

Determinants of Pre-service Knowledge and Use of Emergency Contraception by Female Nursing and Midwifery Students in Northern Nigeria

Adewale O Ashimi^{1*}, Taiwo G Amole², Hauwa M. Abdullahi³, Manubiya A Jibril⁴ and Zubairu Iliyasu^{2,5}

¹Department of Obstetrics and Gynecology, Federal Medical Centre Birnin Kudu, P.M.B 1022, Birnin Kudu, Jigawa State 721101, Nigeria

²Departments of Community Medicine, Aminu Kano Teaching Hospital, Gyadi Gyadi, Kano, Nigeria

³Departments of Obstetrics and Gynecology, Aminu Kano Teaching Hospital, Gyadi Gyadi, Kano, Nigeria

⁴College of Nursing and Midwifery, Kano, Nigeria

⁵School of Health and Related Research, The University of Sheffield, Sheffield, United Kingdom

Received date: April 05, 2016; Accepted date: October 23, 2016; Published date: June 30, 2017

Abstract

Background: Emergency contraception (EC) offers the last opportunity of preventing an unintended pregnancy.

Aim: This study determined factors associated with knowledge and use of EC by female nursing and midwifery students in northwest Nigeria.

Subjects and Methods: A cross-sectional study of 317 female nursing and midwifery students randomly selected in two tertiary health institutions in Northern Nigeria was conducted using a structured self-administered questionnaire. The data obtained was analyzed using SPSS v. 21.20.

Results: Of the 317 students, 62.8% (199/317) were unmarried, 92.4% (293/317) were Muslims, and 74.4% (236/317) were of Hausa ethnicity. The mean age (standard deviation) was 22.9 (3.1) years. Knowledge of EC was nearly universal (n=299/317; 94.3%). Of the respondents 25.8% (77/317), 13.4% (40/317) and 9.4% (28/317) of the respondents' incorrectly identified menstrogen, quinine, and ampicillin, respectively as forms of EC. In addition, 24.1% (72/317) were not aware of the correct timing for the use of hormonal EC following unprotected sexual intercourse. Marital status and parity were significantly associated with knowledge of EC ($P \leq 0.05$). Of those who have had unprotected and unwanted sexual intercourse (n=62, 19.6%), less than a quarter 15 (24.2%) used any device or drug to avoid getting pregnant and this was not affected by socio-demographic variables ($P > 0.05$).

Conclusion: Majority of the student nurses and midwives surveyed had adequate general knowledge of EC, but many lacked in-depth knowledge with some having misconceptions about the forms. Majority did not use it when it was indicated despite being aware of it. Periodic curricula review may address knowledge gaps among these potential change agents and role models.

Keywords: Emergency contraception; Knowledge; Midwifery student; Northern Nigeria; Nursing student; Practice

Introduction

Emergency contraception (EC) is defined as the use of a device or drug to prevent an unwanted pregnancy after an unprotected sexual intercourse [1]. This method of contraception is meant to be used infrequently since there are more effective methods of regular

contraception. Nevertheless, it is effective in preventing as much as 75% of unplanned pregnancies [2,3]. It is suitable in situations of contraceptive failure, rape, and when no method of regular contraception was used [1]. EC offers the last opportunity of preventing an unwanted pregnancy if used correctly and has been found to be reliable, useful, and inexpensive for averting unplanned

Corresponding Author:

Adewale O Ashimi, C-1/1, Department of Obstetrics and Gynecology, Federal Medical Centre Birnin Kudu, P.M.B 1022, Birnin Kudu, Jigawa State 721101, Nigeria, E-mail: adewaleashimi@yahoo.com

DOI:

10.4103/2278-960X.194490

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: editor@jbcrs.org

Copyright: © 2017 Ashimi et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

pregnancies [4]. It has the potential of reducing maternal deaths and morbidities from unsafe abortions.

