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RESEARCH ARTICLE

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Awareness and acceptance of preconception care among female undergraduates in Nigeria

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ABSTRACT

Background: While so much resources and effort are directed towards solving the challenges of pregnant women so as to achieve safe health for mother and child, it seems that the maternal and child health index has recorded very little improvement despite all input. Not many have recognized that a vast majority of such challenges could have been prevented at preconception. Preconception care has remained unexplored in Nigeria.

Objective: To determine the awareness and acceptance rate of preconception care in Nigeria.

Methods: This is a cross sectional study among female undergraduates of Nnamdi Azikiwe University, Awka, Nigeria. A multi stage sampling technique was employed to select respondents from different faculties among whom a pre-tested self-administered questionnaire was distributed and the data analyzed using statistical package for social sciences version 20.0, for rates and 95%Confidence intervals (95%CIs).

Results: A total of 600 questionnaires were distributed with a response rate of 90.3% (542/600). The study showed a low awareness rate of 28.2% (95%CI=23.9-33.1%), but an acceptance rate of 53.1% (95%CI=47.2-56.4%), for preconception care. Electronic media was the most source of awareness while the benefit of improved maternal and child health was the main motivating factor behind acceptance of preconception care.

Conclusion: Preconception care still remains a relatively unknown aspect of maternal health services in Nigeria. Adequate awareness will bring significant improvement in its practice in Nigeria especially among female undergraduates.

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Electronic media, health, interventions, maternal mortality and pregnancy.

Introduction

Preconception care refers to any intervention provided to women and couples of childbearing age, regardless of pregnancy status or desire, before pregnancy to improve health outcomes for women, newborns and children [1,2]. It is a set of interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management [3]. Though a relatively less known but broad and invaluable aspect of reproductive health services, it helps to achieve healthy state of couple and improve delivery outcome. Therefore, it has potential to further reduce global maternal mortality and morbidity especially in low-income countries where the highest burden of pregnancy related deaths and disability occur [4-6].

Preconception care remains a novel ideology, and is not readily available in the healthcare system in Nigeria but has gained ground in some countries of which Netherlands is an example. However, the practice of preconception care is almost non-existent in developing countries [7], and not peculiar to Nigeria, even though it is not a new concept or intervention [8]. Over the years, maternal mortality has globally responded

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to interventions mounted against it though the response is relatively low in Nigeria. Nigeria accounts for about 10% of all maternal deaths globally, and has the second highest mortality in the world, after India [9]. It is not in doubt that the relative non-existence of preconception care services contributes its own quota in Nigeria's maternal mortality rate.

There is widespread agreement that a continuum of care approach is necessary to further reduce maternal, newborn and child deaths [10]. A gap remains in this continuum, particularly for adolescent girls and young women, who often receive little or no healthcare from age five until their first pregnancy [11]. Additionally, antenatal care is too late to reduce the harmful effects that a woman's (and her partner's) health risks or health problems may have on the fetus during the critical period of organogenesis [11]. Preconception care completes the continuum, ensuring ongoing health surveillance and early intervention, so that women begin pregnancy in the best health possible [4].

There is growing experience in implementing preconception care initiatives both in high-income countries, such as Italy, the Netherlands and the United States, and in low- and middle-income countries, such as Bangladesh, the Philippines and Sri Lanka [12]. Since 1996, progress in the United States to improve pregnancy outcomes, including low birth weight, premature birth, and infant mortality has slowed in part, because of inconsistent delivery and implementation of interventions before pregnancy to detect, treat, and help women modify behaviors, health conditions, and risk factors that contribute to adverse maternal and infant outcomes [11]. Recently in the United States, a study of nationally representative ambulatory care data indicates that provision of contraceptive and preconception care has increased over the last decade. However, despite this improvement, only 14% of visits of non-pregnant women of reproductive age received preconception care [13].

