

# Fertility Awareness-Based Contraception: Knowledge and Attitudes Among Nigerian Gynaecologists.

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## Abstract

### Background

*The under use of effective contraceptive methods among women at risk for unintended pregnancy is a major factor contributing to its high rate in Nigeria. Fertility Awareness-Based contraception are preferable alternatives for family planning by some due to its lack of side effects, and for religious and cultural reasons. They can play an important role in reducing unintended pregnancy rate in Nigeria. Despite its inclusion in the national family planning guidelines, there is limited awareness of the modern effective methods among clients. Since gynecologists play a pivotal role in information dissemination and provision of family planning methods, we sought to assess their knowledge and attitude to fertility awareness-based methods.*

### Methods

*A structured questionnaire was administered to Nigerian gynaecologists after an oral informed consent. Data analysis was with descriptive statistics using SPSS v. 20.*

### Results

*The age range of the respondents was 31-68 years, with a mean of 44.2 +/- 9.2 SD. The female respondents and those aged less than 50 years were 16 (14.5%) and 76 (69.1%) respectively. Billings Ovulation (78, 70.9%) and Calendar Rhythm (72, 65.5%) were the commonest methods provided by the respondents. However, 78 (70.9%) of them believed that they were less effective than conventional contraceptives because their efficacy depends on cooperation of a partner (84, 76.4%) and on following the rules of the method (94, 85.5%).*

### Conclusion

*The commonest fertility awareness-based contraception provided by Nigerian gynaecologists are the Billings Ovulation and Calendar Rhythm though they do not believe in their efficacy, because of their dependence on partners' cooperation.*

**KEYWORDS:** Fertility Awareness-Based Contraception; Mucus-focused Methods; Basal Body Temperature; Calendar Based Method; Gynaecologists; Nigeria.

## Introduction

The under use of effective contraceptive methods which include conventional and Fertility Awareness Based Methods (FABMs) by women at risk for unintended pregnancy is a major factor contributing to the high rate of unintended pregnancy in Nigeria<sup>1</sup>, with an unmet need for family planning of 19%.<sup>2</sup> Beyond pregnancy prevention and reduction in disease burden, contraception as a component of good reproductive health has socioeconomic benefits for global development goals. Despite these obvious advantages of contraception, there has been numerous controversies regarding efficacy, religious and cultural taboos, health hazards, and effects on marriage, families and sexual values<sup>3</sup>.

Several factors are responsible for the underuse of contraceptive methods by Nigerian men and women such as client's preference, fear of side effects, religious and cultural taboos, and lack of easy access to contraceptives of choice<sup>4</sup>. Counseling for family planning methods are usually performed by obstetricians and gynecologists either in family planning clinics, out-patient clinics or in hospitals. The access to contraceptive methods depends on the knowledge among health care providers<sup>5</sup>.

Fertility Awareness-Based Methods are alternative contraception preferred by some individuals and couples and are part of the national family planning guidelines. A recent study indicate that many Nigerian men and women are unaware of the modern effective FABMs despite their low uptake of conventional contraceptives<sup>4</sup>. One of the reasons they gave for not using fertility awareness methods is because their providers say it is ineffective. Several studies have also suggested that provider

knowledge is deficient about modern FABMs of contraception<sup>6,7</sup>.

Obstetrician-gynaecologists play a critical role in public education and provision of correct family planning information to clients, as well as in helping them make informed contraceptive choice. While some studies have been done on healthcare providers' knowledge and attitude towards emergency contraceptives in Nigeria<sup>8</sup>, none has reviewed the attitude of obstetrician-gynaecologists to FABMs. We decided to assess the knowledge and attitude of Nigerian gynaecologists to FABMs of contraception.

## Materials and Methods

This is a cross-sectional descriptive study of the attitude of Nigerian gynaecologists towards fertility awareness-based methods of contraception. The study was carried out during the 2019 annual conference of the Society of Gynaecology and Obstetrics of Nigeria (SOGON), which held in Abuja, the capital city of Nigeria, centrally located in its Federal Capital Territory. The conference brought together gynaecologists from different parts of the country and was hosted in the Abuja International Conference Center (AICC), situated in the Central Area, Area II of Abuja.