Globally, unplanned pregnancy poses a public health challenge, especially in the developing countries where they are the main reason for induced abortions. It is estimated that in Nigeria, more than a quarter (28%) of women of reproductive age group have had an unexpected pregnancy at some point in their lives, 14% have sought an abortion, of which 10% were successful [5]. Adolescents and young adults (10-24 years) are the most vulnerable group for unwanted pregnancy as a result of rapid psychological, social, and sexual changes coupled with experimentation, self-discovery, and peer pressure. In addition, this period is marked by sexual debut and low contraceptive uptake hence the potential role of EC at this stage [6]. Most students in postsecondary institutions including health training institutions are in this age cohort.

Abortion is still illegal in Nigeria, except to save a woman's life. Therefore, most procedures are clandestine and are carried out in unsafe conditions with associated high toll on lives and lifelong complications [7]. The commonly available and effective methods of EC in Nigeria include the high-dose combined oral contraceptives pills (COCP) (Yuzpe method), copper intrauterine contraceptive device (IUCD), and the progestogen-levonorgestrel regimen popularly marketed as postinor™ [1].

The previous reports on EC focused on students in secondary and tertiary institutions in the southern part of Nigeria. While some found low levels of awareness of EC [8,9], others reported high levels [10-13]. Nevertheless, they all consistently uncovered poor utilization. It is noteworthy that most of the studies on this group excluded students of health institutions (schools of medicine, nursing, pharmacy, and laboratory sciences) on the erroneous premise that they are well informed. However, a study among students undergoing medical-related courses in some tertiary institutions in Osogbo, Southwest Nigeria revealed the contrary [14]. Importantly, this group constitutes potential change agents and role models for young adults. Little is known about the knowledge and uptake of EC among students undergoing pre-service professional health studies in Northern Nigeria; a region with the lowest contraceptive prevalence rate and highest maternal mortality ratio compared to other parts of the country [15].

The objectives of this study were 2-fold; (1) it assessed the knowledge and utilization of EC by female student nurses and midwives and (2) identified the determinants of knowledge and uptake among these students in Northern Nigeria. The findings could inform curricula review to address knowledge gaps and build the capacity of these potential change agents for up scaling the uptake of EC among youths in Northern Nigeria.

Subjects and Methods

This study involved two schools of nursing and midwifery in Northwest Nigeria. Data were collected from two of the states in the region; Kano and Jigawa. Of the nursing schools in the two states, one was selected from an urban setting while the other was from a rural community. These schools operate 3-year pre-service professional programs for basic nursing and midwifery.

This is a descriptive cross-sectional study, and a sample size of 340 was obtained using the Fisher's formula for estimating sample size in health studies [16]. The following item measures were used: 95% confidence level; 67% prevalence of awareness of EC among students undergoing medical-related courses in Osogbo in Southwest Nigeria [14], and a 5% margin of error. The computed sample size was inflated by 10% to compensate for anticipated nonresponse. The final sample size was 378. Probability proportionate to the size of enrolled female students in nursing and midwifery programs of the institutions was used.

The study population consisted of female student nurses and midwives in each of the two institutions. Included were female student nurses and midwives in both institutions, and excluded were male student nurses.

A structured, self-administered questionnaire was adapted from a previous study instrument used to assess healthcare workers' knowledge of EC [17]. The adapted questionnaire was in three parts; the first part obtained socio-demographic information, the second assessed the knowledge of EC while the third assessed its previous use. The questionnaire was in English language and was pretested on a 10% of the sample size in a different school of nursing (not selected for the current study) to ascertain the appropriateness, sensitivity of the questions, and comprehensibility. This reconfirmed the instrument's reliability and validity.

The study proposal was approved by the Ethics and Research Committee of the Federal Medical Centre Birnin Kudu. Consent was obtained from each respondent after being informed about the study and agreeing to participate. The questionnaire was anonymized and participants were assured of confidentiality. The study lasted 4 weeks (October 06 to November 03, 2014).

The data obtained was analyzed using SPSS v. 21.20 (IBM Corp., New York, USA). Categorical variables were summarized using frequencies and percentages while mean and standard deviation (SD) was used to describe numeric variables. Association between the level of knowledge, practice of EC, and socio-demographic characteristics was assessed using the Pearson Chi-square and Fisher's exact tests as appropriate. All hypothesis tests were two-sided with $P \leq 0.05$ considered statistically significant.