While preconception or intra-conception care is sought partially in Bangladesh [14], evidence from Lebanon highlights a need for promoting preconception health awareness. In a national survey of married Lebanese women aged 18 to 45 years, Nasr et al. found that 40% of the participants had not heard about pre-pregnancy folic acid and its prevention of neural tube defects [15]. Tamin et al. showed a low prevalence (14%) of preconception folic acid intake among 5,280 Lebanese pregnant women [16]. In Sudan, Khalid Ahmed et al reported that a significant proportion of respondents have lack of knowledge regarding preconception care. Despite this poor knowledge, majority of women believed in preconception care. Lack of education, counseling, and proper health care system are significant reasons for low compliance [17]. There is a fair degree of consensus among expert bodies and in professional guidelines about what preconception care should entail, particularly in the USA [18].

This form of care is still evolving and is virtually nonexistent in Nigeria where maternal and perinatal morbidity and mortality is very high due to unplanned and frequent pregnancies, high parity, suboptimal health care seeking behavior and low level of maternal health care [19,20]. Preconception health care is yet to be fully explored in Nigeria [21]. Lack of improvement in reproductive outcomes despite improved quality of and better access to prenatal care strongly suggests that prenatal care alone is insufficient [22,23].

While preconception care has a positive effect on a range of health outcomes [24], however, when combined with lifestyle interventions would ensure better acceptability of sexual and reproductive health issues within an expanded package [25]. However, there were challenges for engaging women in preconception care more routinely [26]. This study is aimed at determining the awareness and acceptance rate of preconception care in Nigeria.

Methods

Study location

This study is a descriptive cross-sectional study carried out on female undergraduates within the reproductive age group (15-49 years) in Nnamdi Azikiwe University Awka, Anambra State in South east Nigeria. The institution, named after Nnamdi Azikiwe, the first president of Nigeria is a federal university established in 1991 which is overseen and accredited by the National Universities Commission. The University has two campuses namely; Main campus located 35 kilometers South-West of Awka, and Nnewi campus (College of Health Sciences).

Currently the University which is well staffed has 14 faculties and offers a diverse range of courses of study, including Arts, Natural Sciences, Engineering, Management Sciences, Medical and Health Sciences, Social Sciences, Law, African Languages, European Languages, and Education. Nnamdi Azikiwe University is founded on the philosophy that knowledge should be propagated and disseminated to individuals without let or hindrance. The motto is discipline, self-reliance and excellence.

Sampling Technique

A multi-stage sampling technique was used to select the respondents of the study. The faculties in Nnamdi Azikiwe University were sampled using simple random sampling technique and 14 departments, one from each of the 14 faculties were selected in the first stage. In the second stage, all levels in each of the departments selected in the first stage were sampled using simple random sampling technique and a level was selected in each of the departments. Simple random sampling technique was also employed in the last stage to select the respondents from the selected groups in the second stage.

Data Collection and Analysis

A self-administered questionnaire adapted from Olowokere et al. [5] and modified for the study population was employed to generate data on awareness, source of information, acceptance of preconception care and its influencing factors among female undergraduates in Nnamdi Azikiwe University. Out of the 600-questionnaire distributed to female undergraduates, 542 (90.3%) were returned and was analyzed using statistical package for social sciences (SPSS) version 20 and variables were subjected to chi square test.

Ethical consideration

Informed consent was obtained from the respondents after explanation of the benefits of the study. Ethical Clearance was sought and obtained from the Ethics Committee of Nnamdi Azikiwe University Teaching Hospital through the Department of Community Medicine Nnamdi Azikwe University Nnewi Campus. Female undergraduates of Nnamdi Azikiwe University who did not give their consent were excluded from the study.

Results

A total of 600 questionnaires were distributed with a response rate of 90.3%. Table 1 gives a summary of the socio demographic characteristics of the 542 respondents. The flowchart is shown in figure 1. Most respondents (74.9%) are within the age bracket 20-24 years, 47.4% are currently in their fourth year of study, 97% are of Igbo ethnicity, 48.2% are of the Roman Catholic denomination while 93.9% are unmarried.

