

# Awareness and Perception of Preconception Care among Women Attending the Antenatal Clinic of Abuth, Shika, Zaria

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Submitted: 10 April, 2022. Published: 10 Sept. 2022

## ABSTRACT

**Background:** Preconception care (PCC) is a critical component of healthcare for women of reproductive age group aimed at improving health status and modifying factors that contribute to poor maternal and child health. Despite the known benefits of PCC, its practice is still evolving in Nigeria. The study sought to assess the awareness and perception of preconception care among women attending the antenatal clinic of Ahmadu Bello University Teaching Hospital (ABUTH), Zaria Nigeria. Methodology: A cross-sectional study was conducted on 177 women that were recruited via a systematic random sampling technique. Data were collected with a structured interviewer-administered questionnaire and analyzed using SPSS version 25.0. A Chi-square test was used to test for association and the results were presented in tables and charts. Results: Only 59.9% and 44.1% were aware of PCC and knew of its practice in Nigeria respectively. There was an association between awareness of the practice of PCC ( $P=0.000$ ) and uptake of PCC ( $P=0.000$ ) with awareness of PCC. The commonest components known to the women were folic acid supplementation (52%) and HIV screening and treatment (23.2%). Only 41.8% had benefitted from any component of preconception care. The most identified benefit of preconception care was the prevention of birth defects (35.6%) and 97.1% of the women who had never accessed preconception care were willing to accept it if offered to them. Conclusion: This study shows that though there seems to be an improvement in the awareness and practice of preconception care, the uptake is still low and the commonest reason for this was a lack of awareness of the care and its benefits. It also shows a high rate of acceptability for the care. It is pertinent that conscious effort is made by health workers, hospitals, and the community to educate women at any opportunity and link them with service points to access care.

**Keywords:** Preconception care, Maternal mortality, Perinatal Mortality, Pregnancy Outcomes



Access to the article

Website: [www.jmbsr.com.ng](http://www.jmbsr.com.ng)

 10.5281/zenodo.7093094

*How to cite this article*

Kachiro HF, Umaru-Sule H, Koledade AK, Umar-Sulayma H. Awareness and Perception of Preconception Care among Women Attending the Antenatal Clinic of ABUTH, Shika, Zaria. *J Med & Bas Sci Res.* 2022;3(2):149-158 DOI: 10.5281/zenodo.7093094

## INTRODUCTION

In 2012, World Health Organization (WHO) together with United Nations agencies and partner organizations made a global consensus on the place of preconception care (PCC) as part of an overall strategy to prevent maternal and childhood morbidity and mortality.<sup>[1]</sup>

Antenatal care has been a cornerstone for improving pregnancy outcomes, however in recent years, limits to antenatal care and the importance of maternal health before pregnancy have been increasingly recognized as several risks factors that impact negatively on pregnancy outcome need to be addressed prior to conception in order to optimize the chances for a healthy mother and baby.<sup>[2,3,4]</sup> This serves as a form of primary prevention for the baby and secondary prevention for prospective mothers.<sup>[5]</sup>

Preconception care is the provision of biomedical, behavioural and social health interventions to women of reproductive age group and their spouses before conception occurs. It is aimed at improving their health status by reducing behaviours as well as individual and environmental factors that could contribute to poor maternal and child health outcomes.<sup>[1,4,6,7,8]</sup> It essentially provides preventive, promotive or curative health and social interventions options including those that may not be available once pregnancy is confirmed either before first or subsequent pregnancy thereby improving pregnancy related outcomes.<sup>[2,9,10]</sup>

Studies have shown that health and behavioural problems like anaemia, obesity, mental disorders, tobacco and alcohol use and environmental health risks like exposure to chemicals and radiation, all contribute to poor maternal and child health outcomes.<sup>[11]</sup> Likewise, studies have also shown that there are effective biomedical, behavioural and social interventions that when delivered before conception occurs, address many health problems, behaviours and risk factors,<sup>[11,12]</sup> with resulting effect of lowering pregnancy complications, reduction in rates of birth defects, fetal loss, low

birth weight and preterm delivery, consequently reducing maternal and neonatal morbidity and mortality rate.<sup>[2]</sup> Nearly all couples are said to have at least one risk factor that requires individual advice in the preconception phase.<sup>[2]</sup>