Each respondent's level of knowledge was scored as in a previous study.[18] Fifteen questions were asked on knowledge of EC; each right answer earned a point, and each wrong answer scored zero except the question on the mode of action of hormonal EC (HEC), where a score of two was recorded for a correct response and zero otherwise. This question was considered critical to the knowledge of EC hence the higher score. Respondents' total knowledge was categorised as follows: scores of 0%-25% (i.e., 0-4 points)=very poor; 26%-50% (i.e., 5-8 points)=poor; 51%-75% (i.e., 9-12 points)=fair; 76%-100% (i.e., 13-16 points)=good. The total knowledge scores of 50% and below were classified as inadequate while scores above 50% were classified as adequate knowledge of EC.

Results

Results of the 378 questionnaires administered, 317 were completed and returned from the two institutions, giving a response rate of 83.8%.

Sample description

Two hundred (63.1%) respondents were recruited from the urban health facility while 117 (36.9%) were from the rural-based facility. The mean (SD) age was 22.9 (3.1) years. Three-quarters (n=236/317) of the participants were of Hausa ethnicity, and about two-thirds (n=199/317) were unmarried. Nine out of ten (n=293/317, 92.4%) were Muslims and 65.8% (209/317) were nulliparous, with parity ranging from 0 to 7 and a median parity of three. Of the respondents 26.8% (85/317) were in the 1st year of study, 33.4% (106/317) 2nd year, and 39.8% (126/317) were in the 3rd year. Table 1 shows the socio-demographic characteristics of the respondents.

Sociodemographic characteristics	n (%)
Age (years)	
<20	28 (8.8)
20-24	194 (61.2)
25-29	79 (24.9)
≥30	16 (5.0)
Marital status	
Single	199 (62.8)
Married	116 (36.8)
Divorced	2 (0.6)
Ethnicity	
Hausa	236 (74.4)
Fulani	39 (12.3)
Yoruba	20 (6.3)
Others	22 (6.9)

Religion	
Islam	293 (92.4)
Christianity	24 (7.6)
Parity	
0	209 (65.8)
1	35 (11.0)
2	45 (14.2)
≥3	28 (8.8)

Table 1: Sociodemographic characteristics of the respondents (n=317).

Knowledge of emergency contraception

Are you aware of EC? Among the respondents, nine out of ten (n=299/317; 94.3%) were aware of EC of which about three-quarters (n=213/317; 71.2%) knew COCP. Two-thirds identified levonorgestrel (postinor) while slightly more than half identified IUCD as an EC. About one of five respondents were aware of mifepristone while 25.8% (77/317), 13.4% (40/317), and 9.4% (28/317) of the respondents' incorrectly identified menstrogen, quinine, and ampicillin respectively as forms of EC

Common side effects of HEC includes? Majority 79.6% (238/317) correctly identified nausea and vomiting as common side effects of HEC. This and other questions fielded are shown in Table 2.

Questions	Yes, n (%)	No, n (%)	Uncertain, n (%)
Types of drugs or device used as EC?			
Combined contraceptive pill	oral 213 (71.2)	25 (8.4)	61 (20.4)
Levonorgestrel (postinor)	191 (63.9)	36 (12.0)	72 (24.1)
Copper device	intrauterine 162 (54.2)	40 (13.4)	97 (32.4)
Mifepristone	53 (17.7)	58 (19.4)	188 (62.9)
Menstrogen	77 (25.8)	55 (18.4)	167 (55.8)
Quinine	40 (13.4)	102 (34.1)	157 (52.5)
Ampicillin	28 (9.4)	101 (33.8)	170 (56.9)
How soon after an unprotected sexual intercourse can levonorgestrel EC be used to avoid pregnancy? n (%)			
≤24 h	167 (55.9)		
>24-72 h	60 (20.1)		
>72-7 days	11 (3.7)		
After a missed period	61 (20.4)		
Hormonal EC may act by*, n (%)			
Delaying/inhibiting ovulation	199 (66.6)		
Preventing fertilization	50 (16.7)		

