Vol. 20(2), pp. 18-26, February 2021
DOI: 10.5897/AJMHS2019.0040
Article Number: 9319BB965993
ISSN: 2384-5589

http://www.academicjournals.org/AJMHS

African Journal of Medical and Health Sciences

Full Length Research Paper

Preconception care: What women know, think and do

Ayodeji A. Adeyemo[1] and Oluwasomidoyin O. Bello[2*]

[1]Department of Obstetrics and Gynaecology, University College Hospital, Ibadan, Nigeria.
[2]Department of Obstetrics and Gynaecology, College of Medicine, University of Ibadan/University College Hospital, Nigeria.

Received 8 May 2019 Accepted 16 November, 2020

Preconception care are interventions that help in identifying maternal and fetal risk factors that could be prevented and managed in order to reduce materno-fetal morbidities and mortality. The study determined the predictors of knowledge, attitude, and practice of preconception care among women at the University College Hospital, Ibadan, Nigeria. A cross-sectional study conducted among 414 antenatal attendees using a structured self-administered questionnaire. Data was analyzed using SPSS 20.0 with level of significant set at p<0.05. Above half of the respondents (59.9%) have a good knowledge and positive attitude 223(53.9%) towards preconception care while only 78(18.8%) practiced it. Predictors of good knowledge of preconception care were educational status (OR= 2.350, 95% CI= 1.18-4.70), occupation (OR=5.31, 95% CI=0.42-19.91) and (OR=2.63, 95% CI=0.36-5.10), age at first pregnancy (OR=0.15, 95% CI= 0.04-0.55) and history of contraception use (OR=2.15, 95% CI= 1.32-3.51). Marital status (OR=2.93, 95% CI= 1.04-8.29), occupation (OR=4.01, 95% CI= 1.09-14.79) and history of contraception use (OR=3.00, 95% CI= 1.90-4.72) determined their positive attitude. Factors predicting practice of preconception care were age (OR=0.52, 95% CI= 0.29-0.92), occupation (OR=6.22, 95% CI= 1.70-22.73) and age at first delivery (OR=0.12, 95% CI= 0.02-0.60). Occupation, level of education, age at first delivery, and history of contraception use predicted knowledge, attitude and practice of preconception care. Counseling and educating women on the importance of practicing preconception care will increase their uptake of the service and subsequently lead to reduction in the high maternal and infant morbidity and mortality in our environment.

Key words: Preconception care, knowledge, attitude, uptake.

INTRODUCTION

Preconception health is a critical component of maternal and child health before conception occurs that aimed at improving their health status, and reducing behaviours, individual and environmental factors that could contribute to poor maternal and child health outcomes (Chung et al., 2010; WHO, 2012). The concept of preconception care is packaged to entail nutritional conditions, mental health, genetic conditions, environmental health, vaccination, treatment or modification of medical disorders, infection prevention and treatment, smoking cessation, avoidance of alcohol and substance abuse (Mullins et al., 2016; Tokunbo et al., 2016; Ekem et al., 2018). The knowledge of preconception care can be acquired through experience or education and exposure to messages via

*Corresponding author. E-mail: bellodoyin@yahoo.com. Tel: +2348033711116.

counselling or education by health personnel and media (Olowokere et al., 2015; Yassin et al., 2015; Kasim et al., 2016). However, there is poor attitude of women to preconception care and there is reluctance of reproductive health workers to participate in preconception care with its utilization almost not in existence in developing countries like Nigeria (Olowokere et al., 2015; Tokunbo et al., 2016). According to the 2013 Demographic and Health Survey (DHS) in Nigeria, 9% of women with live births were reported to have unplanned pregnancy in the preceding three years (NDHS, 2013). Also, studies in antenatal clinics in the South-east and South- south Nigeria, reported only 43.7 and 35.5% of women attending antenatal clinic have heard of preconception care respectively (Ezegwui et al., 2008; Oranu et al., 2015). Yet, women with chronic medical illness are at the risk of unintended pregnancy because of the high unmet need of family planning in Nigeria and this may result in poor obstetric outcome among them. Nonetheless, preconception care is particularly indispensable in women with medical disorders, nutritional deficiencies, and exposure to toxins or teratogens, and it has been shown to reduce maternal and perinatal morbidity and mortality. Preconception care is still evolving and not widely practiced in the health care system in Nigeria due to unintended and recurrent pregnancies, high parity, suboptimal health care seeking behaviour and low level of maternal health care (Tokunbo et al., 2016; Fawole et al., 2011). Therefore, it is against this knowledge that this present study is aimed at determining the predictors of women's knowledge, attitude and practice of preconception care.