Several preconception care models have been developed.<sup>[4]</sup> The ACOG classified the main components into physical assessment, risk screening, vaccinations, and counselling.<sup>[4]</sup> While according to world health organization (WHO), the recommended areas to be addressed by the PCC package are nutritional conditions, tobacco use, genetic condition, environmental health, infertility/subfertility, interpersonal violence, too early, unwanted and rapid successive pregnancies, sexually transmitted infections (STIs), Human Immunodeficiency Virus (HIV), and mental health.<sup>[1,10]</sup>

Generally, the components can be summarized as risk assessment, health promotion and intervention.<sup>[2]</sup> Risk assessment identifies risks in women's medical, reproductive, family, and psychosocial history, nutritional and behavioural risks, and maternal exposures. Health promotion on the other hand consists of counselling and education to support healthful behaviour about pregnancy and parenting; while the interventions available include imparting knowledge, influencing attitudes, providing access to contraceptives and vaccines, and enhancing life options.<sup>[2]</sup>

The delivery of preconception care is implemented in various settings, but mostly achieved in the health care setting by community extension workers, general physicians, emergency department, obstetricians and other health workers.<sup>[13,14]</sup> Other avenues for delivering various components of this care include the educational system, mass media campaigns, agricultural sector and community support groups.<sup>[14]</sup>

Despite all the known benefits of preconception care, the uptake of preconception services among women of reproductive age group is low in Africa

and the concept of actively preparing for pregnancy prior to conception is a challenge to many people in developing nations and Nigeria.<sup>[2]</sup>

The health of women, newborn and children is an important indicator of the wellbeing of any nation.<sup>[2]</sup> The Sustainable Development Goal 3 adopted from the Millennium Development Goals in 2015 have caused progressive and significant improvement in saving the lives of mothers and children worldwide.<sup>[11]</sup> However, even with existing effective interventions and public health commitment, there were 295,000 maternal death globally in 2017, 2.5 million neonatal deaths in 2018 and 2.6 million stillbirths in 2015.<sup>[15,16,17]</sup>

Major causes of stillbirths have been attributed to congenital anomalies, child birth complication, post-term pregnancy, maternal infections and medical disorders in pregnancy and fetal growth restriction, majority of which are preventable.<sup>[17]</sup> Similarly neonatal deaths are majorly caused by preterm births, infections, birth defects and intra-partum related complications, majority of which are also preventable.<sup>[9,16]</sup> Sadly, Sub-Saharan Africa records the highest number of neonatal deaths with 98% of still births occurring in low and middle income countries.<sup>[16,17]</sup> Preconception care has been documented to influence positively most of the aforementioned preventable causes, with strategies like folic acid supplementation reducing the risk of neural tube defects by a documented 72%; maternal weight reduction decreasing stillbirth risk by 10%; causation of smoking before conception decreasing the risk of preterm birth by 5-7% and sudden infant death by 24%.<sup>[1,2,3,18]</sup>

Of the documented maternal mortality, 94% occur in low and middle income countries with 86% occurring in Sub Saharan Africa and Asia.<sup>[15]</sup> The WHO states that majority of these deaths could have been prevented.<sup>[15]</sup> Preconception care has a role to play in decreasing maternal morbidity and mortality with interventions like preventing unintended pregnancies to decrease unsafe abortion, good nutrition, food fortification and iron supplementation to prevent maternal under nutrition and iron deficiency anaemia, cessation of

smoking and substance use to prevent complications like preterm delivery and abruptio placenta.<sup>[1,2,3,15,18,19]</sup>

Preconception care is a neglected but vital component of maternal and child health care services, which form a primary prevention for the baby and secondary prevention for prospective mothers.<sup>[5]</sup> Preconception care has been implemented in some high income countries such as United States, Canada, Australia, as well as some middle income countries such as Bangladesh and Philippines.<sup>[20]</sup> Therefore, in settings where there is low awareness of preconception care, promotion of preconception care among reproductive age group women is important to reduce pregnancy complications.<sup>[21]</sup> Its practice however is almost non-existent in developing countries, and still evolving in Nigeria.<sup>[5]</sup>

This study set out to assess the awareness and perception of preconception care among women attending the Antenatal Clinic of Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria.

