Barriers to Utilization of Antenatal Care Interventions among Pregnant Women Attending Primary Health Care Centres in Kano, Nigeria

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ABSTRACT

Background: Knowledge of Ante-Natal Care interventions (ANC) and removal of barriers associated with access to the interventions can significantly reduce the burden of maternal, neonatal, and infant morbidity and mortality in Sub-Saharan Africa. **Objective:** This study assessed the knowledge and barriers to ANC interventions among pregnant women attending PHC in Kano**. Methods:** Descriptive cross-sectional study design was used to study 383 pregnant women attending ANC in primary health care centers in Kano metropolis using a three-staged sampling technique. Data was collected using interviewer administered semi-structured questionnaire and analyzed at univariate, bivariate and multivariate levels using IBM SPSS Statistics for Windows, version 20. **Results:** Out of the 383 questionnaires distributed 374 were retrieved and analyzed, giving a response rate of (97.7%). The mean age of respondents was 25.7±4.8years. The majority of the pregnant women studied (60.0%) were greater than 24 years of age with most of the respondents having formal education (96.8%) and married pregnant women constituted most (89.0%) of the respondents. The maximum knowledge score was 39 and the minimum was 10 with a mean of 24.8±5.8. Many pregnant women (97.0%) had satisfactory knowledge of ANC interventions. Age greater than 24 years (p<0.001), employment (p<0.001), gestational age between 4-6 months (p<0.001), urban residence (p=0.02) were found to be significantly associated with satisfactory knowledge. Age greater than 24 years {AOR=2.0, 95%CI= (1.1-3.7)}, Gestational age ranging between 4-6 months {AOR=0.5, 95%CI= (0.3-0.8)}, and urban residence {AOR=2.0, 95%CI= (1.1-3.7)} were found to be independent predictors of knowledge of ANC interventions. Variable barriers to using various interventions were reported. The barrier to using iron and folic acid reported by about a half of the respondents (50.0%) was forgetting to use the tablets, the financial capacity to transport self to the facility was reported to serve as a barrier to using Long Lasting Insecticides Treated Nets by about one-fourth (25.0%) of the pregnant women. Similarly, up to one-fourth (25.0%) had fear of side effects as the barrier to using IPT(sulphadoxine/pyrimethamine). Barrier to using some health education interventions was reported to be due to rejection by the spouse. **Conclusion:** Pregnant women were knowledgeable on the available ANC interventions but are faced with many barriers to accessing them. The government should, therefore, formulate policies directed to addressing the identified barriers.

Key words: Knowledge, pregnant women, interventions, barriers and facilitators

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Introduction

The health of mothers and children are some of the important factors that determine global and national wellbeing. This because every individual, family and community is at some point involved in pregnancy and the success of childbirth.[1] Nigeria is second to India in terms of the absolute number of maternal

deaths and regrettably, despite abundant resources, contributes more than 10% of all global maternal deaths.[1]

The reasons for high maternal mortality ratio are multipronged and complex including but not limited to access, and utilization of maternal health services in various parts of the country regarded as main causes. Reduction of maternal mortality has long been a global concern and priority as enunciated by the Millennium Development Goals (MDG) framework, the Global Strategy for Women's and Children's Health, and the Sustainable Development Goals. To further advance the reduction of maternal mortality in Nigeria, factors influencing the non-utilization of maternal health services need to be addressed. [1-3] Nigerian government specifically recommends Primary Health Care as then try point to the health care system to generate universal health coverage for all citizens.[2] Little empirical evidence exists from primary sources on the reasons why women use or do not use primary healthcare facilities in Nigeria for maternal health care and the individual-level predictors of use or non-use.[1,2] Analyses of the utilization of primary health care facilities in Nigeria have been limited in their focus such as the description of interventions, quality of care and patients or community satisfaction, knowledge, adequacy of resources and adequacy of antenatal care.[2] The effect of user fees protects the poor by reducing catastrophic out of pocket expenditure. Some developing countries with high MMR have adopted free maternal health care policy at various levels, as an intervention intended to improve maternal health.[4]