MATERIALS AND METHODS

This was a four-month descriptive cross-sectional study conducted among antenatal clinic attendees from 1st February to 31st May 2016 at the University College Hospital, Ibadan, Oyo state, Nigeria. A sample size of 414 was determined using Kish formula, with 95% confidence interval and 5% level of precision. The sample size was calculated using $n= [Z\alpha^2(pq)]/ d^2$ p=43.1% =0.431 (43.1% respondents who had heard of preconception care) (Ezegwui et al., 2008), while q=1-p, Zα=1.96 and d=0.05. Considering the 10% non-response rate, a sample size of 414 was obtained.

During each antenatal clinic, consecutive consenting pregnant women were recruited for the study after a written informed consent was obtained, till the desired sample size was attained. A semi-structured questionnaire was used to obtain information on their socio-demographic, obstetrics and gynecological characteristics, as well as their knowledge, attitude and practice of preconception care. A nine-question item was used to assess knowledge and six-question item was used to assess the attitude towards preconception care.

The variables used in assessing respondent's knowledge were: preconception care is care given to women before pregnancy to make them healthier; preconception care is given to all women in reproductive age group; preconception care is not the same as antenatal care; preconception care enables healthier babies to be born; preconception care only applies to women with chronic ailments, bad lifestyle, and unhealthy behaviours; preparation for pregnancy through preconception care is best before getting pregnant; preconception care ensures diseases are under control before pregnancy; preconception care improves pregnancy outcome; and reproductive plan is a set of goals about whether or not to have children and how to achieve those goals. Knowledge questions were analyzed by allotting 1 mark for correct response and zero for an incorrect response with a maximum score of 9 marks obtainable. The total score was changed into a percentage and the percentage mean score was calculated. All respondents who scored less than the mean score was regarded as having poor knowledge while those that scored above the mean score was regarded as having good knowledge of preconception care. The variables used in assessing respondents' attitude were: i do not need preconception care because i do not have chronic ailments; preconception care is not necessary since i will receive antenatal care during pregnancy; preconception care is important and should be encouraged; preconception care may cause delay that may reduce fertility; having preconception care may hinder my freedom to get pregnant when i want to; and i will have preconception care before my next pregnancy. The attitude questions were also analyzed in like manner as the knowledge with a maximum score of 6 marks obtainable. The women's uptake of preconception care was assessed using the variable "did you have preconception care before the index pregnancy?"

Data were analyzed using Statistical Package for Social Sciences (SPSS) software version 20.0 and presented in tables reporting frequency counts and percentage. The chi-square test was used to determine association between respondents' variables with their knowledge, attitude and practice of preconception care while logistic regression was used to determine factors associated with good/poor knowledge and attitude of the respondents towards preconception care to eliminate confounding factors. Level of significance was set at $p< 0.05$ and 95% confidence interval.

Ethical approval was obtained from the University of Ibadan/ University College Hospital Ethical Review Committee with ethical number UI/EC/15/0429.