## METHODOLOGY

This is a cross-sectional study where pretested structured interviewer-based questionnaires were administered by trained resident doctors and midwives to 177 women who presented for antenatal care at the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria Nigeria between 7<sup>th</sup> December 2020 and 5<sup>th</sup> February 2021. The sample size was derived from the formula  $n = z^2 pq / d^2$  where n is the minimum sample size, z standard normal variate taken as 95% confidence interval with a value of 1.96 from the z table, p is the proportion of prevalence in a previous study (0.116)<sup>[22]</sup>, q is 1-p (0.884) and d is the degree of precision at 0.05. Selection was by systematic random sampling technique. Data generated was analysed using IBM statistical package for social sciences (SPSS version 25.0).

Ethical clearance was obtained from the ABUTH ethical committee. Informed verbal consent was

obtained from the respondents in English language and in the local language of Hausa for those who do not understand English.

## RESULTS

A total of 177 women were interviewed and the demographic characteristics (Table 1) revealed that most of the respondents were aged between 25 and 34 years (60.5%) with a mean age of  $29 \pm 5.3$  years, 96% were married, most were civil servants (26%), unemployed (23.2%), students (22%) and businesswomen (19.8%) and majority of the women had attained tertiary education (57.6%). Most of the women were multiparas (49.1%) while 32.8% were nulliparas and 18.1% primiparas. About 6.8% of the women have had at least one preterm birth, 7.9% have had at least one still birth and 21.5% have had at least one abortion (Table 2).

**Table 1. Demographic characteristics of the attendees, Dec, 2020 Feb, 2021. (n = 177)**

Variable	n (%)
<b>Age (years)</b>	
15 – 24	40 (22.6)
25 – 34	107 (60.5)
35 – 44	30 (16.9)
45 – 54	0 (0)
<b>Ethnicity</b>	
Hausa	89 (50.3)
Igbo	21 (11.9)
Yoruba	25 (14.1)
Others	42 (23.7)
<b>Religion</b>	
Islam	113 (63.8)
Christianity	64 (36.2)
<b>Occupation</b>	
Unemployed	41 (23.2)
Student	39 (22)
Civil servant	46 (26)
Businesswoman	35 (19.8)
Teacher	7 (4)
Others	2 (5)
<b>Marital status</b>	
Single	7 (4)
Married	170 (96)
<b>Level of education</b>	
Islamic	4 (2.3)
Primary	15 (8.5)
Secondary	56 (31.6)
Tertiary	102 (57.6)