To attain an optimum level of health during pregnancy and the best possible maternal and neonatal health outcomes, effective interventions need to be delivered during the preconception period and throughout pregnancy. In recent years, there has been increased awareness regarding the importance of preconception period and efforts have been made to increase knowledge and promote health right from childhood and adolescence onwards. Research has also established evidence linking quality preconception interventions with improved maternal, perinatal and neonatal health outcomes.[5] A study reported that pregnant women quit antenatal care to deliver at home mainly due to maternity staff attitude and presence of male healthcare workers during delivery and concluded that, pregnant women are aware of the importance of antenatal care and, do deliver at home due to behavioral, socio-cultural and religious preferences.[6] Low antenatal attendance was reported to be due to inadequate knowledge about the ideal time of starting ANC, understaffed clinic, traditional beliefs and cultural practices were reported to affect antenatal attendance. Other factors identified were socio-cultural practices such as afraid of witchcraft, long distances and need for material support from family members.[7] There is a paucity of literature in areas that assessed the knowledge of pregnant women on the interventions provided to them during routine ANC visits and barriers associated with accessing the services provided for pregnant women. This study, therefore, assessed the knowledge of ANC interventions, barriers and enablers to using the interventions among pregnant women attending ANC in Kano metropolis. Findings from this study can inform policymakers on removing the identified barriers and strengthen the facilitators of using ANC services to improve maternal and child health indices in Kano and Nigeria at large.

Materials and Methods
Study area/Setting
The study was carried out in 17 primary health caters within Kano metropolis providing ANC services to pregnant women. Kano State is located in Northwestern Nigeria. It consists of forty-four (44) Local Government Areas (L.G.A).

The Kano metropolis comprises of eight Local Government Areas; Kano Municipal, Fagge, Dala, Gwale, Tarauni, Nassarawa, Ungoggo and Kumbotso. The total land area of Metropolitan Kano is 499 square kilometers with 2,163,225 people as 2006 national population census living within the metropolis using a growth rate of 3.1% per annum. Kano state had a projected total population of 11,215,688 in 2012 and 13,065,294 in 2019.[8]

Primary health centers are under the local government control with Kano Metropolis. They provide antenatal care, routine immunization, outpatient consultation and basic laboratory test services. Health workers providing these services are qualified primary health care Nurse, Community Health Officers, SCHEW, JCHEW. These health care providers are trained to provide services based on the components of primary health care among which

are maternal and child health services. Kano state has two tertiary health facilities owned by the Federal Government, Aminu kano Teaching Hospital and National Orthopedic Hospital Dala. There are Secondary health facilities which include Murtala Specialist Hospital, Muhammad Abdullahi Wase Specialist Hospital and Hasiya Bayero Paediatric Hospital among others. There are also various comprehensive and primary health centers in all the local government areas.[8]

Study design
Descriptive cross-sectional study design was used.

Study population
All pregnant women attending primary health care centers in Kano Metropolis for ANC. However, pregnant women on admission, those who missed appointments and were absent during data collection and primigravida presenting for booking were excluded from the study.

Sample size determination
A sample of 383 was determined using the formula for estimating the minimum sample size for descriptive studies.[8]

$$n = \frac{Z^2 pq}{d^2}$$

Substituting the values of standard normal deviate (z) 1.96 at 95% confidence interval and margin of error (d) 0.05 and prevalence (p) from previous study, point prevalence rates of utilization of insecticides treated nets of 34.8%= 0.35 obtained from previous study[9] and a non-response rate of 10% were used to compute the sample size.

Sampling technique
A three staged sampling technique was used to select eligible respondents. At the first stage, the list of all the metropolitan LGAs was obtained from Kano state ministry for local government from which 2 LGAs were randomly selected by balloting representing 25% of the LGAs in Kano Metropolis. A second stage, the list of all the health facilities in the selected local governments was obtained from the selected LGA health departments from which 25% of the health facilities were randomly selected by simple balloting. In the third stage, systemic sampling was used to select the eligible respondents. The sampling frame i.e list of pregnant women attending ANC in each of the selected hospitals was obtained from the antenatal unit register of the facility and the sampling interval for each of the selected facility was obtained as the ratio of the sampling frame of each of the selected facility to the calculated sample size. Respondents were proportionately allocated to the selected facilities based on the sampling frame obtained from the ANC units.