Table 2 shows the respondent's awareness of preconception care and their information source(s). Only 28.2% of respondents have heard of preconception care; 10.1% learnt of it two years earlier, while electronic media is the source of awareness for most respondents (10.7%). Up to 12.9% accepted the definition that preconception care is care provided for couples desiring pregnancy and 24.0% believe that preconception care is part of maternal health services.

Nutrition (20.8%) is the most identified component of preconception care, 19.6% believe that couples intending to have children should seek preconception care while 20.1% also believe that improvement in maternal health is a benefit of preconception care. Up to 18.8% thinks that folic acid is for women attending antenatal clinics while 15.1% agree that folic acid can help reduce the incidence of neural tube defects.

Table 3 describes the acceptance of preconception care and the influencing factors. Up to 56.8% of respondents are not certain of when they intend becoming pregnant, 53.1% are willing to seek preconception care among whom 35.4% are positive about it because it improves maternal and child health, 39.7% are not yet decided among whom 21.2% agreed that the single most important reason for their decision is because they are not yet convinced on its importance; while 7.2% are not willing with their single most important reason being that they do not see its importance. Up to 13.8% intend seeking preconception care 6 months before pregnancy. Majority (28.4%) prefers to consult obstetricians for the care and 40.4% intend to seek preconception before all pregnancies.

Table 4 shows that a higher rate of awareness of preconception care and acceptance of preconception care improves with increasing age, as indicated by statistically significant X^2 values following Chi-Square tests.

Table 1: Socio-Demographic Data of Respondents.

	Frequency	Percentage (%)
Age		
15-19	**111**	**20.5**
20-24	**406**	**74.9**
25-29	**24**	**4.4**
30-34	**1**	**0.2**
Total	**542**	**100**
Course of Study		
Medicine	**30**	**5.5**
Law	**59**	**10.9**
Political Science	**30**	**5.5**
Nursing Science	**41**	**7.6**
Estate Management	**33**	**6.1**
Crop Science	**11**	**2.0**
Anatomy	**49**	**9.0**
Industrial Chemistry	**43**	**7.9**
Public Administration	**35**	**6.5**
Chemical Engineering	**17**	**3.1**
Pharmacy	**45**	**8.3**
Botany	**31**	**5.7**
Modern European Languages	**53**	**9.8**
Science Education	**65**	**12.0**
Total	**542**	**100**
Level of Study		
100	**43**	**7.9**
200	**171**	**31.5**
300	**30**	**5.5**
400	**257**	**47.4**
500	**41**	**7.6**
Total	**542**	**100**
Tribe		
Igbo	**526**	**97**
Hausa	**1**	**0.2**
Yoruba	**8**	**1.5**
Efik	**2**	**0.4**
Ijaw	**2**	**0.4**
Ogoni	**2**	**0.4**
Urhobo	**1**	**0.2**
Total	**542**	**100**
Religion/Denomination		
Roman Catholic	**261**	**48.2**
Anglican	**146**	**26.9**
Pentecostal	**127**	**23.4**
Muslim	**0**	**0**
Traditional Religion	**1**	**0.2**
Atheist	**0**	
Sabbath/Judaism	**4**	**0.8**
Methodist	**1**	**0.2**
Seventh day Adventist	**1**	**0.2**
Eckankar	**1**	**0.2**
Total	**542**	**100**
Marital status		
Single	**509**	**93.9**
Married	**33**	**6.1**
Widowed	**0**	**0**
Divorced	**0**	**0**
Others	**0**	**0**
Total	**542**	**100**