RESULTS

Four hundred and fourteen antenatal attendees were recruited during the period with majority 252 (60.9%) within 20 to 34 age category. Majority 395 (95.4%) are married with over three quarter 334 (80.7%) having tertiary educational status and are predominantly 326 (78.7%) skilled workers. Significantly, good knowledge of preconception care was found in older women, 96 (68.1%); more educated women, 220 (65.9%); those with semi-skilled occupation, 11 (73.3%); elderly primigravida, 18 (78.3%); (women with age at first pregnancy greater or equals to 35 years), those with history of contraceptive use with $p<0.001$ respectively and multigravida (women with 1-4 previous pregnancies) with p=0.036 (Table 1).

The factors determining respondents' knowledge on preconception care were level of education, occupation, age at first pregnancy and history of contraception use. Women with tertiary educational level were about two times more likely to have good knowledge about preconception care than those having secondary or lower level of education (OR= 2.350, 95% CI= 1.18-4.70) while those involved in semi-skilled occupation were five times more likely to have good knowledge about preconception care than those involved in unskilled occupation (OR=5.31, 95% CI=0.42-19.91). Also, those involved in

Table 1. Bivariate analysis of respondents' sociodemographics and obstetric characteristics with knowledge on preconception care.

Variable	Knowledge of preconception care		Total (%)	Chi square	P value
	Good (%)	Poor (%)			
Age (Years)					
15-19	5 (23.8)	16 (76.2)	21 (100.0)	15.578	<0.001
20-34	147 (58.3)	105 (41.7)	252 (100.0)		
≥35	96 (68.1)	45 (31.9)	141 (100.0)		
Marital status					
Married	237 (60.0)	158 (40.0)	395(100.0)	0.033	0.855
Single/Divorced	11 (57.9)	8 (42.1)	19 (100.0)		
Level of education					
Secondary or lower	28 (35.0)	52 (65.0)	80 (100.0)	25.604	<0.001
Tertiary	220 (65.9)	114 (34.1)	334 (100.0)		
Occupation					
Skilled	215 (66.0)	111 (34.0)	326 (100.0)	33.019	<0.001*
Semi-skilled	11 (73.3)	4 (26.7)	15 (100.0)		
Unskilled	22 (30.1)	51 (69.9)	73 (100.0)		
Age at first pregnancy					
<20	16 (29.6)	38 (70.4)	54 (100.0)	25.648	<0.001
20-34	214 (63.5)	123 (36.5)	337 (100.0)		
≥35	18 (78.3)	5 (21.7)	23 (100.0)		
Number of previous pregnancies					
None	56 (50.0)	56 (50.0)	112 (100.0)	6.658	0.036*
4-Jan	180 (64.1)	101 (35.9)	281 (100.0)		
≥5	12 (57.1)	9 (42.9)	21 (100.0)		
Parity					
None	79 (50.3)	78 (49.7)	157 (100.0)	0.956	0.421*
4-Jan	169 (66.8)	84 (33.2)	253 (100.0)		
≥5	0 (0.0)	4 (100.0)	4 (100.0)		
History of contraception					
Yes	179 (65.6)	94 (34.4)	273 (100.0)	10.708	0.001
No	69 (48.9)	72 (51.1)	141 (100.0)		

*=Fisher's exact test.

skilled occupation were about three times more likely to have good knowledge of preconception care compared to those involved in unskilled occupation (OR=2.63, 95% CI=0.36-5.10). Respondents who were less than 20 years of age at first delivery were about seven times less likely to have good knowledge of preconception care than those ≥35 years of age at first delivery (OR=0.15, 95% CI= 0.04-0.55) whereas those with history of contraception use were two times more likely to have good knowledge of preconception care than those who had never used contraceptives (OR=2.06, 95% CI= 1.29-3.27) (Table 2).

Marital status, occupation and history of contraception use were the factors determining respondents' attitude towards preconception care. Significantly positive attitude towards preconception care was found in older women (p=0.001), married women (p =0.046), those with semi-skilled occupation (P =0.012), grand multigravidity (women with 5 or more previous pregnancies), (p<0.001) and in those with history of contraceptive use (p<0.001),

Table 2. Multivariate analysis of respondents' knowledge on preconception care.