The first respondent in each of the selected facility was selected between values of 1 to the calculated sampling interval by simple balloting and the subsequent respondents were obtained by adding the sampling interval until the proportionately allocated respondents in each of the selected facility were obtained.

Instrument description and method of data collection
Semi-structured adapted[10, 11]interviewer-administered questionnaire consisting of open and closed-ended questions was used for data collection. The questionnaire has five sections that elicited information on socio-demographic information, available ANC interventions for pregnant women, Knowledge of ANC intervention, facilitators of using the ANC interventions and barriers to using ANC intervention. Pre-testing of the questionnaire was conducted among 40 pregnant women attending ANC outside the selected LGAs in Kano. The questionnaires were administered by ten trained Hausa speaking research assistants with the interviews conducted in the local language.

Data management and analysis
Data were analyzed using IBM SPSS Statistics for Windows, version 20. Quantitative variables were summarized using appropriate measures of location and variability, whereas categorical variables were presented as frequencies and percentages. Questions were asked to identify the available ANC interventions provided to pregnant women during ANC services.

Knowledge domain: Thirty-nine questions were used to assess knowledge of ANC interventions based on the package of interventions provided to pregnant women during routine ANC visits namely (Long Lasting Insecticides Treated Nets, iron and folic acid supplementation, health education,

sulphadoxine/pyrimethamine therapy, tetanus toxoid).

Any correct response to questions assessing knowledge of ANC interventions was awarded one mark while the wrong response was given a zero point. The total score was summed up.

A total score of <19 point was considered as unsatisfactory knowledge of ANC services while a score of ≥19 was considered as satisfactory knowledge of ANC services.[12]

Facilitators and barriers to the use of ANC services: Questions were asked to determine the facilitators and barriers to the use of each of the identified ANC interventions used to assess the knowledge domain and were presented in frequencies and percentages. The outcome variable was knowledge of ANC interventions while the independent variable was the age, occupation, parity among others.

Pearson's chi-square and Fisher's exact tests were used to test for significant association between categorical variables. Logistic regression was used to adjust for confounders and to determine predictors of pregnant knowledge of ANC interventions. A p-value of 0.05 was considered significant.

The criteria for inclusion of variables into the logistic regression model were apriori variables, variables found to be significant at the bivariate level, and a set of p-value of 0.2 for variables that were found not significant at a bivariate level.[8]

Ethical considerations

Informed consent was obtained from eligible respondents before the questionnaire administration. The consent form was in both local language (Hausa) and English, and literate respondents indicated acceptance by signing the consent form and the non-literate ones affixed their thumbprints.

Permission to conduct the study was obtained from the respective LGAs selected, heads of the selected hospitals and Health Research Ethics Committee of Kano State Ministry of Health with approval number of MOH/OFF/797/T.I/1224, approved on 24th April2019 and data was collected from 10thMay, 2019 to 30th July 2019. All the principles of research ethics were strictly adhered to throughout the conduct of the study.

significantly associated with satisfactory knowledge as shown in table 3 . However, Age greater than 24

Results

Out of the 383 questionnaires distributed 374 were retrieved and analyzed, giving a response rate of 97.0%.

Socio-demographic characteristics of pregnant women attending routine ANC

The mean age of respondents was 25.7±4.8years. The majority of the pregnant women studied (60.0%) were greater than 24 years of age. Many of the pregnant women studied had formal education (96.8%). More than two-thirds of the respondents (73.0%) were employed, with gravidity of less than 5 for the index pregnancy reported among (78.9%) the pregnant women. Majority of them (94.6%) had clinic visits within the range of 1-4 times during the index pregnancy. More than three-quarter of the pregnant women (86.1%) had a monthly income of < N18, 000 with a median of N6, 000. About two-thirds of the pregnant women were urban dwellers (67.1%) as shown in table 1 below.

