

PACIFIC JOURNAL OF MEDICAL SCIENCES

{Formerly: Medical Sciences Bulletin}

ISSN: 2072 – 1625



Pac. J. Med. Sci. (PJMS)

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ASSESSMENT OF THE AWARENESS AND PREPAREDNESS FOR MENACHE AMONG FEMALE STUDENTS IN SECONDARY SCHOOLS IN ILE-IFE, OSUN STATE NIGERIA

WASIU OLALEKAN ADEBIMPE¹, OLUWATOYIN ADEWALE², OLUGBENGA OSUNMAKINWA¹; ABIDEMI KAFAYAT ADEGBORE^{3*}; MICHAEL GBALA⁴, NAJEEMDEEN AJAO ADELEKE⁵

1. Department of Community Medicine, Faculty of Clinical Sciences, University of Medical Sciences, Ondo Nigeria;
2. Department of Nursing, Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife Nigeria;
3. Department of Public Health, College of Basic Medical and Health Sciences, Fountain University Osogbo;
4. Department of Obstetrics and Gynaecology, Faculty of Clinical Sciences, University of Medical Sciences Ondo, and UNIMED Teaching Hospital Ondo Nigeria;
5. Department of Obstetrics and Gynaecology, Faculty of Clinical Sciences, Osun State University Osogbo Nigeria

***Correspondence author:** adegborekafayat@gmail.com

Running Title: Preparedness for menarche among girls

Submitted: July 2021; Accepted: August 2021

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WASIU OLALEKAN ADEBIMPE¹, OLUWATOYIN ADEWALE², OLUGBENGA OSUNMAKINWA¹;
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6. Department of Community Medicine, Faculty of Clinical Sciences, University of Medical Sciences, Ondo Nigeria;
7. Department of Nursing, Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife Nigeria;
8. Department of Public Health, College of Basic Medical and Health Sciences, Fountain University Osogbo;
9. Department of Obstetrics and Gynaecology, Faculty of Clinical Sciences, University of Medical Sciences Ondo, and UNIMED Teaching Hospital Ondo Nigeria;
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ABSTRACT:

Generally, the mean age at menarche appears to be falling, and many girls attained menarche unprepared. This study assessed the preparedness of female secondary school students in Ile-Ife in Osun State towards menarche. This cross-sectional descriptive study was carried out among 797 female students selected through multistage sampling method. Semi-structured, self-administered pretested questionnaires were used as research instrument. Data was analyzed using the Statistical Package for Social Sciences software version 23.0. Mean age of respondents was 18.4 ± 2.7 years. A total of 89.6% (714) of all the respondents were informed about menarche before its onset; 73.2% (527) of them were informed by their mothers. About 69.3% of the respondents had good knowledge score of menarche while only 65.9% of them were scored as prepared for menarche. Predictors of being prepared for menarche include higher age at menarche, and being pre-informed about menarche. There is still need to fill the existing knowledge gap among the respondents through adequate school health education program.

Keywords: Menarche, Secondary school adolescents, menstruation, preparedness.

INTRODUCTION:

The period of adolescence in a girl is a critical and important period that usually witnesses the first menstruation, usually referred to as menarche. It is one of the major events of puberty, usually occurring between the ages of 10 and 16 years [1]. Few years before menarche, the production of sufficient gonadotropin acts on the uterine endometrium and paves the way for the first menstruation [2]. Mean age at menarche appear to be falling, most especially in developed countries [3,4], the same may not expressly be said of developing countries due to paucity of data. However, a study conducted in Nigeria has reported higher age of menarche for girls from the low socio-economic group and a lower age for those from the higher socio-economic group, with a mean age of about 13 years [5]. In many Nigerian secondary schools, the biology and physiology of the reproductive system are taught only to science students. However, the menstrual cycle and the practical management of menstruation are often considered as a matter of secrecy and inappropriate for public discussions [6]. This encourage unnecessary beliefs, myths, and superstitions surrounding the menstrual cycle as female students are left to find out information on their own, most especially from the social media. Whereas the veracity and reliability of these internet sources cannot be determined, situation is worsened by the non-

formal teaching of family life health education in secondary schools in Osun State, Nigeria. This is an avenue in the state for adolescents to learn about reproductive health, menstruation and menstrual hygiene. As adolescents enter puberty uninformed and unprepared, this pattern may have far reaching impact on how they manage their subsequent menstrual cycles and the reproductive health period that follows. This study therefore assessed the awareness and preparedness for menarche among adolescent girls in secondary schools in Ile-Ife in Southwestern Nigeria

METHODOLOGY:

This was a descriptive cross sectional institutional based study carried out among female students in secondary schools in Ile-Ife, Southwestern Nigeria.