The study instrument was a structured questionnaire, which sought to elicit the demographic characteristics of the respondents (age, gender, professional status, place and duration of practice), as well as their knowledge and attitude to different fertility awareness-based methods of contraception. Knowledge was assessed by asking respondents to indicate agreement with items on a 5-point Likert scale which was collapsed into 2 for ease of presentation- Good knowledge [(excellent (5)/very good (4)/good(3)] and Poor

knowledge [(fair (2)/poor(1)]. Information on the type of FABMs provided in their practices were sought, including views on efficacy and accessibility to FABMs by clients. The questionnaire was pretested among obstetrician/gynaecologists in a tertiary institution in Eastern Nigeria and was confirmed to have adequate content validity and internal consistency (Cronbach alpha 0.73).

The study population consisted of obstetrician-gynaecologists who attended the 10th international congress of the Society of Gynaecology and Obstetrics of Nigeria (SOGON) held at Abuja in December 2019. Ethical clearance was obtained from the Research Ethics Committee of the University of Nigeria Teaching Hospital, Enugu.

Using a sample of convenience, all obstetrician-gynaecologists who consented to the study were selected. Inclusion criteria were being a SOGON member, with a minimum of Part 1 Fellowship of the West African College of Surgeons or National Postgraduate Medical College of Nigeria and practicing in Nigeria. Exclusion criteria

were not having passed the Part 1 Fellowship examination of either of the two colleges above, and not practicing in Nigeria. The objective of the study was explained to the participants and an oral informed consent obtained, while assuring them of strict confidentiality.

The sample size was determined using the Cochran formula  $N = Z^2 PQ / D^2$  where N is the sample size, Z is the standard deviation set at 1.96, P is the prevalence (rate of 90% for Awareness of Healthcare Providers of Emergency Contraception in a previous study in Nigeria),<sup>8</sup> Q= 1-P, and D is the margin of error tolerable (5%) at 95% confidence interval (CI). This gave a sample size of 138.3.

Data collected was analyzed by descriptive statistics using the Statistical Package for Social Sciences (SPSS) Software version 20 (SPSS Inc. Chicago, IL, USA). The results were presented in frequency and percentages. The Pearson chi-square test was used to test association between demographic characteristics and respondent responses, with the level of significance set at  $p < 0.05$ .

## Results

A total of 132 questionnaires were returned but 110 were deemed adequate for analysis.

Table 1: Demographic characteristics of respondents.

Variable	Number (110)	Percentage (100%)
Age (Years)		
30-49	76	69.1
50-69	34	30.9
Gender:		
Male	94	85.5
Female	16	14.5
Professional status		
Senior Registrar	38	34.5
Consultant	72	65.5
Duration of Practice (Years)		
10 years or less	62	56.4

Variable	Number (110)	Percentage (100%)
Greater than 10 years	48	43.6
Place of Practice:		
Public Hospital	96	87.3
Private Hospital	4	3.6
Public and Private Hospital	10	9.1

The age of our respondents ranged from 31 to 68 years, with a mean of 44.2 years (+/- 9.2 SD), while the duration of practice was between 1 year to 40 years with a mean value of 12 years (+/- 8.2 SD).

The respondents of consultant status were 72 (65.5%). While 96 (87.3%) were employed in public hospitals, only 4 (3.6%) worked in self-employed private hospitals. The male respondents were 94 (85.4%), and 48 (43.6%) respondents had been in practice for greater than 10 years.

Table 2: \*Knowledge of FABMs of Contraception as reported by respondents.