Study Flow Chart

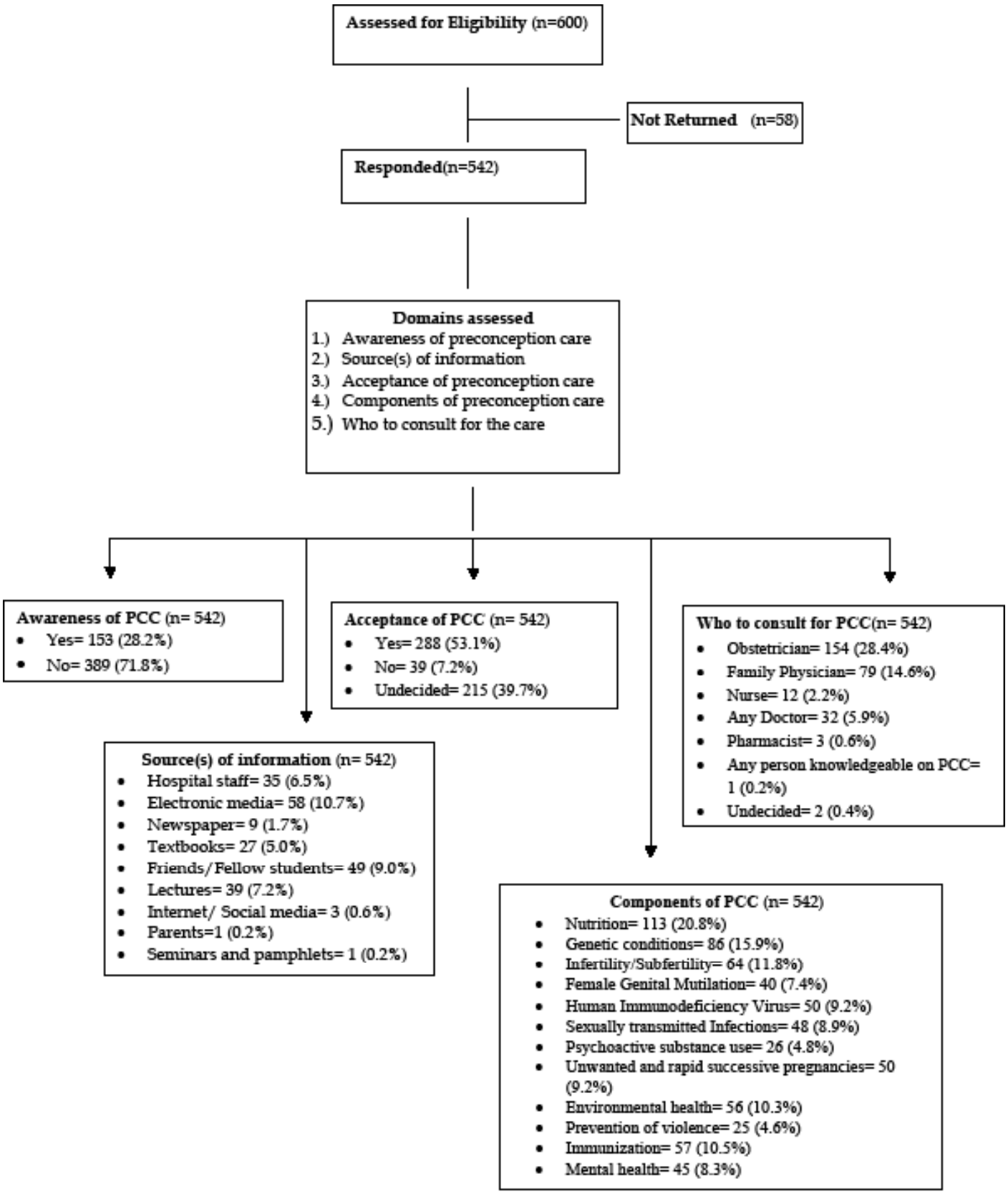

Figure 1: Flow pattern of Main domains assessed and analyzed.

n= Total Number

PCC= Preconception Care

Table 2: Awareness of Preconception Care and Source of Information.