Preventing implantation	26 (8.7)			
Causing abortion	25 (8.4)			
Do not know	34 (11.4)			
Does hormonal EC protect against sexually transmitted infection?	63 (21.1)	215 (71.9)	21 (7.0)	
Can hormonal EC be used as a continuous form of contraception?	128 (42.8)	148 (49.5)	23 (7.7)	
Mention three indication(s) for EC, n (%)				
Rape	207 (69.3)			
Split condom	216 (72.2)			
Unprotected sexual intercourse	232 (77.6)			
Total knowledge scores, n (%)				
Very poor	22 (7.4)			
Poor	108 (36.1)			
Fair	143 (47.8)			
Good	26 (8.7)			

*Multiple responses noted. EC=Emergency contraception

Table 2: Knowledge of emergency contraception among the respondents who were aware of it (n=299).

Parity and marital status were significantly associated with the level of knowledge of EC [$P < 0.05$; Table 3]. There was no statistically significant association between age, ethnicity, and religion, level of study, and knowledge of EC [$P > 0.05$; Table 3].

Sociodemographic characteristic	Knowledge			χ^2	P
	Inadequate, n (%)	Adequate, n (%)	Total		
Age (years)					
<25	98 (46.7)	112 (53.3)	210 (100)	2.92	0.09
≥25	32 (36)	57 (64)	89 (100)		
Ethnicity					
Hausa/Fulani	116 (44.4)	145 (55.6)	261 (100)	0.78	0.38
Others	14 (36.8)	24 (63.2)	38 (100)		
Religion					
Islam	120 (43.3)	157 (56.7)	277 (100)	0.04	0.85
Christianity	10 (45.5)	12 (54.5)	22 (100)		
Parity					

0	96 (49.7)	97 (50.3)	193 (100)	8.7	0.003
≥1	34 (32.1)	72 (67.9)	106 (100)		
Marital status					
Unmarried	90 (48.6)	95 (51.4)	185 (100)	5.3	0.02
Married	40 (35.1)	74 (64.9)	114 (100)		
Year of study					
1	28 (38.4)	45 (61.6)	73 (100)	1.71	0.43
2	50 (48.1)	54 (51.9)	104 (100)		
3	52 (42.6)	70 (57.4)	122 (100)		

Table 3: Association between level of knowledge about emergency contraception and sociodemographic characteristics (n=299).

Use of emergency contraception

Of the respondents that were aware of EC, about a fifth (n=62/317; 20.7%) had experienced unprotected and unwanted sexual intercourse; and of this number, majority (n=47/62; 75.8%) did not use any drug/device to avoid pregnancy after any such episodes.

Various proportions gave different reasons for this action which includes: “did not think would become pregnant,” “did not know what to use,” “did not know where to get the drug/device” and “it is against my faith.” The reasons grouped as others include “shame” (n=2) and “ill health” (n=1). This is shown in Table 4.

Questions	n (%)
Ever had unprotected unwanted sexual intercourse?	
Yes	62 (20.7)
No	237 (79.3)
Did you use any drug/device as EC (n=62)	
Yes	15 (24.2)
No	47 (75.8)
If no, why? (n=47)	
Did not think will get pregnant	30 (63.8)
Did not know what to use	5 (10.6)
Against my faith	5 (10.6)
Did not know where to get the drug/device	4 (8.6)
Others	3 (6.4)

EC=Emergency contraception

Table 4: Previous use of emergency contraception.

Of those that used a drug/device (n=15), 73.3% (11/15) used levonorgestrel (postinor); 13.3% (2/15) used COCP and one participant used IUCD while the other took native concoction.

There was no statistically significant association between age, ethnicity, and religion, level of study, marital status, parity, and previous use of EC [P > 0.05; Table 5].