Knowledge of ANC interventions among pregnant women

The maximum knowledge score was 39 and the minimum was 10 with a mean of 24.8±5.8. Most of the pregnant women (97.0%) had satisfactory knowledge of ANC interventions as shown in figure 1 below. The majority of the respondents (90.9%) correctly answered that LLIN is used as a physical barrier to prevent mosquitoes' bites. More so, most of the pregnant women agreed that the LLIN is beneficial for the mother, fetus, infants and children. Also, about two-thirds (68.7%) of the respondents correctly mentioned the importance of iron and folic acid among pregnant women. The majority of the pregnant women (92.2%) correctly reported that health education on nutrition is an important component of ANC, about three-quarters (75.7%) of the respondents correctly described the drugs used for IPT as shown in table 2.

Factors associated with knowledge of ANC interventions among pregnant women

Age greater than 24 years (p<0.001), employment (p<0.001), gestational age between 4-6 months (p<0.001), urban residence (p=0.02) were found to be

years of age {AOR=2.0,95% CI=(1.1-3.7)}, Gestational age ranging between 4-6 months{AOR=0.5,

95%CI=(0.3-0.8)}, and urban residence {AOR=2.0,95%CI=(1.1-3.7)} were found to be independent predictors of knowledge of ANC interventions after adjusting for confounding as shown in table 4

Facilitators of using ANC interventions by pregnant women

Facilitators to the use of health education intervention were reported to be due to: Knowledge of its benefit (86.4%), having trust in healthcare workers (86.6%) and availability of interventions all the time (84.4%). Having trust in healthcare workers by the pregnant women and readily available ANC interventions were reported as facilitators to using other ANC interventions by the pregnant women as shown in table 5.

Variable barriers to using various interventions were reported. The barrier to using iron and folic acid reported by about half of the respondents (50.0%) was forgetting to use the tablets, the financial capacity to transport self to the facility was reported to serve as a barrier to using LLIN by about one-fourth (25.0%) of the pregnant women. In the same vain, up to one-fourth (25.0%) had fear of side effects as the barrier to using IPT as shown in table 6 below. The barrier to using some health education intervention was reported to be due to rejection by the spouse as shown in figure 2.

Table 1: Socio-demographic and reproductive characteristics of pregnant women attending ANC

Variable(s)	Frequency	Variable(s)
Age (years)		
<24	150	40.1
≥24	224	59.9
Marital status		
Married	333	89.0
Unmarried	41	11.0
Educational status		
Formal	362	96.8
Non formal	12	3.2
Occupation		
Employed	273	73.0
Unemployed	101	27.0
Gravidity		
<4	295	78.9
≥4	79	21.1
Median and range	3 and 11	
Gestational age		
<3	46	12.3
4-6	192	51.3
7-9	136	36.4
Mean ±SD	5.8±1.8	
Parity		
<4	350	93.6
≥4	24	6.4
Median and range	2 and 8	
Ever had miscarriage		
Yes	110	29.4
No	264	70.6
Number of clinic visit		
1-4	354	94.7
>4	20	5.3
Median and range	2 and 7	
Monthly income		
<18,000	322	86.1
≥18000	52	13.9
Place of residence		
Rural	123	32.9
Urban	251	67.1
Ever had anemia in pregnancy		
Yes	119	31.8
No	255	68.2
Ever had malaria in pregnancy		
Yes	147	39.3
No	227	60.7
Infection in pregnancy other than malaria		
Yes	54	14.4
No	320	85.6
Blood transfusion in pregnancy		
Yes	71	19.0
No	303	81.0
Type of facility		
Comprehensive health center	43	11.5
Primary health center	313	83.7
Health post	7	1.9
Basic health clinic	5	1.3
Others	6	1.6

Table 2: Parameters used to assess knowledge of ANC interventions and showing correct responses among pregnant women