	Frequency	Percentage (%)
Have you heard of preconception care		
Yes	**153**	**28.2**
No	**389**	**71.8**
If yes, when		
1 year ago	**26**	**4.8**
2 years ago	**55**	**10.1**
3-5 years ago	**36**	**6.6**
6-10 years ago	**24**	**4.4**
Less than a year ago	**8**	**1.5**
More than 10 years ago	**1**	**0.2**
Cannot remember	**3**	**0.6**
Tick the source(s) of your information		
Hospital staff	**35**	**6.5**
Electronic media e.g Television, Radio	**58**	**10.7**
Newspapers	**9**	**1.7**
Textbooks	**27**	**5.0**
Friends/Fellow students	**49**	**9.0**
Lectures	**39**	**7.2**
Internet/Social media	**3**	**0.6**
Parents	**1**	**0.2**
Seminars and pamphlets	**1**	**0.2**
Preconception care is		
Care provided for pregnant women	**46**	**8.5**
Care provided for couples desiring pregnancy	**70**	**12.9**
Care provided for couples regardless of pregnancy desire	**34**	**6.3**
Interventions that improve maternal and child health	**53**	**9.8**
Interventions that identify biomedical, behavioral and social risks to a woman's health or pregnancy outcome	**53**	**9.8**
Interventions that modify biomedical, behavioral and social risks to a woman's health or pregnancy outcome	**25**	**4.6**
Preconception care is part of maternal health services		
Yes	**130**	**24.0**
No	**6**	**1.1**
Not certain	**17**	**3.1**
The components of preconception care include:		
Nutritional conditions	**113**	**20.8**
Genetic conditions	**86**	**15.9**
Infertility/Subfertility	**64**	**11.8**
Female genital mutilation	**40**	**7.4**
Human immunodeficiency virus	**50**	**9.2**
Sexually transmitted infections	**48**	**8.9**
Psychoactive substance use	**26**	**4.8**
Unwanted and rapid successive pregnancies	**50**	**9.2**
Environmental health	**56**	**10.3**
Prevention of violence	**25**	**4.6**
Immunization	**57**	**10.5**
Mental health	**45**	**8.3**
The following should seek preconception care		
Women with chronic ailment	**4.2**	**7.7**
Couple intending to have children	**106**	**19.6**
Women with previous poor pregnancy outcome	**78**	**14.4**
Pregnant women	**43**	**7.9**
Women of childbearing age	**78**	**14.4**
Preconception care can help achieve the following		
Planned pregnancy	**91**	**16.8**
Improve maternal health	**109**	**20.1**
Improve child health	**88**	**16.2**
Reduce risk of genetic diseases	**63**	**11.6**
Reduce infertility/subfertility	**68**	**12.5**
Reduce substance use	**20**	**3.7**
Reduce sexual violence	**14**	**2.6**
Folic acid is advised for women:		
Planning pregnancy	**85**	**15.7**
Attending antenatal care	**102**	**18.8**
After delivery	**18**	**3.3**
Preconception intake of folic acid can reduce the incidence of having a baby with neural tube defect		
I agree	**82**	**15.1**
I do not agree	**3**	**0.6**
I am not certain	**69**	**12.7**

Table 3: Acceptance of Preconception Care and Influencing Factors.