Sociodemographic characteristic	Previous use of EC			χ^2	P
	Yes, n (%)	No, n (%)	Total		
Age (years)					
<25	10 (20.8)	38 (79.2)	48 (100)	1.31	0.25
≥25	5 (35.7)	9 (64.3)	14 (100)		
Ethnicity					
Hausa/Fulani	12 (24.0)	38 (76.0)	50 (100)	Fishers	0.94
Others	3 (25.0)	9 (75.0)	12 (100)		
Religion					
Islam	13 (22.8)	44 (77.2)	57 (100)	Fishers	0.39
Christianity	2 (40.0)	3 (60.0)	5 (100)		
Parity					
0	12 (25.5)	35 (74.5)	47 (100)	Fishers	0.66
≥1	3 (20.0)	12 (80.0)	15 (100)		
Marital status					
Unmarried	8 (20.0)	32 (80.0)	40 (100)	1.1	0.3
Married	7 (31.8)	15 (68.2)	22 (100)		
Year of study					
1	4 (25.0)	12 (75.0)	16 (100)	1.23	0.54
2	4 (36.2)	7 (63.6)	11 (100)		
3	7 (20.0)	28 (80.0)	35 (100)		

EC=Emergency contraception

Table 5: Association between previous use of emergency contraception and sociodemographic characteristics (n=62).

Discussion

Awareness of EC was nearly universal among the students. The few (5.7%) who were not aware were

mostly in their 1st year, and family planning is part of the second and 3rd year curriculum. This high level of awareness (94.3%) was however marred with misconceptions as a quarter, 13.4% and 9.4% of respondents identified menstrogen, quinine, and ampicillin, respectively as drugs used for EC. This finding is disconcerting as these agents are either used to induce menstruation [10] as antimalarial or antibiotic, respectively. They are neither effective nor recommended for use as EC agents. Interestingly, these erroneous viewpoints about these agents as EC have been widespread among other groups of adolescents and young female undergraduates in Nigeria [10,19-21]. The source of this misinformation is perplexing but may not be unconnected with a poor understanding of the mechanism of action of EC, which is confused with the process of inducing menstruation in other gynecologic conditions. Furthermore, anecdotes abound regarding the toxic effects of quinine; therefore, promoters of its wrong use may be thinking they are inducing an abortion. Ampicillin use defies all logic, and there is no evidence of any untoward effect of ampicillin on human conception. Exploration of these in future studies using qualitative or mixed methods studies could reveal the sources of this misleading and dangerous information.

Although knowledge of EC was not significantly associated with level of study, it was unfortunate to know that the final year students constituted more than a third of the respondents but a lesser proportion knew that levonorgestrel (postinor™), the most common method of EC could be used within 72 h of having unprotected sexual intercourse. Knowledge of EC was however noted to be associated with marital status and parity as a higher proportion of married women and those that have delivered before were more knowledgeable. Married students, some of them mothers are expected to have a greater need to plan their pregnancies and avoid interruptions to their studies during their program; hence, they might have sought for more information concerning contraception or have previously utilized EC.

It is interesting to know that of those who had experienced unprotected and unwanted sexual intercourse, less than a quarter (24.2%) utilized EC to avoid unwanted pregnancy. Majority (63.8%) assumed that they would not get pregnant without the use of any method of contraception before or after an unplanned intercourse. The risks and complications of self-induced abortion following unwanted pregnancies in a region with one of the highest maternal mortality ratios remain daunting. It is worrisome that a low proportion of these professional students protected themselves from unwanted pregnancy. It is, therefore, less likely that they would correctly advise other young women and especially adolescents who would consider them as peers and immediate sources of advice on prevention of unwanted pregnancy with ECs. These potential game changers of contraceptive uptake including EC in Northern Nigeria are

not yet using the last opportunity at primary prevention of unintended pregnancy.

Drawing appropriate comparisons with previous similar studies were constrained, due to lack of similar studies in Nigeria. However, the 94.3% awareness about EC found among our respondents is higher than the figure (67.8%) noted among students undergoing health-related courses in Osogbo, Southwest Nigeria [14], the 59.5% observed among nursing and midwifery students in Turkey [22] and the 48% recorded in a study among student nurses and nurses in Nairobi Kenya [23]. In addition, the 66.6% who identified the correct mechanism of action of EC among the respondents in this survey is higher than the 40.9% reported from Osogbo, Southwest Nigeria [14].