s/n	Knowledge questions	Frequency n=374(%)
1	Long-lasting insecticides treated mosquito nets is designed to block mosquitoes physically	340(90.9)
2	LLITN is designed to kill and repel mosquitoes	255(68.2)
3	Long-lasting insecticides treated nets are designed to maintain effectiveness against mosquitoes for at least 3 years?	202(54.0)
	Sleeping under insecticide-treated nets is beneficial to:	
4	Pregnant mother?	318(85.0)
5	Fetus?	332(88.8)
6	Newborn baby?	330(88.2)
7	Pregnant women should not commence sleeping under insecticides treated mosquito nets until late in the pregnancy?	230(61.5)
8	Pregnant woman should stop sleeping under LLIN after delivery	200(53.5)
9	Mother and child should sleep under LLIN during postpartum period?	233(62.3)
10	Mosquito bites due to damaged LLIN is associated with	9(0.02)
11	Iron and folic acids are drugs given to pregnant women for prevention of anaemia?	258(69.0)
12	Folic acid is important formation of red blood cells?	257(68.7)
13	When should folic and fersolate be commenced in pregnancy?	98(26.2)
14	Eating good food during pregnancy substitutes the use of iron and folic acid supplementation?	202(54.0)
15	Iron and folic acid supplementation can cause difficult labor?	257(68.7)
16	Iron and folic acid supplementation can lead to the delivery of big baby?	173(46.3)
17	Iron and folic acid supplement can lead to low birth weight?	180(48.1)
18	Iron supplement can prevent congenital malformation?	81(21.7)
	Health education is important during antenatal care for all pregnant women because:	
19	Improve nutrition?	345(92.2)
20	Improve the use of routine antenatal medications?	335(89.6)
21	Help in identification of danger signs during pregnancy?	318(85.0)
23	Do not improve husband's involvement?	308(82.4)
24	Improve child spacing practices?	177(47.3)
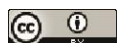
25	Do no prevent mortality and morbidity among pregnant women?	228(61.0)
26	Promotes birth preparedness and complications readiness?	119(31.8)
27	Improves breastfeeding practices by mothers?	243(65.0)
28	Improves compliance with routine antenatal drugs?	317(84.8)
29	IPTp involves the use of use of drugs during pregnancy to prevent malaria among pregnant women?	317(84.8)
30	What is the drug recommended for IPTp?	283(75.7)
31	Who can be givenIPTp?	108(28.9)
32	How many tablets of IPTpis used as a dose?	212(56.7)
	When is IPTp recommended to be used during pregnancy?	
33	Between 4-6 months?	253(67.6)
34	Between 7-9months?	209(55.9)
35	Between 1-3months?	85(22.7)
36	The drugs used for IPTp may be associated with side effects?	99(26.5)
37	Side effects ofany drug during ANC	78(20.9)
38	Tetanus toxoid is given during pregnancy?	108(28.9)
39	Tetanus toxoid protects the pregnant woman and her baby?	108(28.9)

Table 3: Factors associated with knowledge of ANC interventions among pregnant women

	Knowledge			
Variables	Unsatisfactory	Satisfactory	χ^2	P-value
Age groups				
<24	41(27.3)	109(72.7)	14.1	<0.001*
≥24	27(12.1)	197(87.9)		
Marital status				
Married	58(17.4)	275(82.6)	1.2	0.3
Unmarried	10(24.4)	31(75.6)		
Educational status				
Formal	65(18.0)	297(82.0)	0.4	0.7
Non formal	3(25.0)	9(75.0)		
Occupation				
Employed	38(13.9)	235(86.1)	12.3	<0.001*
Unemployed	30(29.7)	71(70.3)		
Gravidity				
<4	59(20.0)	236(80.0)	3.1	0.08

≥4	9(11.4)	70(88.6)		
Gestational age				
0-3	6(13.0)	40(87.0)	26.2	<0.001*
4-6	19(9.9)	173(90.1)		
7-9	43(31.6)	93(68.4)		
Parity				
<4	67(19.1)	283(80.9)	3.4	0.09†
≥4	1(4.2)	23(95.8)		
Ever had miscarriage				
Yes	31(28.2)	79(71.8)	10.5	0.001*
No	37(14.0)	227(86.0)		
Number of clinic visit				
1-4	64(18.1)	290(81.9)		1†
>4	4(20.0)	16(80.0)		
Monthly income				
<18,000	65(20.2)	257(79.8)	6.3	0.02*
≥18,000	3(5.8)	49(94.2)		
Place of residence				
Rural	37(30.1)	86(69.9)	17.4	<0.001*
Urban	31(12.4)	220(87.6)		
Ever had anemia in pregnancy				
Yes	17(14.3)	102(85.7)	1.8	0.2
No	51(20.0)	204(80.0)		
Ever had malaria in pregnancy				
Yes	35(23.8)	112(76.2)	5.2	0.02*
No	33(14.5)	194(85.5)		
Infection in pregnancy other than malaria				
Yes	10(18.5)	44(81.5)	0.005	1.0
No	58(18.1)	262(81.9)		
Ever had transfusion in pregnancy				
Yes	14(19.7)	57(80.3)	0.13	0.7
No	54(17.8)	249(82.2)		