	Frequency	Percentage (%)
When do you intend to get pregnant in the future		
Next 3 months	6	1.1
Next 6 months	8	1.5
Next 1 year	49	9.0
Next 2-5 years	171	31.5
Not certain	308	56.8
Are you willing to seek preconception care prior to getting pregnant		
Yes	288	53.1
No	39	7.2
Not yet decided	215	39.7
If yes, what are your reason(s)		
It makes conception and sex selection easy	129	23.8
I have a risk for adverse pregnancy outcome	30	5.5
I want to avoid unplanned pregnancy	123	22.7
I do not want a baby with congenital abnormality	115	21.2
It improves maternal and child health	192	35.4
Personal interest	1	0.2
How long prior to conception do you intend to utilize preconception care		
3 month	64	11.8
6 months	75	13.8
1 year	62	11.4
2 years	27	5.0
3-5 years	24	4.4
2 months	1	0.2
Undecided	27	5.0
As long as necessary	2	0.4
Whom will you consult for the care		
Obstetrician	154	28.4
Family Physician	79	14.6
Nurse	12	2.2
Any doctor	32	5.9
Pharmacist	3	0.6
Any person knowledgeable on preconception care	1	0.2
Undecided	2	0.4
I will seek preconception care for the following pregnancies		
First pregnancy only	45	8.3
The ones I consider high risk	15	2.8
All pregnancies	219	40.4
Undecided	4	0.8
First and high risk pregnancies	1	0.2
Ones after first pregnancy	1	0.2
Necessary ones	1	0.2
If no, what are your reason(s)		
It is not cost worthy	2	0.4
I do not see its importance	20	3.7
It is not popular in our environment	17	3.1
I do not have time for it	9	1.7
I do not have any risk for adverse pregnancy outcome	11	2.0
Identify the SINGLE MOST IMPORTANT reason from the answer(s) above		
It is not cost worthy	2	0.4
I do see its importance	14	2.6
It is not popular in our environment	13	2.4
I do not have time for it	5	0.9
I do not have any risk for adverse pregnancy outcome	4	0.7
If not yet decided, what are your reason(s)		
I am not certain of cost	23	4.2
I am not yet convinced about its importance	135	24.9
It depends on my husband	78	14.4
It depends on my schedule	26	4.8
It depends on my future birth experience and outcome	87	16.1
Identify the SINGLE MOST IMPORTANT reason from the answer(s) above		
I am not certain of cost	10	1.8
I am not yet convinced about its importance	115	21.2
It depends on my husband	23	4.2
It depends on my schedule	9	1.7
It depends on my future birth experience and outcome	55	10.1

Table 4: Awareness and Acceptance of Preconception Care with Age.

Test of Awareness with Age	X2
Pearson Chi-Square	0
Likelihood Ratio	0
Linear-by-Linear Association	0
Test of Acceptance with Age	X2
Pearson Chi-Square	0.002
Likelihood Ratio	0.001
Linear-by-Linear Association	0

Discussion

The total number of respondents were 542 of which 406 (77.5%) were within the age bracket 20-24 years, 111 (21.2%) were between 15-19 years of age, 24 (4.4%) were between 25-29 years and only 1 (0.2%) was up to 30 years. Five hundred and nine (93.9%) respondents were single while only 33 (6.1%) were married.

Only 153 students (28.2%; 95%CI=23.9-33.1%) have heard of preconception care. While this is similar to the finding of Gautam et al. [27] (28.63%) among reproductive age women in India in 2012, it is in contrast to that of Tokunbo et al. [21] (83.3%), Olowokere et al. [5] (63.5%), Ezegwui et al. [7] (43.1%). The contrast with the latter three works can be attributed to the fact that Tokunbo et al. study' between [21] and was done among health workers and the latter two among married women unlike in this work where most of the respondents were unmarried. Concerning when the respondents heard about preconception care, 2 years earlier was the most occurring with 55 respondents (35.9%) of the total number that have heard of preconception care.

Fifty-eight respondents (37.9% of the aware group) got to know of preconception care through electronic media. Hence electronic media was the most frequent source of awareness as also seen in Gautam et al. [27] (47.69%), but not in Olowokere et al. [5] where the most source of awareness is the antenatal clinic (38.4%). Most students in this study were yet to have any contact with the antenatal clinic and it is expected that the antenatal clinic/hospital staff (22.9% of aware group) should not be the main source of awareness like in Olowokere et al. [5]. Other sources of awareness in the aware group were Friends/fellow students (32.02%), Lectures (25.5%), Textbooks (17.6%), and Newspapers (5.9%).

Among the options that fall into the definition of preconception care, the most picked was care provided for couples desiring pregnancy and this was picked by 70 respondents (46.58% of the aware group) while 46 respondents (30.1% of the aware group) also believed that it is also a care for pregnant women, and this does not fall into the definition of preconception care. Gautam et al. [27] reported 55.9% in their study as the percentage that believed that preconception care is for couple before conception. This is in agreement with Ezegwui et al. [7] that knowledge of preconception care is still inadequate in Nigeria.