It is disheartening however, that nearly a quarter (24.1%) of the student nurses and midwives did not know the correct timing for the use of EC; this is lower than the 31.0% noted in the study earlier alluded to in Southwest Nigeria [14]. Furthermore, among the participants that have had unprotected and unwanted sexual intercourse, the less than a quarter that ever used any form of EC is lower than the 29.9% recorded among students undergoing medical-related courses [14] and the 35.5% among university undergraduates in Nigeria [8], but much higher than the 3.5% reported in the study from Nairobi, Kenya. This may be attributed to a difference among the respondents as only a third were nursing students [23].

Student nurses and midwives need to be more knowledgeable about EC, especially about the types; the timing of use and the misconceptions associated with it as nurses form the bulk of the healthcare personnel and are usually the first point of contact to the health system. In addition, the findings from a recent multicentre study in Northern Nigeria on EC points to a serious gap in knowledge among nurses regarding EC and its misconceptions [24].

The Nursing and Midwifery Council of Nigeria, the regulatory authority charged with pre-service training and in-service continuing education of these professionals may need to re-evaluate this aspect of the curriculum and pedagogy of sexual and reproductive health including EC in these schools of nursing and midwifery. Emphasis should be on fine points such as timing of EC use, which remains the key to its effectiveness; since after graduation, these students will play an important role in reducing the morbidity and mortality associated with unintended pregnancy in Nigeria.

This study involved two schools, one based in the urban area and the other rural. Although the design was cross-sectional, the non-responders (n=61; 16.2%) may differ from the participants who responded. In addition, social desirability bias may have influenced some responses as premarital sex and unwanted sex are taboo

in the sociocultural milieu where these institutions are based. Therefore, the responses may not fully reflect reality. However, the use of anonymized self-completed questionnaires and female research assistants was all geared toward minimizing such bias. Therefore, despite these limitations, our study elicited useful information regarding EC knowledge and use among female student nurses and midwives in Northern Nigeria.

Future studies could identify the students' sources of information since about nine of ten respondents (94%) were aware of EC despite the fact that just about three-quarters had received lectures on family planning. This could be useful in correcting the misconception about EC. In addition, these studies should involve more schools so that findings can be generalized to Northern Nigeria.

Conclusion

Majority of the student nurses and midwives surveyed had adequate general knowledge of EC, but many lacked in-depth knowledge with some having misconceptions about the forms. Majority did not use it when it was indicated despite being aware of it.

Recommendation

Periodic curricula review may address knowledge gaps among these potential change agents and role models.

Acknowledgment

The authors would like to thank the Principals of the school of Nursing and Midwifery of the participating schools for their cooperation. The authors funded this study.

Financial Support and Sponsorship

There is no financial support or funding for this article.

Conflicts of Interest

There are no conflicts of interest.

References

1. Cheng L, Gülmezoglu AM, Piaggio G, Ezcurra E, Van Look PF. Interventions for emergency contraception. *Cochrane Database Syst Rev* 2008;3:CD001324.
2. Trussell J, Rodríguez G, Ellertson C. Updated estimates of the effectiveness of the Yuzpe regimen of emergency contraception. *Contraception* 1999;59:147-51.
3. Graham A, Moore L, Sharp D, Diamond I. Improving teenagers' knowledge of emergency contraception: Cluster randomised controlled trial of a teacher led intervention. *BMJ* 2002;324:1179.
4. Ezzati M, editor. Ineffective methods of contraception. In: *Comparative Quantification of Health Risks: Global and Regional Burden of Disease Attributable to Selected Major Risk factors*. Geneva: World Health Organization; 2004. p. 1255-320.