Contraception	Good Knowledge N(%)	Poor Knowledge N (%)
Billings Ovulation Method	102 (92.7)	8 (7.3)
Basal Body Temperature	100 (90.9)	10 (9.1)
Sympto-Thermal Method	100 (90.9)	10 (9.1)
Two Day Method	50 (45.5)	60 (54.5)
Creighton Model System	12 (10.9)	98 (89.1)
Calendar-Based Rhythm	96 (87.3)	14 (12.7)

\*Multiple answers were given, N=Number (110), %= percentage

Good knowledge of the Billings Ovulation, Basal Body Temperature, Sympto-Thermal and Calendar Rhythm methods were self-reported by 102 (92.7%), 100 (90.9%), 100 (90.9%) and 96 (87.3%) of our participants respectively. In addition, poor knowledge of the Creighton Model and Two-Day methods were self-reported by 98 (89.1%) and 60 (54.5%) respondents. None of the respondents indicated knowledge of the Standard Day Calendar Based Method.

Table 3: \*Provision of FABMs of Contraception as reported by respondents.

Contraception	Number (%)
Billings Ovulation Method	78 (70.9)
Basal Body Temperature	36 (32.7)
Sympto-Thermal Method	28 (25.5)
Two Day Method	4 (3.6)
Creighton Model System	2 (1.8)
Calendar Rhythm Method	72 (65.5)

The Billings Ovulation and Calendar Rhythm methods were being provided by 78 (70.9%) and 72 (65.5%) participants respectively. The least provided FABMs of contraception were the Creighton Model (2, 1.8%) and Two-Day methods (4, 3.6%). Fertility Awareness-Based contraception was not being provided at all by 12 (10.9%) respondents.

Table 4: \*Reasons for non-provision of FABMs of contraception as reported by respondents.

Reason	n (%)
Not chosen by clients	4 (33.3)
Does not have adequate knowledge of methods	4 (33.3)
Does not believe in their efficacy	12 (100)
n=12	

The reasons given by respondents for not providing fertility awareness-based contraception ranged from clients not requesting for the methods (4, 33.3%), respondents not believing in the efficacy of the methods (12, 100%), and not having adequate knowledge of the methods.

Table 5: \*Factors believed to limit the effectiveness of FABMs of contraception as reported by the respondents.

Factors	Number (%)
Need for Spousal cooperation	84 (76.4)
Need to follow the rules of the method	94 (85.5)
Need for high client motivation	86 (78.2)
Ability to determine fertility period	74 (67.3)
Level of intelligence	2 (1.8)
High failure rate	10 (9.1)

The need for partners' cooperation, clients' inability to determine fertility period and need for high client motivation were factors believed by 84 (76.4%), 74 (67.3%) and 86 (78.2%) respondents respectively, as limiting the effectiveness of these methods.

Most of the respondents 78 (70.9%) believed that the FABMs of contraception were not as effective as the conventional contraceptives. However, 92 (82.3%) also opined that women do not have easy access to these FABMs.

Table 6: \*Methods of increasing access to FABMs of contraception as reported by the Respondents

Method	Number (%)
Acquiring and providing accurate information to women about Modern FABMs	90 (81.8)
Encouraging the addition of FABMs to their Medical School Curricula	66 (60)
SOGON encouraging the Ministry of Health to provide trained FABMs service providers in Primary Health Care Centres	72 (65.5)

Method	Number (%)
Offering the services as part of the Contraceptive methods in their Centres	2 (1.8)
Provision of Public Awareness programs on FABMs of Contraception	2 (1.8)

The addition of FABMs to the Medical School Curricula, and SOGON encouraging the Ministry of Health to provide trained FABMs service providers in Primary Health Care Centres were methods of increasing access to FABMs of contraception suggested by 60% and 65.5% of our respondents respectively.

Table 7a: Association of Demographic Variables with Knowledge of FABMs of contraception.