Variable	Odd ratio (OR)	P value	95% CI
Age (Years)			
15-19	0.874	0.802	0.23-3.09
20-34	0.762	0.318	0.44-1.29
≥35 (ref)	1	-	-
Level of education			
Tertiary	2.35	**0.016**	1.18-4.70 g
Secondary or lower(ref)	1	-	-
Occupation			
Skilled	2.63	**0.004**	0.36-5.10
Semi-skilled	5.312	**0.013**	0.42-19.91
Unskilled (ref)	1	-	-
Age at first pregnancy			
<20	0.15	**0.005**	0.04-0.55
20-34	0.44	0.169	0.14-1.42
≥35(ref)	1	-	-
Number of previous pregnancies			
None	1.13	0.843	0.34-3.72
4-Jan	1.91	0.264	0.61-5.99
≥5(ref)	-	-	-
History of contraception			
Yes	2.15	**0.002**	1.32-3.51
No(ref)	1	-	-

(Table 3). The married respondents were about three times more likely to have positive attitude towards preconception care than those who are single or divorced (OR=2.93, 95% CI= 1.04-8.29), while those involved in semi-skilled occupation were four times more likely compared with those with unskilled occupation to have positive attitude (OR=4.01, 95% CI= 1.09-14.79). Additionally, those with history of contraception use were three times more likely to have positive attitude towards preconception care than those who had never used contraceptives (OR=3.00, 95% CI= 1.90-4.72) (Table 4).

Occupation and age at first pregnancy were factors predicting the respondents' practice of preconception care. Majority 100(89.3%) of the primigravida and more 65(89.0%) of those involved in semi-skilled occupation did not practice preconception care compared with those involved in skilled and unskilled occupation (p=0.001). The uptake of preconception care was found to be statistically significant in older women (p<0.001) and women with age at first pregnancy greater than 20 years (p<0.001) (Table 5).

Respondents within 20-34 years of age were about two times less likely to practice preconception care than those ≥35 years (OR=0.52, 95% CI= 0.29-0.92). Respondents involved in semi-skilled occupation were six times more likely to practice preconception care than those involved in unskilled occupation (OR=6.22, 95% CI= 1.70-22.73). Respondents who were less than 20 years of age at first delivery were eight times less likely to practice preconception care than those ≥35 years of age at first delivery (OR=0.12, 95% CI= 0.02-0.60) (Table 6).

DISCUSSION

Overall, this study revealed good knowledge and positive attitude towards preconception care but low uptake of the service.

In this study, the proportion of the women with good knowledge of preconception care was lower compared with 83.3% in the Northern Nigeria, where the study was conducted majorly among health workers who are expected to have a vast knowledge of the service. On the contrary, fewer (31.7%) pregnant women were aware of preconception care in South Eastern Nigeria (Tokunbo et al., 2016; Ezegwui et al., 2008). These observed

Table 3. Bivariate analysis of respondents' sociodemographics and obstetric characteristics with attitude towards preconception care.