5. Bankole A, Oye-Adeniran BA, Singh S, Adewole IF, Wulf D, Sedgh G, et al. Unwanted Pregnancy and Induced Abortion in Nigeria: Causes and Consequences; 2006.
6. Sander PM, Raymond EG, Weaver EA. Emergency contraceptive use as a marker of future risky sex, pregnancy and sexually transmitted infection. *Am J Obstet Gynecol* 2009;201:146.e1-e6.
7. Sedgh G, Bankole A, Oye-Adeniran B, Adewole IF, Singh S, Hussain R. Unwanted pregnancy and associated factors among Nigerian women. *Int Fam Plan Perspect* 2006;32:175-84.
8. Akani C, Enyindah C, Babatunde S. Emergency contraception: Knowledge and perception of female undergraduates in the Niger Delta of Nigeria. *Ghana Med J* 2008;42:68-70.
9. Arowojolu AO, Adekunle AO. Perception and practice of emergency contraception by post-secondary school students in Southwest Nigeria. *Afr J Reprod Health* 2000;4:56-65.
10. Aziken ME, Okonta PI, Ande AB. Knowledge and perception of emergency contraception among female Nigerian undergraduates. *Int Fam Plan Perspect* 2003;29:84-7.
11. Oladapo OT, Adefuye PO, Odusoga OL, Okewole IA, Daniel OJ. Emergency contraception among female undergraduates in Ogun State, Nigeria. *Sex Health Matters* 2005; 6:4.
12. Ebuehi OM, Ekanem EE, Ebuehi OA. Knowledge and practice of emergency contraception among female undergraduates in the University of Lagos, Nigeria. *East Afr Med J* 2006;83:90-5.
13. Adewunmi AA, Rabiun KA, Tayo AO, Ottun TA, Adeboye SB, Akindede RA. Knowledge of emergency contraception among students in a tertiary institution in a developing country. *Open Access J Contracept* 2012;3:23-6.
14. Asekun-Olarinmoye EO, Adebimpe WO, Adeomi A, Olugbenga-Bello AI. Emergency contraception: An untapped resource among sexually active college students in Osogbo metropolis, Nigeria. *Open Access J Contracept* 2013;4:13-20.
15. National Population Commission (NPC) [Nigeria] and ICF Macro. Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, Rockville, Maryland USA: NPC and ICF International; 2014.
16. Lwanga SK, Lemeshow S. Sample Size Determination in Health Studies: A Practical Manual. Geneva, Switzerland: World Health Organization; 1991.
17. Geidam AD, Kullima AA, Sadiq GU. Knowledge, attitude and provision of emergency contraception among health professional in Borno State, Northern Nigeria. *Int J Health Res* 2009;2:339.
18. Ashimi A, Aliyu L, Shittu M, Amole T. A multicentre study on knowledge and attitude of nurses in Northern Nigeria concerning female genital mutilation. *Eur J Contracept Reprod Health Care* 2014;19:134-40.
19. Otoide VO, Oronsaye F, Okonofua FE. Why Nigerian Adolescent seek abortion rather than contraception: Evidence from focus group discussions. *Int Fam Plan Perspect* 2001;27:77-81.
20. Basiattai AM, Umoiyobo AJ, Bassey EA, Etuk SJ, Udoma EJ. Misconception of emergency contraception among tertiary school students in Akwa Ibom State South-South, Nigeria. *Niger J Clin Pract* 2007;10:30-4.
21. Adinma DE, Adinma JI, Iwuoha C, Akiode A, Oji E, Okoh M. Knowledge and practices among medical abortion seekers in Southeastern Nigeria. *Southeast Asian J Trop Med Public Health* 2012;43:471-8.
22. Celik M, Ekerbicer HC, Ergun UG, Tekin N. Emergency contraception: Knowledge and attitudes of Turkish nursing and midwifery students. *Eur J Contracept Reprod Healthc* 2007;12:63-9.
23. Gichangi PB, Karanja JG, Kigundu CS, Fonck K, Temmerman M. Knowledge, attitude and practice regarding emergency contraception among nurses and nursing students in two hospital in Nairobi, Kenya. *Contraception* 1999;59:253-6.
24. Ashimi AO, Amole TG, Muhammad AS, Aliyu LD, Garba NA, Iliyasu Z. Factors associated with Nurses' knowledge and prescriptive attitude toward emergency contraception in Northern Nigeria. *Ann Afr Med* 2016;15:91-2.