Variables	Age(yrs.)		Gender		Pract. Dur(yrs).		Prof. status		Place of Pract.		
	<50	≥50	M	F	<=10	>10	Sreg.	Cons.	Pub.Pri.	Pub/Pr.	
<b>Billings Ovulation Method</b>											
Good Knowledge	70	32	86	16	58	44	36	66	90	2	10
Poor Knowledge	6	2	8	0	4	4	2	6	6	2	0
p-value	1.000 <sup>#</sup>		0.600 <sup>#</sup>		0.727 <sup>#</sup>		0.712 <sup>#</sup>		0.003		
<b>Basal Body Temp Method</b>											
Good Knowledge	70	30	84	16	58	42	36	64	88	2	10
Poor Knowledge	6	4	10	0	4	6	2	8	8	2	0
p-value	0.495 <sup>#</sup>		0.352 <sup>#</sup>		0.327 <sup>#</sup>		0.489 <sup>#</sup>		0.010		
<b>Sympto-Thermal Method</b>											
Good Knowledge	68	32	84	16	56	44	34	66	88	2	10
Poor Knowledge	8	2	10	0	6	4	4	6	8	2	0
p-value	0.721 <sup>#</sup>		0.352 <sup>#</sup>		1.000 <sup>#</sup>		0.735 <sup>#</sup>		0.010		
<b>Two Day Method</b>											
Good Knowledge	26	24	48	2	26	24	16	34	42	0	8
Poor Knowledge	50	10	46	14	36	24	22	38	54	4	2
p-value	<0.001 <sup>#</sup>		0.005		0.400 <sup>#</sup>		0.608		0.016		
<b>Creighton Model System Method</b>											
Good Knowledge	10	2	12	0	10	2	10	2	12	0	0
Poor Knowledge	66	32	82	16	52	46	28	70	84	4	10
p-value	0.336 <sup>#</sup>		0.208 <sup>#</sup>		0.064 <sup>#</sup>		<0.001 <sup>#</sup>		0.375		
<b>Calendar-Based Rhythm Method</b>											
Good Knowledge	62	34	84	12	52	44	36	60	84	2	10
Poor Knowledge	14	0	10	4	10	4	2	12	12	2	0
p-value	0.005 <sup>#</sup>		0.120 <sup>#</sup>		0.262 <sup>#</sup>		0.132 <sup>#</sup>		0.039		

Pract. Dur. = Practice Duration; Prof. = Professional; M = Male; F = Female; SReg. = Senior Registrar; Cons. = Consultant; Pub. = Public hospital; Pri. = Private hospital; Pub/Pri. = Public and Private hospital.

# Fisher's Exact Test.

knowledge of Billings Ovulation (p=0.003), Basal Body temperature (p=0.010), Symptothermal (p=0.010) and Calendar Rhythm (p=0.039) Methods. Similarly, professional status was also significantly associated with good knowledge of Creighton Model system.

The place of practice was significantly associated with good

Table 7b: Association of Demographic Variables with Provision of FABMs of contraception.

Variables	Age(yrs.)		Gender		Pract. Dur(yrs).		Prof. status		Place of Pract.		
	<50	>/=50	M	F	</=10	>10	Sreg.	Cons.	Pub.Pri.	Pub/Pr.	
<b>Billings Ovulation Method</b>											
Yes	52	26	66	12	40	38	26	52	68	2	8
No	24	8	28	4	22	10	12	20	28	2	2
p-value	0.390		0.776		0.093		0.676		0.536		
<b>Basal Body Temp Method</b>											
Yes	26	10	28	8	22	14	12	24	34	2	0
No	50	24	66	8	40	34	26	48	62	2	10
p-value	0.620		0.111		0.484		0.852		0.057		
<b>Sympto-Thermal Method</b>											
Yes	20	8	22	6	16	12	10	18	28	0	0
No	56	26	72	10	46	36	28	54	68	4	10
p-value	0.757		0.231		0.923		0.880		0.065		
<b>Two Day Method</b>											
Yes	2	2	4	0	0	4	0	4	2	0	2
No	74	32	90	16	62	44	48	68	94	4	8
p-value	0.586#		1.000#		0.034#		0.296#		0.015		
<b>Creighton Model System Method</b>											
Yes	0	2	2	0	0	2	0	2	2	0	0
No	76	32	92	16	62	46	38	70	94	4	10
p-value	0.094#		1.000#		0.188#		0.544#		0.862		
<b>Calendar-Based Rhythm Method</b>											
Yes	42	30	60	12	32	40	24	48	62	4	6
No	34	4	34	4	30	8	14	24	34	0	4
p-value	0.001#		0.571#		0.001		0.713		0.321		

Age and duration of practice were found to be significantly associated with the provision of the Calendar based methods.