Variable	Attitude towards preconception care		Total	Chi square	P value
	+ve (%)	-ve (%)			
Age (Years)					
15-19	7 (33.3)	14 (66.7)	21 (100.0)	13.115	0.001
20-34	124 (49.2)	128 (50.8)	252 (100.0)		
≥35	92 (65.2)	49 (34.8)	141 (100.0)		
Marital status					
Married	217 (54.9)	178 (45.1)	395(100.0)	3.98	0.046
Single/Divorced	6 (31.6)	13 (68.4)	19 (100.0)		
Level of education					
Secondary or lower	37 (46.3)	43 (53.8)	80 (100.0)	2.314	0.128
Tertiary	186 (55.7)	148 (44.3)	334 (100.0)		
Occupation					
Skilled	183 (56.1)	143 (43.9)	326 (100.0)	8.836	0.012
Semi-skilled	11 (73.3)	4 (26.7)	15 (100.0)		
Unskilled	29 (39.7)	44 (60.3)	73 (100.0)		
Age at first pregnancy					
<20	32 (59.3)	22 (40.7)	54 (100.0)	5.028	0.081
20-34	174 (51.6)	163 (48.4)	337 (100.0)		
≥35	17 (73.9)	6 (26.1)	23 (100.0)		
Number of previous pregnancies					
None	49 (43.8)	63 (56.3)	112 (100.0)	15.268	<0.001
4-Jan	159 (56.6)	122 (43.4)	281 (100.0)		
≥5	15 (71.4)	6 (28.6)	21 (100.0)		
Parity					
None	67 (42.7)	90 (57.3)	157 (100.0)	2.019	0.192
4-Jan	152 (60.1)	101 (39.9)	253 (100.0)		
≥5	4 (100.0)	0 (0.0)	4 (100.0)		
History of contraception					
Yes	172 (63.0)	101 (37.0)	273 (100.0)	26.94	<0.001
No	51 (36.2)	90 (63.8)	141 (100.0)		

differences could be due to the difference in the study population and the larger sample size. The older women greater than 35 years of age have a good knowledge of preconception care. This is consistent with findings from other studies conducted in Nigeria, Ethiopia and Iran (Ayalew et al., 2017; Ghaffari et al., 2014; Anzaku, 2013). This might be because pregnancy at advanced age is associated with a higher risk and might be extrapolated that women's knowledge on preconception care increase with their age.

The women's level of education played an important role as regards their knowledge of preconception care with the women with tertiary level of education twice more likely to have good knowledge. This finding corroborates the findings of Olowokere et al. (2015), Ayalew et al. (2017) and Ezegwui et al. (2008) studies also documented the association between women's education and awareness, knowledge, and uptake/practice of preconception care (Olowokere et al., 2015; Ezegwui et al., 2008; Ayalew et al., 2017). This is expected because of the increased exposure that formal education bestows on individuals and educated women are more likely to

Table 4. Multivariate analysis of attitude of respondents on preconception care.

Variable	Odd ratio (OR)	P value	95% CI
Age (Years)			
15-19	0.42	0.11	0.14-1.20
20-34	0.76	0.26	0.47-1.23
≥35 **(ref)**	1	-	-
Marital status			
Married	2.93	**0.043**	1.04-8.29
Single/Divorced**(ref)**	1	-	-
Occupation			
Skilled	1.62	0.091	0.93-2.81
Semi-skilled	4.01	**0.037**	1.09-14.79
Unskilled **(ref)**	1	-	-
Number of previous pregnancies			
None	0.44	0.144	0.14-1.33
4-Jan	0.54	0.255	0.19-1.56
≥5**(ref)**	1	-	-
History of contraception			
Yes	3	**<0.001**	1.90-4.72
No**(ref)**	1	-	-

identify the benefits of preconception care, in addition to deciding to attend preconception clinic to seek care. As per age at first pregnancy, the younger the women were during their first pregnancy, the less likely they were to have a good knowledge of preconception care. This might not be unrelated to the fact that women in older age categories are more likely to have a high-risk pregnancy and delivery, so they tend to seek information about preconception health and social behavioural risk factors as observed in a similar study in Ethiopia using a different study population (Ayalew et al., 2017).

Meanwhile, the findings that previous contraceptive use determines good knowledge of preconception care also supports the result of an Ethiopian community-based study in that women who had no history of family planning use were less knowledgeable than those who had a history of family planning use (Ayalew et al., 2017). This might be because of basic counselling on pregnancy that include preconception care are generally given along with contraceptive counselling in the family planning centres thus these groups of women have information as regards preconception care and services.

The finding that women engaged in skilled and semi-skilled occupation were more likely to have a good knowledge of preconception care is not surprising. This is expected since majority of the women have tertiary level of education, and education is known to equip individuals with better access to information and improved critical thinking skills with resultant greater income and resources. This agrees with the report of an Iranian study in which women's occupation was associated with their knowledge of preconception care (Jafari and Rashidi, 2017).