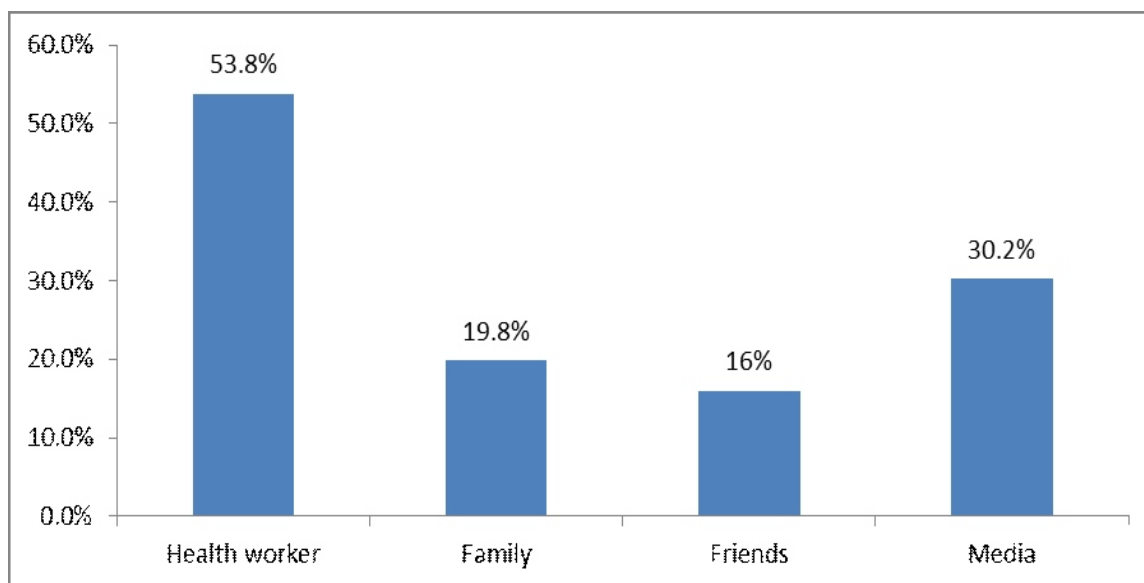
**Table 2. Pregnancy Outcomes of ABUTH ANC attendees. (n = 177)**

Variable	n(%)
<b>Parity</b>	
0	58 (32.8)
1	32 (18.1)
2 – 4	70 (39.5)
≥ 5	17 (9.6)
<b>Preterm births</b>	
0	165 (93.2)
1	10 (5.6)
2	1 (0.6)
≥ 3	1 (0.6)
<b>Still births</b>	
0	163 (92.1)
1	13 (7.3)
≥ 2	1 (0.6)
<b>Abortions</b>	
0	139 (78.5)
1	23 (13)
2	6 (3.4)
≥ 3	9 (5.1)

More than half (59.9%) of the women had heard about preconception care. However only 66% of them could define preconception care correctly and health workers were the commonest source of information in 53.8% of the women (Figure 1) When asked about which components of preconception care they knew, folic acid supplementation (52%) and HIV screening and treatment (23.2%) were the commonest known to them. Others were treatment of STI (18.1%), genetic counselling and testing (18.1%), dietary counselling and modification (16.4%) and treatment of medical illnesses (16.4%) (Table 3).

Out of the benefits of preconception care identified by the women, prevention of birth defects (35.6%), prevention of miscarriages (32.8%) and prevention of mother to child transmission of infections (26.6%) were the commonest. Other identified benefits were prevention of maternal low blood level (22%), control of medical illness before pregnancy (22%), prevention of preterm birth and low birth weight (19.8%), prevention of still births and neonatal deaths (16.9%), prevention of maternal death (16.9%) and prevention of unintended pregnancies (11.3%).

There was a statistically significant association between age and level of education of the women



**Figure 1. A bar chart showing the attendees sources of information on PCC.**

with awareness of preconception care at  $P < 0.05$ . There was however no significant association between occupation, parity, number of abortions, preterm deliveries and still births with awareness of preconception care (Table 4).

**Table 3. Components of preconception care known to the attendees. (n=177)**

Components of PCC	Frequency / Percentage (%)
Folic Acid supplementation	92 (52)
Dietary modification and counselling	29 (16.4)
Other micronutrient supplementation	26 (14.7)
Weight reduction	25 (14.1)
Immunization	20 (11.3)
Genetic testing and counselling	32 (18.1)
Counselling / cessation of smoking, alcohol and drugs	24 (13.6)
STI treatment	32 (18.1)
HIV screening and treatment	41 (23.2)
Treatment of medical illnesses	29 (16.4)

Less than half (44.1%) of the women knew about the practice of preconception care in Nigeria and only 41.8% had ever benefitted from any component of preconception care. There was a significant association between awareness of preconception care with knowledge of its practice in Nigeria and uptake of preconception care among the women at  $P < 0.05$ . (Table 5)

The most utilized components of preconception

care by the women were folic acid supplementation (33.3%), dietary counselling and modification (13%), immunization (10.7%) and genetic counselling and testing (10.2%) (Figure 2). More than half of the women (59.5%) who had benefitted from preconception care accessed their care in the hospital while others accessed the services from the media (18.9%) premarital counselling (8.1%), pharmacy (6.8%) and school (6.8%).