## Discussion

Fertility Awareness-Based Methods of contraception are alternative options for preventing pregnancy where the conventional contraceptives are either unavailable, or unacceptable. Proper use of these methods is dependent on the availability of knowledgeable instructors<sup>9</sup>. Gynaecologists by virtue of their training are at the head of the team.

Most of our respondents were providing the ineffective calendar rhythm methods which wrongly assumes that all women ovulate on day 14 of menstrual cycle. It has been documented that ovulation does not occur consistently on day 14 and that the luteal phase varies and is usually less than 14 days<sup>10</sup>. Only 13% of menstrual cycles are the stereotypical 28 days<sup>11</sup>. Use of the ineffective calendar rhythm method by majority of women may be the reason why clients believe that the FABMs are ineffective<sup>12</sup>. The Standard Day Method, a modern method, is the only calendar-based method that is recommended for women with cycles 26-32 days and identifies the cycle window as days 8-19 for all users in all cycles<sup>13</sup>. However, none of our respondents indicated having knowledge of this method.

The Billings Ovulation and Creighton Model System Methods which are examples of the modern FABMs, involve observation of the mucus pattern, where the fertile period starts at the onset of secretions and ends 3 days after the last clear, stretchy and lubricative mucus. In the Two-Day Method which is a modification of the Billings Method, a woman considers herself fertile on any day in which she noted secretions of any kind and the day

before<sup>14</sup>. Majority of our respondents provided the Billings Ovulation Method, with only few providing the Creighton Method. However, the need for spousal cooperation, need of following the rules of the method and the need for high clients' motivation were factors they noted limited the effectiveness of these methods. The general consensus among the respondents is that the FABMs are ineffective. This would likely affect the eagerness with which they provide FABM services, and their interest in improving their knowledge on the newer effective methods. This may inadvertently lead to provider bias, which is described as service providers sometimes denying access to a family planning method as a result of their own prejudices about the method or its delivery system<sup>15</sup>, whether from cultural, religious or lack of adequate knowledge<sup>16</sup>.

We found that most of the respondents practicing in government teaching hospitals had good knowledge of FABMs, which is not surprising since they are more likely to keep abreast of all methods of contraception compared to private practitioners. In addition, the knowledge of the Creighton Model System was more common among the respondents of senior registrar status probably because this is a recent method which is not taught as part of the regular Medical Curricula, but can be accessed via journal publications as they prepare for their fellowship examinations. Also, the provision of Calendar based rhythm method was commoner among those 50 years and above, and those with greater than 10 years practice duration, probably because it is the oldest FABM, introduced in the 1920s before the availability of hormonal methods, and at its



inception was thought to be one of the most effective method of birth control<sup>17</sup>. It however typically overestimates fertile period with the potential of reduced frequency of intercourse<sup>18</sup>, thereby causing strain in marital relationships.

Though several studies have shown that individually, the FABMs have comparative effectiveness like the barrier, oral and injectable contraceptives<sup>19</sup>, other authors have argued that including FABMs as part of modern contraceptives is a step in the wrong direction<sup>20</sup>, as it sends an incorrect message that we should think of all contraceptives as equally effective under real-world conditions. They noted that these methods assume that a woman has the agency to say no to intercourse during her fertile period, a choice not available to the 10% to 50% of women who experience sexual violence and coercion worldwide<sup>21</sup>. However, from a rights-based perspective, a woman may choose any method of contraception for reasons as varied as personal perception of side effects, cultural norms, religious beliefs, or prior negative experience with a method, all of which must be respected<sup>22</sup>. Having access to the method is therefore a component of her reproductive right.