Hundred and thirty respondents in the aware group (84.9%) agreed that preconception care is part of maternal health services, 17 (11.1%) were not certain while 6 (3.9%) did not agree that preconception care is part of maternal health care services. This high rate of agreement that preconception care is part of maternal health care services was at variance with that reported by Olayinka et al [9] (10.4%). In their work, preconception care was placed side by side with other very popular components of maternal health care services like family planning, antenatal care, immunization and this might have influenced the decision of many respondents agreeing to those other components and paying less attention to preconception care which was not popular as the other components in our environment.

When asked to pick the components of preconception care, nutritional conditions have the highest frequency among applicable respondents 113 (73.9%) and the lowest ones being psychoactive substance use 26 (16.9%) and prevention of violence 25 (16.3%). No reviewed work had similar comparison. This result can be attributed to the popular belief in the setting of this work of the need for adequate nutrition for women before and during pregnancy and the very low hospital presentation on account of domestic violence.

Majority of respondents in the aware group 106 (69.3%) believed that couple intending pregnancy should seek preconception care, which is higher than the figure reported by Gautam et al. [27] among reproductive aged women. This disparity can be due to the relatively lower sample size employed in the work by Gautam et al. [27]. Forty-three respondents in the aware group (28.1%) went with the wrong option that pregnant women should also seek preconception care implying that there is still lack of in-depth knowledge about preconception care.

The most accepted benefit that preconception care can help to achieve among the aware group was to improve maternal health 109 (71.2%), followed by planned pregnancy 91 (59.5%), and improve child health 88 (57.5%). This is not surprising since the three were among the areas of reproductive health that are still below the expected level in Nigeria where maternal mortality ratio is 576 per 100 000 live births as reported by the 2013 Nigeria Demographic Health Survey [28].

In the aware group, 85 respondents (55.6%) agreed that women planning pregnancy should take folic acid, 102 (66.7%) believed women attending antenatal care should take folic acid, while 18 (11.8%) believed women should also take folic acid post-delivery. Nasr et al. [15] reported that 24% of women in their study were aware of the need of folic acid supplementation during preconception period while 81% agreed to taking folic acid before conception in the 2009 survey by Best Start Resource Centre [30] which was done in Ontario Canada. The disparity may be due to higher female literacy rate in Canada compared to Nigeria, the setting of this work where 55.6% was reported. It is also possible that regional variation in awareness is the reason while the figure from this study was higher than that reported by Nasr et al. [15] in Lebanon.

Also in the aware group, 82 (53.6%) respondents agreed that preconception intake of folic acid can reduce the incidence of neural tube defect, 3 (1.96%) did not agree while 69 (45.1%)

were not certain. The Best Start Resource Centre Survey [30] showed that 69% were in agreement, 2% did not agree, while 29% did not know. Nasr et al. [15] reported that only 14% knew that folic acid could prevent congenital malformations such as neural tube defect. Again, the reason given above explains the disparity in figures.

Most of the entire respondents in the work 308(56.8%) were not certain of when to get pregnant in the future, 171 (31.5%) intended getting pregnant within the next 2-5 years while 63 (11.6%) intended getting pregnant between the time of this study and the subsequent one year. This shows that educating female undergraduates on preconception care at this stage will go a long way in achieving many benefits and solving many health issues early enough since majority still have adequate time for health modifications before pregnancy.

Among the entire respondents, 288 (53.1%) were willing to seek preconception care prior to getting pregnant. This is slightly higher than 49% that intended to seek preconception care next time in Sudanese study on reproductive aged women with rheumatic heart disease by Ahmed et al. [17]. It is expected that women with known pathology as in the Sudanese study would have shown more interest than the respondents in this study, but why interest rate in this study was comparatively higher might be due to the fact that only 4% had university education unlike in this study where all the respondents were university students. Tokunbo et al. [21] reported that 90.8% were willing to utilize preconception care in their work among health workers. The huge gap in acceptance rate between their respondents and that of this work was not out of place considering that health workers should be better informed on the subject matter. Only 39 (7.2%) respondents were not willing to seek preconception care while 215 (39.7%) were undecided. Majority of the respondents got to know about preconception care for the first time through the questionnaire used for this study and that might possibly account for part of the percentage not yet decided.

