it is caused by loss of water from the body, 275, (45.99) agreed that it occurs as a result of low blood level.

As it concerns the prevention strategies of anemia among pregnant women, out of 598 respondents, 231 respondents (38.63%) agreed that it can be prevented by adequate nutrition, 132 (22.07) agreed that it can be prevented by giving the child enough water, 67, (11.20) agreed that it can be prevented by regular deworming, 61, (10.20) agreed that it can be prevented by early treatment of malaria, while 107, (17.89) agreed that it can

Table 1: Demographic variables of respondents

Variable		Frequency	Percentage
Age	≤30 years	265	44.31
	31-40 years	182	30.43
	≥41 years	151	25.25
	Total	598	100
Marital status	Single	56	9.36
	Married	389	65.05
	Divorced	153	25.59
	Total	598	100
Educational status	No formal education	60	10.03
	Primary education	128	21.40
	Secondary education	154	25.75
	Tertiary education	256	42.81
	Total	598	100
Gestational age of pregnancy	1 st trimester	342	57.19
	2 nd trimester	112	18.72
	3 rd trimester	144	24.08
	Total	598	100
Respondents' opinion perception of anaemia			
What is your perception of anemia?	Inadequate dietary intake	154	25.75
	Loss of water from the body	169	28.26
	Low blood level	275	45.99
	Total	400	100
Respondents' opinion on anemia prevention strategies among pregnant women			
What anemia prevention strategies among pregnant women do you know?			
	Adequate nutrition	231	38.63
	Giving the child enough water	132	22.07
	Regular deworming	67	11.20
	Early treatment of malaria	61	10.20
	Exclusive breastfeeding	107	17.89
	Total	598	100

Source: Field work (2023)

be prevented by exclusive breast feeding.

Test of Hypothesis

There is no significant influence of the predictor variables (perception of and adherence to anaemia preventive strategies) among pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria. The choice of multiple linear regression (modelling application) was to help explain the linear relationship that exist between and among the predictor variables at $p < 0.05$. The results are presented in (Table 2).

The regression equation is given thus:

$$Y_i = B_0 + B_1X_1 + B_2X_2 + e_i \dots(1)$$

Where:

Y is the predicted value of the DV (pregnant women attending antenatal clinics in selected hospitals)

X_1 = perception of anamia

X_2 = adherence to anaemia preventive strategies

B_0 is the Y-intercept and

e_i is the error of prediction known as residuals.

The result in (Table 2) shows that the combination of all the predictor variables (perception of and adherence to

anaemia preventive strategies) are joint predictors of health of pregnant women attending antenatal clinics. The predictor variables accounted for 27.8% of the variance in health of pregnant women attending antenatal clinics.

Furthermore, the regression ANOVA revealed that, there was moderate joint contribution of the predictor variables to health of pregnant women attending antenatal clinics $F(5, 594) = 35.923$; $p < 0.05$. The adjusted R^2 (0.21.9) shows some shrinkage from the unadjusted value (0.278) indicating that the model could be generalized to the population. Based on the result, it was revealed that when all the contributor variables (perception of and adherence to anaemia preventive strategies) are used together significantly contribute to health of pregnant women attending antenatal clinics.

In terms of the individual predictors, perception of anemia and adherence to anemia preventive strategies predict health of pregnant women attending antenatal clinics. The higher the β value the greater the contribution of the predictor variable. Therefore, the regression equation is expressed thus:

Health of pregnant women attending antenatal clinics = $B_0 + B_1$ perception of anaemia preventive strategies_i + B_2 adherence to anaemia preventive strategies_i (2)

Therefore, we can conclude that, there is a significant influence of the predictor variables (perception of and adherence to anaemia preventive strategies) among

Table 2: Regression Model Summary of all the predictor variables (perception of and adherence to anaemia preventive strategies) among pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria.

Model	R	R square	Adjusted R square	Std error of the estimate	
1	0.443	0.278	0.219	1.346	
Source of Variables	Sum of Squares	Df	Mean square	F	Sig.
Regression	1938.002	5	2884.433	35.923*	0.001
Residual	21115.005	594	3.411		
Total	3202.750	598			
Variables	Regression weight				
	B	Std error	Standard. Coef.	t.value	Sig.
(constant)	4.551	0.884		4.211	.000
Perception of anemia	0.049	0.054	0.026	.686	0.343
Adherence to anaemia preventive strategies	-0.022	0.057	-0.022	-0.553	0.223

Key: DV = Health of pregnant women attending antenatal clinics

pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria.

DISCUSSION

The finding of the study showed that there is a significant influence of the predictor variables (perception of and adherence to anaemia preventive strategies) among pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria. This study highlights the importance of anemia prevention in pregnant women as dietary intakes of food such as meat, vegetables and fruits that are rich in iron are important in the prevention of anaemia. The outcome of the study is in consonance with Aguayo et al. (2021) who stated that anemia is, however, preventable when access to supplements is guaranteed and when they are provided with minimum, consistent, and easily understandable information and counselling, indicating that these are key elements to ensure effective programmes. Unfortunately, only 21 % of women took iron tablets daily for 90 or more days during their last pregnancy in Nigeria.

Perception takes a central position in determining health-seeking behaviour (Roberts et al. 2018). People's perceptions and judgement are often conditioned by assessing factors their traditions and culture consider important such as courtesy, responsiveness, attentiveness, and perceived competence of the health staff. The finding of the study also supports Prince, Daniel, and Duut (2019) who examined Knowledge of and Adherence to Anaemia Prevention Strategies among Pregnant Women Attending Antenatal Care Facilities in Juaboso District in Western-North Region, Ghana and revealed that there were significant associations between adherence to anaemia prevention strategies and the woman's ethnicity and her knowledge of anaemia. Pregnant women's knowledge of anaemia and adherence to anaemia prevention strategies are not encouraging. However, anaemia in pregnancy and its consequences could be devastating to all stakeholders if actions are not taken to reduce the phenomenon.

Conclusion

The study concluded that there is a significant influence of the predictor variables (perception of and adherence to anaemia preventive strategies) among pregnant women attending antenatal clinics in selected hospitals in Benin city, Edo State, Nigeria. Anaemia was to be prevented by giving adequate nutrition, regular deworming as well as exclusive breastfeeding. Education and the number of children were associated with the perception regarding anemia implying that previous experience with anemia and higher educational level results to a better understanding of anemia.

Recommendations

Based on the outcome of the study, it was recommended that;

1. Authorities of government hospitals, in discussion with the Ministry of health, government and non-governmental organization, civil society organizations and stakeholders alike should intermittently organize outreach programmes targeting mothers who visit their hospital and those within their catchment area to improve their knowledge on anemia especially on the causes of anemia in order to equip them to detect and report suspected cases for early treatment.
2. The presence of low knowledge and adherence to anaemia prevention suggests the need for an intensification of education on anaemia and its prevention strategies by health professionals and collaborators at all levels of health delivery services to all women in reproductive age. This should include more education and sensitisation on good nutritional practices in the diet of pregnant women.

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