Doctors and nurses were the main providers of this care for women who had benefitted from it in 67.6% and 40.5% respectively while other providers of the care were nutritionists (13.5%), pharmacists (9.5%), friends (8.1%), community extension workers (6.8%), counsellors (5.4%) and family (0.6%).

Almost all the women (97.1%) who had never accessed this care were willing to accept it if offered to them and the factors affecting the uptake of preconception care mostly identified by the women were lack of awareness (70.1%), lack of knowledge on the benefits of preconception care

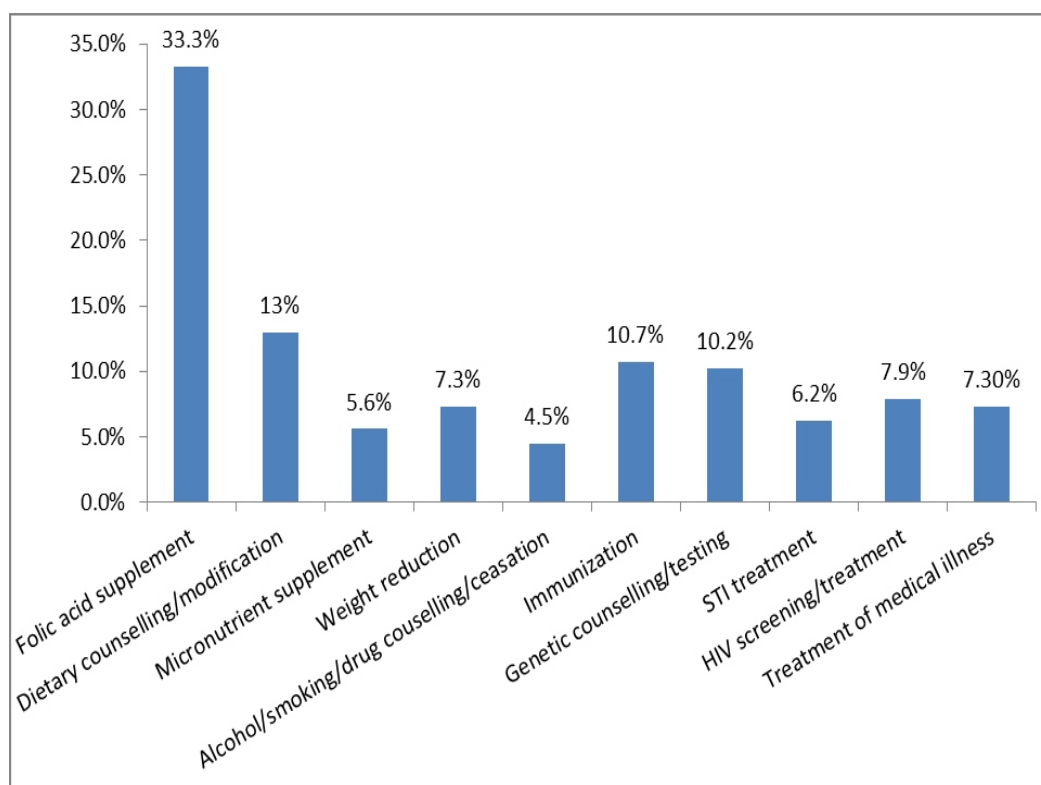
**Table 4. demographic characteristics and reproductive profile associated with awareness of preconception care among the attendees. (n=177)**