Table 4 Predictors of knowledge of ANC interventions among pregnant women

Variables	Satisfactory knowledge	p-value	AOR(95% CI)
Age (years)			
<24	109(72.7)	0.02*	2.0(1.1-3.7)
≥24	197(87.9)		
Occupation			
Employed	235(86.1)	0.8	0.9(0.5-1.7)
Un-employed	71(70.3)		
Income(naira)			
<18,000	257(79.8)	0.1	2.8(0.8-10)
≥18,000	49(94.2)		
Gravidity			
<4	236(80.0)	0.5	1.4(0.6-3.2)
≥4	70(88.6)		
Parity			
<4	283(80.9)	0.2	3.8(0.4-32.7)
≥4	23(95.8)		
Gestational age(month)			
0-3	40(87.0)	0.006*	0.5(0.3-0.8)
4-6	173(90.1)		
7-9	93(68.4)		
Miscarriage			
Yes	79(71.8)	0.08	1.8(0.9-3.4)
No	227(86.0)		
Place of residence			
Rural	86(69.9)	0.02*	2.0(1.1-3.7)
Urban	220(87.6)		
Ever had malaria in pregnancy			
Yes	79(71.8)	0.5	1.2(0.7-2.3)
No	227(86.0)		

Statistically significant

AOR= Adjusted Odds ratio

CI=Confidence interval

Table 5: Facilitators of using ANC interventions by pregnant women

Facilitators of using ANC interventions	LLIN n=374(%)	Iron/folic acid n=374(%)	Sulphodoxine / Pyrimethamine
Know its benefits	108(28.9)	301(80.5)	284(75.9)
Have trust in the healthcare workers	338(90.4)	343(91.7)	330(88.2)

Readily available all the times	324(86.6)	330(88.2)	319(85.3)
Have the financial capacity to buy	327(87.4)	305(81.6)	312(83.4)
Feel better when sleeping/ taken	326(87.2)	317(84.8)	312(83.4)
Receive support on compliance from family members	331(88.5)	309(82.6)	309(82.6)

LLIN-Long lasting insecticides treated nets

Table 6: Reported barriers to using ANC interventions among pregnant women

Barriers to using ANC interventions	LLIN	Iron/folic acid	Sulphodoxine/ pyrimethamine
Forget to take/use it	124(33.2)	188(50.3)	119(31.8)
Non availability	77(20.6)	111(29.7)	100(26.7)
Limited financial capacity	74(19.8)	117(31.3)	113(30.2)
Lack of antenatal care services	70(18.7)	56(15.0)	62(16.6)
Family members/husband not allowing the use	46(12.3)	50(13.4)	45(12.0)
Not knowing about the benefit	57(15.2)	100(26.7)	100(26.7)
Fear or experience of side effects	53(14.2)	57(15.2)	65(17.4)
They are considered as a family planning method	53(14.2)	47(12.6)	46(12.3)
Felt better and stopped/no mosquitoes	65(17.4)	55(14.7)	60(16.0)

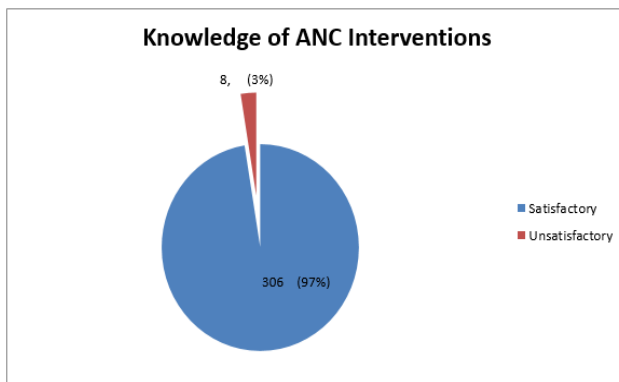LLIN-Long lasting insecticides treated nets