Among the group of those willing to seek preconception care prior to getting pregnant, 192 (66.7%) were positive about seeking preconception care because it improves maternal and child health. Why this was the most reason chosen emphasize the huge concern for good outcome for both mother and child in our environment that has the second highest mortality in the world after India [9]. In this willing group, other reasons for their decision include; it will make conception easy as well as help in sex selection 129 (44.8%), it will help avoid unplanned pregnancy 123 (42.7%), they do not want a baby with congenital abnormality 115 (39.9%) while only 30 of them (10.4%) made their decision because they thought they have risk for adverse pregnancy outcome.

Six months prior to conception as the time to begin to seek preconception care was the most preferred in the willing category, by 75 respondents (26.04%), followed by 3months (22.2%) and one year (21.5%) in that order. Six months prior to conception was also obtained by Delissaint [29] as the most preferred time to begin to see preconception care.

Among this group, 53.5% of respondents preferred to consult an Obstetrician for the care, followed by Family physician (27.4%), any doctor (11.1%), nurse (4.2%) and pharmacist (1.04%). The choice of an obstetrician as the most preferred to consult for preconception care and the family physician coming after the obstetrician was also shown by Tokunbo et al. [21] with obstetrician being 76.2% and Family physician 53.6%. Majority (76.04%) were willing to see the preconception care provider before each pregnancy, 15.6% for the first pregnancy only and 5.2%were willing to seek the care only for the pregnancies they think might be high risk.

In the group that were not willing to seek preconception care, the single most important reason for their decision was because they do not see its importance (35.9%) followed by lack of popularity in our environment (33.3%). Similarly, the single most important reason among the group that is not yet decided was because they were not yet convinced about its importance (53.5%). This was in keeping with the finding of Olowokere et al. [5] where the major key factors contributing to poor seeking behavior about preconception care included lack of awareness (76.5%) and lack of knowledge on the importance and benefits of preconception care (73.6%). Cost as a barrier to seeking preconception care was observed in 2 respondents and is also the single most important reason for not seeking preconception care in only 2 persons out of the 39 that are not willing to seek preconception care (5.1%). Twenty three out of 215 respondents who were not yet decided on whether to seek preconception care (10.7%) chose uncertain cost as one of the reason(s) for their decision while only 10 respondents (4.7%) chose uncertain cost as the single most important reason for their decision. These findings were not in line with that of Olowokere et al. [5] who reported that 51.7% of their respondents chose cost as one of the reason(s) for not seeking preconception care.

Limitations and strengths

Firstly, the study design being cross – sectional in nature limits conclusion on acceptance of preconception care as it cannot address it completely in the absence of marriage among participants. Secondly, it is also an academic institutional based study and findings may not be generalized and there may have been some level of detection bias during recruitment. The strengths of the study are that to the best of knowledge of the authors, no study has been done in the study institution on the awareness and acceptance of preconception care.

Conclusion

The study showed a low awareness rate of 28.2%, but an acceptance rate of 53.1% for preconception care. Preconception care still remains a relatively unknown aspect of maternal health services in Nigeria. Adequate awareness will bring significant improvement in its practice in Nigeria especially among female undergraduates.

Authors' contribution

OP Anaedu and SA Nwabueze were involved in the overall conceptual design and implementation of the project, and

overall revision of the manuscript. GU Eleje, CC Aniagboso, CA Ezenyeaku, OS Umeononihu, CO Okoye and OC Ekwebene were involved in the writing of this manuscript and overall revision. The authors read, approved the final manuscript and agree to be accountable for all aspects of the work.

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