Variable	Aware of PCC	Not aware of PCC	$\chi^2$ , df, P
<b>Age (years)</b>			
15 – 24	18	22	39.9, 23, 0.016
25 – 34	72	35	
35 – 44	16	14	
≥ 45	0	0	
<b>Tribe</b>			
Hausa	48	41	21.2, 20, 0.383
Igbo	14	7	
Yoruba	18	7	
Others	28	16	
<b>Level of education</b>			
Islamic	2	2	23.1, 3, 0.000
Primary	1	14	
Secondary	31	25	
Tertiary	72	30	
<b>Occupation</b>			
Unemployed	21	20	15.3, 11, 0.168
Student	23	16	
Civil servant	34	12	
Businesswoman	20	15	
Teacher	3	4	
Others	5	4	
<b>Parity</b>			
0	35	23	14.4, 8, 0.073
1	21	11	
2 - 4	45	25	
≥ 5	5	12	
<b>Preterm births</b>			
0	98	67	2.6, 3, 0.457
1	7	3	
2	1	0	
≥ 3	0	1	
<b>Still births</b>			
0	98	65	1.5, 2, 0.470
1	8	5	
≥ 2	0	1	
<b>Abortions</b>			
0	82	57	5.5, 5, 0.357
1	16	7	
2	3	3	
≥ 3	5	4	

**Table 5. Association between awareness of PCC with awareness of its practice in Nigeria and uptake of PCC among the attendees. (n=177)**

Variable	Aware of PCC	Not aware of PCC	$\chi^2$ , df, P
<b>Awareness of PCC in Nigeria</b>			
Yes	78	0	93.4, 1, 0.000
No	28	71	
<b>Uptake of PCC</b>			
Yes	74	0	85.1, 1, 0.000
No	32	71	





**Figure 2. A bar chart showing components of PCC which the attendees had benefitted from**

(48%), poor health seeking behaviour (32.8%) and lack of access to preconception care services (25.4%) (Table 6). Preterm delivery was the only reproductive characteristic with a significant association with willingness to accept preconception care ( $P = 0.001$ ), while there was no association between demographic characteristics and willingness to accept preconception care.

**Table 6. The attendees perception on barriers to preconception care, Dec, 2020 – Feb, 2021.**

Barriers	Frequency / Percentage (%)
Lack of awareness of PCC	124 (70.1)
Poor health seeking behaviour	58 (32.8)
Lack of access to PCC services	45 (25.4)
Lack of knowledge on benefits of PCC	85 (48)
Cost implication of PCC	29 (16.4)
Lack of education of the importance of PCC by health workers	35 (19.8)
Unplanned Pregnancies	32 (18.1)

## DISCUSSION

The study revealed that 59.9% of the women were aware of preconception care which is higher than

values in other Northern Nigeria studies with awareness ranging between 4 20.4%<sup>[22,23]</sup> respectively but lower than values in Southern Nigeria ranging between 63.5 76%.<sup>[2,4]</sup> This may be due to the fact that the study was a hospital based study and conducted several years after that of Giwa and the fact that Zaria is a more heterogeneous region than Sokoto. There was a significant association between age and level of education with awareness of preconception care where more than half (57.6%) of the women had attained tertiary education and 60.5% of the women were aged between 25 34 years. There were however no significant association between demographic factors and awareness of preconception care in Lagos while tribe and occupation of the respondents were the demographic factors with significant association with awareness of preconception care in Sokoto.<sup>[5,22]</sup> Despite the fact that more than half of the women

had heard of preconception care, only 66% of them could define it correctly and only 44.1% of the women knew about its practice in Nigeria. There was also a significant association between the awareness of preconception care and awareness of its practice in Nigeria. This shows that despite the slightly higher value of awareness of preconception care, the knowledge of the service and awareness of its practice in Nigeria is still lacking. This also suggests that with improvement in awareness of preconception care, the awareness of its practice in Nigeria will also be improved. This finding is in keeping with Lagos where awareness of the service was high (86.8%) however the knowledge of its practice was low (34.2%).<sup>[5]</sup> Health workers and media were the major sources of information, however only slightly above half (53.8%) of the women had heard about the services from a health worker. This is in keeping with findings in Australia where only 53% of women had heard of preconception folic acid supplementation from health practitioners.<sup>[13]</sup> It is lower in Lagos, where only 34.6% had heard about preconception care from a health worker.<sup>[5]</sup> Similarly in Zaria, only 47.7% of health workers had offered any form of preconception care.<sup>[21]</sup> The fact that preconception care services is mainly achieved in the hospital setting makes it imperative that health workers make a conscious effort to educate and offer the women they encounter within different service points this important package of care as opportunist delivery has been found to be an important mode of service delivery.<sup>[13,21]</sup>