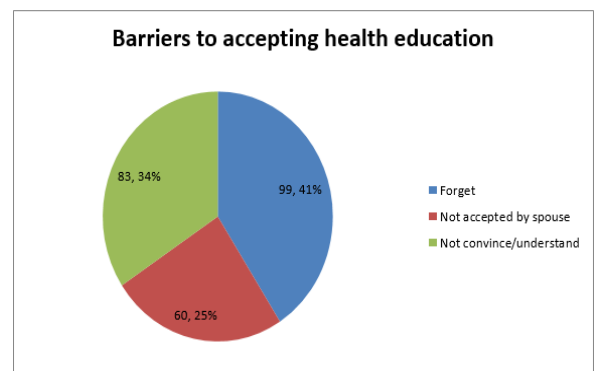Figure 1 Knowledge grade of ANC interventions among pregnant women

Figure 2 Barriers associated with accepting health education intervention among pregnant women

Discussion

This study identified that majority of the pregnant women (97.0%) attending ANC services at PHCs within metropolitan LGAs of Kano had satisfactory knowledge of ANC interventions in comparison with studies conducted in Uganda and Ethiopia that reported (98.1%) and (81.9%) pregnant women to knew the importance of LLIN in the prevention of malaria.[13,14]This suggests that healthcare education intervention provided at the ANC clinics offers significant improvements in knowledge of ANC interventions among pregnant women. Similarly, this study found out that (84.8%) of pregnant women studied were able to define IPTp unlike what was reported (23.9%) by a study conducted in Ekiti State, South-western Nigeria.[15] This may likely be due to the fact that this study was conducted within the metropolitan LGAs, with pregnant women more likely to have a formal education that can enable them to have access to a written sources of information on IPTp in addition to information during ANC visit. This, however, underscores the importance of intensifying health education programs among pregnant women at all levels on the importance of IPTp in preventing malaria in pregnancy and its associated complications.

Also, about two-thirds (69.0%) of pregnant women studied were able to explain the importance of iron and folic acid in the prevention of anemia in pregnancy. This calls for sustained efforts to ensure that all pregnant women clearly understand the role of iron/folic acid supplementation especially in disabusing the cultural believes that ingestion of supplements during pregnancy can lead to the delivery of big babies thereby leading to obstructed labor and difficult deliveries.

Age greater than 24 years, employment, urban residences were found to be significantly associated with a satisfactory knowledge of ANC interventions. This may be due to the tendency for older pregnant women to interact with women that had information on various interventions provided during ANC in addition to the possibility of attending ANC during the previous pregnancies there by making them have better knowledge, more so, employed pregnant women are likely to be literate and can, therefore, have access both to media and written sources of information on ANC interventions, the same applies for pregnant women residing in urban areas.

Forgetfulness to use the ANC interventions was reported as one of the barriers to using ANC interventions. This may require the use of reminders and treatment support individuals possibly the spouse, which may require male involvement and participation at all levels of managing the pregnancy. In doing that, there is a need for female empowerment, improved status of women in the communities and community dialogue to achieve the involvement of husbands for reminders, having reported by about (13.0%) of pregnant women to be denied using the provided interventions at the facility by their husbands. More so, about a quarter (27.0%) of the respondents did not know the benefits of using iron/folic acid and IPTp. Therefore, there is a need for continued media campaigns by qualified healthcare workers in addition to routine health education programs on the importance of all the interventions given to pregnant women.

Conclusion and recommendations

Knowledge of ANC interventions among pregnant women was generally found to be satisfactory; however, many barriers were identified in using ANC interventions. The government should, therefore, scale up efforts to address the identified barriers to reduce the burden of maternal and infant mortality and morbidity.

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Corrected and republished

Barriers to Utilization of Antenatal Care Interventions among Pregnant Women Attending Primary Health Care Centres in Kano, Nigeria. Initially published in volume 17 issue 2 on page 129.