Newer effective fertility awareness methods of contraception are currently available<sup>23</sup>, and it is imperative that gynaecologists regularly update their knowledge on all family planning issues for the good of their clients. A family planning method no matter how ineffective is better than using no method<sup>19</sup>, as this will go a long way to reduce unmet need. In addition, adding FABMs to the medical school curricula will improve the baseline knowledge of new medical school graduates and they will thus be able to help many more women especially during Youth service in the rural areas across the

country.

According to the Federal Ministry of Health Service Protocol (2016)<sup>24</sup>, Basal Body Temperature, Calendar Based, Billings Ovulation, Sympto-thermal, Lactational Amenorrhoea, Creighton Model System, and Coitus Interrupticus are listed as FABMs of Family Planning. However, there are no formally trained instructors in these methods present in the different Family planning clinics across the country. The Society of Gynaecology and Obstetrics of Nigeria (SOGON) can help by encouraging the Federal Ministry of Health to provide FABM service providers in the Primary Health Centres across the country thereby helping women meet their reproductive intentions.

This study is however limited by the fact that the knowledge and provision of FABMs were self-reported values, hence the study is susceptible to recall bias. In addition, only those who attended the SOGON conference were included in the study, hence the views obtained may not be totally generalizable.

### Conclusion

Nigerian Gynaecologists have fair knowledge of FABMs of contraception but majority still offer the ineffective calendar rhythm method. It is important that they update their knowledge on the newer effective methods, thus improving women access to these methods in fulfillment of their contraceptive choices.

Implementing interventions to increase demands for contraception and meeting the demands for contraception will not only support women and men's ability to realize their reproductive rights but also ultimately may reduce the burden of maternal deaths in Nigeria<sup>25</sup>.

## References

1. Dehlendorf C, Levy K, Ruskin R, Steinauer J. Health care providers' knowledge about contraceptive evidence: A barrier to quality family planning care? *Contracept* 2010; **81**(4): 292–298. DOI:10.1016/j.contraception. 2009.11.006.
2. Nigeria Demographic Health Survey (NDHS) 2018 Key Indicators Report. National Population Commission Abuja Nigeria. The DHS Program Maryland USA 2019.
3. Lawrence RE, Rasinski KA, Yoon JD, Curlin FA. Obstetrician-gynecologists' views on contraception and natural family planning: a national survey *Am J ObstetGynecol* 2011; **204**(2): 124.e1–124.e7. doi:10.1016/j.ajog.2010.08.051.
4. Ezeome IV, Nwankwo TO. Knowledge and Use of Fertility Awareness based Methods (FABMs) of Family Planning (FP) among Men and Women in Enugu, Nigeria. *EC Gynaecol* 2020; **9**(1): 1-12.
5. Podolskyi V, Gemzell-Danielsson K, Marions L. Contraceptive experience and perception, a survey among Ukrainian women. *BMC Women's Health* 2018; **18**:159.
6. Fehring R, Hanson L, Stanford J. Nurse-midwives' knowledge and promotion of lactational amenorrhea and other natural family-planning methods for child spacing. *J Midwifery Women's Health* 2001; **46**:68–73.
7. Wilson MA. The practice of natural family planning versus the use of artificial birth control: family, sexual, and moral issues. *CathSocSci Rev* 2002; **7**
8. Ebuehi OM, Ebuehi OAT, Inem V. Healthcare Providers' Knowledge of, Attitudes towards and Provision of Emergency Contraception in Lagos, Nigeria. *IntFamPlannPersp* 2006; **32**(2): 89-93.
9. Brown SS, Eisenberg L. (eds) Basic Requirements: Contraceptive Knowledge and Access-The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families. Washinton DC: National Academic Press (US); 1995.  
Downloaded from [https://www.ncbi.nlm.nih.gov/books/NBK\\_232123/ on 23/03/2020](https://www.ncbi.nlm.nih.gov/books/NBK_232123/ on 23/03/2020).
10. Wilcox AJ. The timing of the 'fertile window' in the menstrual cycle: day specific estimates from a prospective study. *BMJ* 2000; **321**:1259–1262.
11. Bull JR, Rowland SP, Scherwitzl EB, Scherwitzl R, Danielsson KG, Harper J. Real-world menstrual cycle characteristics of more than 600,000 menstrual cycles. *NPJ Digital Medicine* 2019; **83**(2). Downloaded from <https://doi.org/10.1038/s41746-019-0152-7 on 20/03/2020>.
12. Pallone SR, Bergus GR. Fertility Awareness-Based Methods: Another Option for Family Planning. *J Am Board Fam Med* 2009; **22**:147–157.