Furthermore, marital status was identified as being associated with the positive attitude displayed towards preconception care with married women thrice more likely to have a positive attitude. This shows that the husband's acceptance of maternal healthcare services goes a long way to affect women attitude towards the service which substantiate that being married is one of the factors affecting the utilization of maternal health care services has reported in previous studies (Onasoga et al., 2014; Jing and Rukhsana, 2017).

Also, this study found that previous contraception users have positive attitude towards preconception care. Similarly, a Malaysian study confirms this (Kasim et al., 2016). This result reflects that the women who had used contraception would have planned their pregnancy and is knowledgeable of the need to be in good health and access preconception services before getting pregnant. Additionally, these women could have been educated and advised on preconception care and services during their family planning clinic visits. According to the findings of this study, less than one- fifth (18.8%) of the women utilized preconception service.

The observed proportion was higher than 2.7% and 10.3% reported previously among mothers in reproductive age group and antenatal attendees respectively (Ekem et

Table 5. Bivariate analysis of respondents' sociodemographics and obstetric characteristics with practice of preconception care.

Variable	Practiced preconception care		Total	Chi square	P value
	Yes (%)	No (%)			
Age (years)					
15-19	0 (0.0)	21 (100.0)	21 (100.0)	21.444	<0.001*
20-34	35 (13.9)	217 (86.1)	252 (100.0)		
≥35	43 (30.5)	98 (69.5)	141 (100.0)		
Marital status					
Married	78 (19.7)	317 (80.3)	395 (100.0)	0.673	0.414*
Single/Divorced	0 (0.0)	19 (100.0)	19 (100.0)		
Level of education					
Secondary or lower	13 (16.3)	67 (83.8)	80 (100.0)	0.435	0.509
Tertiary	65 (19.5)	269 (80.5)	334 (100.0)		
Occupation					
Skilled	62 (19.0)	264 (81.0)	326 (100.0)	14.644	0.001
Semi-skilled	8 (53.3)	7 (46.7)	15 (100.0)		
Unskilled	8 (11.0)	65 (89.0)	73 (100.0)		
Age at first pregnancy					
<20	2 (3.7)	52 (96.3)	54 (100.0)	14.523	0.001*
20-34	67 (19.9)	270 (80.1)	337 (100.0)		
≥35	9 (39.1)	14 (60.9)	23 (100.0)		
Number of previous pregnancies					
None	12 (10.7)	100 (89.3)	112 (100.0)		
4-Jan	60 (21.4)	221 (78.6)	281 (100.0)	7.297	0.026
≥5	6 (28.6)	15 (71.4)	21 (100.0)		
Parity					
None	27 (17.2)	130 (82.8)	157 (100.0)	1.493	0.474*
4-Jan	51 (20.2)	202 (79.8)	253 (100.0)		
≥5	0 (0.0)	4 (100.0)	4 (100.0)		
History of contraception					
Yes	50 (18.3)	223 (81.7)	273 (100.0)	0.145	0.704
No	28 (19.9)	113 (80.1)	141 (100.0)		

al., 2018; Idris et al., 2013) but is lower than (30.4%) reported by Olowokere at al. The probable reason is that many women do not know the importance of preconception care and are not properly informed through necessary sources as concluded by the studies of Tokunbo et al. (2016) and Roozbeh et al. (2016) Therefore, it is vital to educate and counsel women on the importance and benefits of preconception care so as to improve their uptake because non-utilisation of maternal health services including preconception care increases the chances of having adverse pregnancy outcome.

In addition, respondents younger in age, especially those belonging to the 20-34 years of age range were less likely to practice preconception care compared to those in the older age range. This finding is not in keeping with some studies (Ekem et al., 2018; Ezegwui et al., 2008). The reason for the observed result is attributed the fact that older women are usually found to be more likely to seek and utilise maternal health care services (Adamu, 2011; Ononokpono and Odimegwu, 2014).