Only 41.8% of the women had ever benefitted from any form of preconception care which is higher than values in Northern Nigeria and lower than values in Southern Nigeria.<sup>[2,5,22,23]</sup> This may be attributed to the fact that the levels of awareness and its practice were lower and higher in these regions respectively, probably because literacy levels and economic empowerment may be higher amongst women in the Southern region than those in the Northern region. There was a significant association between awareness of preconception

care and uptake of preconception care, with the same finding in Lagos which suggests that with increased awareness of preconception care, the level of uptake of this essential package of care will also be increased.<sup>[5]</sup>

Most of these women (59.5%) accessed their care in the hospital and were offered by Doctors (67.6%) and Nurses (40.5%). This is similar to findings in Lagos where the commonest service point for PCC was the hospital, and Doctors were the common service providers.<sup>[5]</sup> This is not surprising as preconception care is mainly achieved in the hospital with some components achieved via media campaigns, educational system, agricultural sector and community support groups. Likewise, some of the women accessed their care via media, pharmacies, school and premarital counselling by counsellors, nutritionists, pharmacists, community extension health workers, family and friends.

Folic acid supplementation, dietary modification, immunization and genetic counselling and modification were the most utilized components which is similar to findings in Osun and Lagos where the most utilized components were folic acid supplementation and dietary counselling and maintenance of healthy food choices.<sup>[2,5]</sup> This is expected because folic acid supplementation was the commonest component of preconception care known to the respondents (52%) with other common components known to them being HIV screening and treatment (23.2%), genetic counselling and testing (18.1%), treatment of STIs (18.1%), dietary counselling and modification (16.4%) and treatment of medical illness (16.4%). The benefits of preconception care identified were majorly prevention of: birth defects (35.6%), miscarriages (32.8%), mother to child transmission of infections (26.6%), Prevention of maternal anaemia (22%) and preterm births and low birth weights (19.8%), all of which are documented benefits of preconception care. Majority (97.1%) of the women who had never benefitted from preconception care were willing to access the service before their next conception



after they were educated and counselled on the importance of the care.

Seeing as there are documented challenges to the practice of preconception care especially in developing countries and Nigeria, the identified factors that affect utilization of this package of care were mainly lack of awareness (70.1%), lack of knowledge on its benefits (48%), poor health seeking behaviour (32.8%) and poor accessibility to the service (25.4%). These are similar to identified factors in Osun and Lagos where common barriers were lack of awareness, lack of knowledge on its importance, lack of access, poor health seeking behaviour, cost implication, poverty and ignorance.<sup>[2,5]</sup>

## CONCLUSION

The findings from this study shows that though there seem to be some improvement on the awareness and practice of preconception care in our Northern Nigerian setting, the uptake of this important package of care is still low with the most important reason for it being lack of awareness of the care and its' benefits. It is pertinent that conscious effort is made by health workers, hospitals and community at large to educate women at any opportunity and help link them with service points to access the care.

There is a need to improve educating all women of reproductive age group on preconception care, its benefits and places to access this care. Seeing as there is yet to be an established preconception care clinic in this facility, it is recommended that all health workers should be trained on preconception care components and intervention and an opportunistic approach to offer this care at all service delivery points should be encouraged. There is also a need to establish a dedicated preconception clinic so that General practitioners and other health workers can refer women that may need specialist care before or after their initial assessment and screening at different service points.

It is also recommended that a link up should be

established between the hospital and community extension workers, community leaders, schools and the media to aid in increasing the awareness and benefits of preconception care and to also help in implementing some of the interventions like counselling on life style habits and genetic diseases that can be achieved outside of the hospital setting.

## Conflict of Interest

There is no conflict of interest.

## Limitations

Verification of the information provided by the respondents was not possible.

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