13. Malarcher S, Spieler J, Fabic MS, Jordan S, Starbird EH, Kenona C. Fertility Awareness Methods: Distinctive Modern Contraceptives. *Global Health: Sci&Pract* 2016; **4** (1): 13-15.
14. Arevalo M, Jennings V, Nikula M, Sinai I. Efficacy of the new Two Day Method of Family Planning *FertilSteril* 2004; **82** (4): 885-892.
15. Campbell M, Sahin-Hodoglugil NN, Potts M. Barriers to fertility regulation: a review of the literature. *Stud Fam Plann* 2006; **37** (2): 87 - 98 .
16. Solo J, Festin M. Provider Bias in Family Planning Services: A Review of Its Meaning and Manifestations. *Global Health: Sci&Pract* 2019; **7** (3): 371-385.
17. Kambic RT, Lamprecht V. Calendar rhythm efficacy: a review. *Adv Contracept* 1996; **12**: 123-128.
18. Sinai I, Arevalo M. It's all in the timing: coital frequency and fertility awareness-based methods of family planning. *J Biosoc Sci* 2006; **38**: 763-77.
19. Family Planning: A Global Handbook for Providers. World Health Organization Department of Reproductive Health and Research (WHO/RHR) and John Hopkins Bloomberg School of Public Health/Centre for Communication Program (CCP) Knowledge for Health Project. Baltimore and Geneva: CCP and WHO.
20. Austad K, Chary A, Colom A, Barillas R, Luna D, Menjívar C et al. Fertility Awareness Methods Are Not Modern Contraceptives: Defining Contraception to Reflect Our Priorities. *Global Health: Sci&Pract* 2016; **4** (2): 342-345.
21. World Health Organization (WHO). Understanding and addressing violence against women: overview. Geneva: WHO; 2012. Downloaded from: [https://www.paho.org/hq/index.php?option=com\\_content&view=article&id=8165:2013-understanding-addressing-violence-against-women&Itemid=0&lang=en](https://www.paho.org/hq/index.php?option=com_content&view=article&id=8165:2013-understanding-addressing-violence-against-women&Itemid=0&lang=en) on 04/03/2020.
22. World Health Organization (WHO). Ensuring human rights in the provision of contraceptive information and services: guidance and recommendations. Geneva: WHO; 2014. Downloaded from: <http://www.who.int/reproductivehealth/publications/> on 04/03/2020.
23. Shilaih M, Goodale BM, Falco L, Kubler F, DeClerck V, Leeners B. Modern fertility awareness methods: wrist wearables capture the changes in temperature associated with the menstrual cycle. *Bioscience Reports* 2018; **38** BSR20171279. Downloaded from <https://doi.org/10.1042/BSR20171279> on 15/03/2020.
24. National Family Planning /Reproductive Health Service Protocol. Federal Ministry of Health, Nigeria. Revised Edition 2016.
25. Austen A. Unmet Contraceptive need among married Nigerian women: an examination of trends and drivers. *Contraception* 2015; **91**: 31-38.