Table 6. Multivariate analysis of respondent's practice of preconception care.

Variable	Odd ratio (OR)	P value	95% CI
Age (Years)			
15-19	0	0.998	0
20-34	0.52	0.024	0.29-0.92
≥35 (ref)	1	-	-
Occupation			
Skilled	1.48	0.343	0.66-3.34
Semi-skilled	6.22	0.006	1.70-22.73
Unskilled (ref)	1	-	-
Age at first pregnancy			
<20	0.12	0.011	0.02-0.60
20-34	0.44	0.105	0.17-1.18
≥35(ref)	1	-	-
Number of previous pregnancies			
None	1.95	0.336	0.50-7.56
4-Jan	0.76	0.681	0.21-2.77
≥5(ref)	1	-	

It should be noted that occupation being a predictor of preconception care uptake is an expected finding because high proportion of the women who participated in this study are quite learned thus resulting in respondents involved in skilled occupation utilizing the service more than those involved in unskilled labour. This could also be attributed to the women's high level of education since it is expected that a high income ought to ease the access to information via communication thereby creating awareness for service utilization. The uptake of maternal health services which preconception care is inclusive has been reported to be associated with the occupation, especially among employed women (Balogun et al., 2017). This is similar to the findings of the study.

Conclusion

The women studied have good knowledge and positive attitude towards preconception care but only a few practiced it, which implies that preconception care uptake and implementation of comprehensive maternal health care are still big challenges in our setting. History of contraception use, and occupation were consistently identified as predictors of good knowledge and positive attitude towards preconception care which indicates the need for concerted effort towards programs built on a well-structured policy on preconception care as well as advocating for long term investment on women empowerment and family planning use.

Limitation

This study is not without its limitations. First, the study was not a population survey, so could not assess the knowledge, attitude and uptake of preconception care among the general population of women of reproductive age group. Also, the individual, social or medical factors that could affect their knowledge, attitude and uptake of preconception care as well as the barriers and hindrance to its utilization were not explored.

However, the strength of this study is its identification of the predictors of preconception care as regards knowledge, attitude and uptake and this information is useful for improving maternal health care services especially preconception care with resultant reduction in the high maternal and infant morbidity and mortality in our environment.

Recommendation

Further researches are recommended to be carried out using another study setting and population to eliminate bias since it is quite possible that the women with good knowledge and positive attitude observed might have been enlightened about preconception care during previous antenatal clinic visit. Also, further studies should

be done to assess likely barriers and hindrances to utilization of preconception care.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Adamu SH (2011). Utilization of Maternal Health Care Services in Nigeria: An Analysis of Regional Differences in the Patterns and Determinants of Maternal Health Care Use. Published thesis. The University of Liverpool pp. 3-5.

Anzaku AS (2013). Assessing folic acid awareness and its usage for the prevention of neural tube defects among pregnant women in Jos, Nigeria. Journal of Basic and Clinical Reproductive Sciences 2:13-17.

Ayalew Y, Mulat A, Dile M, Simegn A (2017). Women's knowledge and associated factors in preconception care in Adet, West Gojjam, Northwest Ethiopia: a community based cross sectional study. BMC Reproductive Health 14:15.

Balogun TM, Usman SA, Odeyemi JO, Ayeni AA (2017). Factors associated with the utilization of maternal health services amongst adult women of childbearing age in South-Western Nigeria. LRJ of Medicine and Medical Sciences 4(1):001-015. http://www.landmarkresj.org/lrjmms/home

Chung CH, Vellot DL, Weisman CS (2010). Exploring knowledge and attitudes related to pregnancy and preconception health in women with chronic medical conditions. Maternal and Child Health Journal 14(5):713-719.

Ekem NN, Lawani LO, Onoh RC, Iyoke CA, Ajah LO, Onwe EO, Onyebuchi AK, Okafor LC (2018) Utilisation of preconception care services and determinants of poor uptake among a cohort of women in Abakaliki Southeast Nigeria. Journal of Obstetrics and Gynaecology 38(6):739-744.

Ezegwui HU, Dim C, Ikeme AC (2008). Preconception care in South Eastern Nigeria. Journal of Obstetrics and Gynaecology 28(8):765-768.

Fawole AO, Shah A, Tongo O, Dara K, El-Ladan AM, Umezulike AC (2011). Determinants of perinatal mortality in Nigeria. International Journal of Gynaecology and Obstetrics 114:37-42.

Ghaffari F, Shourab NJ, Jafarnejad F, Esmaily H (2014). Application of Donabedian Quality-of-Care Framework to Assess the Outcomes of Preconception Care in Urban Health Centers, Mashhad, Iran in 2012. Journal of Midwifery Reproductive and Health 2(1):50-59.

Idris SH, Sambo MN, Ibrahim MS (2013). Barriers to utilization of maternal health service in a semi urban community in Northern Nigeria. The clients' perspective. Journal of the Nigeria Medical Association 54(1):27-32.

Jafari F, Rashidi S (2017). Iranian women's knowledge and attitude regarding preconception health: 12 years after integration into the primary health care network. Journal of Nursing and Midwifery Science 4(3):104-109.

Jing T, Rukhsana A (2017). Examining preconception care-related knowledge and attitudes among Chinese immigrants in Canada. International Journal of Migration, Health and Social Care 13(1):69-92.

Kasim R, Draman N, Abdul KA, Muhamad R (2016). Knowledge, attitudes and practice of preconception care among women attending Maternal Health Clinic in Kelantan. Education in Medicine Journal 8(4):57-68.

Mullins E, Murphy O, Davies SC (2016). Pre-conception public health to address maternal obesity. An International Journal of Obstetrics and Gynaecology 123(2):159-160.

Nigeria Demographic and Health Survey (NDHS) (2013). The DHS program. Accessed 6th October 2018. https://dhsprogram.com/pubs/pdf/fr293/fr293.pdf .

Olowokere AE, Komolafe A, Owofadeju C (2015). Awareness, Knowledge and Uptake of Preconception Care among Women in Ife Central Local Government Area of Osun State, Nigeria. Journal of Community Medicine and Primary Health Care 27(2):83-92.

Onasoga AO, Osaji TA, Alade OA, Egbuniwe MC (2014). Awareness and barriers to utilization of maternal health care services among reproductive women in Amassoma community, Bayelsa State. International Journal of Nursing and Midwifery 6(1):10-15.

Ononokpono DN, Odimegwu CO (2014). Determinants of Maternal Health Care Utilization in Nigeria: a multilevel approach. The Pan African Medical Journal 17(Supp 1):2.

Oranu EO, Ojule JD, Nnah EW (2015). Preconception Care in a Southern Nigeria Tertiary Institution. Nigeria Journal of Medicine 24(1):58- 63.

Roozbeh N, Nahidi F, Hajian S (2016). Barriers to utilization of preconception care services – A qualitative study. Hormozgan Medical Journal 20(3):185-193.

Tokunbo OA, Abimbola OK, Polite IO, Gbemiga OA (2016). Awareness and perception of preconception care among health workers in Ahmadu Bello University Teaching University, Zaria. Tropical Journal of Obstetrics and Gynaecology 33:149-152.

World Health Organization (WHO) (2012). Maternal, new born, child and adolescent health; adolescent pregnancy. Accessed on 17th November 2018 https://www.who.int/maternal_child_adolescent/topics/maternal/adolescent_pregnancy/en/.

Yassin K, Elfil AMH, Hamid H, Saeed AK, Aziem A, Ali A (2015). Epidemiology of Cardiac Disease during Pregnancy in Khartoum Hospital, Sudan. Journal of Women's Health Care 4:227.