Ile-Ife is a city in south-western Nigeria, with a total population of about 300,000 going by a projection of the 2006 National Population Census [7]. There are two local government areas (LGA) within the city. Secondary schools are either owned by private individuals or by government. There are a total of eight secondary schools within the city.

The study population constituted all female secondary school students in the senior classes of selected schools; only registered in-school students were included. Students from private secondary schools were excluded from the study, because of administrative bottleneck.

The sample size was calculated using the Modified Leslie Fisher's formula [8]. A sample size of 748 was obtained based on a p-value of 0.5, considering Z alpha and Z beta to be 1.96 and 0.84, respectively [9]. This was rounded up to 800 to cater for cases of attrition and non-responses.

A multistage sampling method was adopted in sample selection. In the first stage, two of the four local government areas (LGAs) in the city were selected by simple random sampling. In the second stage, a list of secondary schools in each of the two LGAs was obtained from the local inspectorate of education. Two schools were randomly selected using simple random sampling. In the third and fourth stages, respondents were randomly selected from four classes in a total of eight eligible senior secondary schools.

Questionnaires were equally allocated to each of the LGAs, school, level and class. Considering an average of 40 students in a class, a list or sampling frame (through numbering of students) that were present on the day of data collection and as they sat in the class was prepared. A systematic sampling of one in three numbered students was drawn and these were subjected to the research instrument. This continued until the questionnaires allocated to that class were exhausted. In classes where questionnaires were not exhausted, another level was chosen using simple random sampling and participants recruited in the same way.

Semi structured self-administered pre-tested questionnaires were used for data collection. The questionnaires were pre-tested among 60 secondary school students in a Government school in Ibadan in Oyo state. The study variables included socio-demographic data, pre-menarchial events and experiences and preparedness for menarche.

Ethical clearance for this project was obtained from the Osun State Ministry of Health research ethical review committee. The heads of the selected schools also gave permission to conduct the study; written informed consent was obtained from each of the selected female students.

The Statistical Package for Social Sciences (SPSS) software version 23.0 was used for data analysis after validating data entered through manual random checks and double entry.

Questions related to knowledge was scored accordingly with score 1 given to right knowledge for those with "Yes" response and score 0 given to wrong knowledge for those with "No" response. Total score on knowledge was computed and mean score determined. Respondents with scores equal to and above the mean were classified as having adequate knowledge while those below the mean score were classified as having inadequate knowledge. Preparedness was scored in a similar way by pulling together all the questions related to preparedness. The Chi-square test was used to demonstrate relationships

between categorical variables. Binary logistic regression model was used for multivariate analysis to determine the strength of associations reported while level of significance was set at P-values ≤ 0.05 for all inferential analysis.

RESULTS:

Of the 800 questionnaires distributed a total of 797 (99.6%) were retrieved from the respondents and found suitable for analysis. This gave a non-response rate of 0.4%. Table 1 shows the socio-demographic characteristics of respondents. The mean age of respondents was 18.4 ± 2.7 years and the age range was 10-19 years. A total of 94.5% (752/797) were single; the mothers of 63.6% (507/797) of the respondents had more than secondary school education attainment.

Table 2 shows the pre-menarchial information received and preparedness for menarche by respondents. The results indicate that majority 89.6% (714) were informed about menarche before its onset. Of these, 73.8% were informed by their mothers. 75.1% stated that their response to what they were told was used to prepare their mind for menarche.

Considerable proportion (70.6%) of the respondents said they informed their mother when they started seeing their menstruation, 21.8% informed their sisters while few 1.0% informed their father. Only (23.1%) said they were celebrated at home when they first had their menses. About (57.0%) of them said they

felt happy when they started menstruating while (67.5%) said they planned not eating or drinking sugary things during their first menses. Close to one third (24.4%) of them said they planned taking some school leave days once menarche sets in, while (19.1%) said they were prepared to skip visiting religious places once menarche starts, including avoiding sexual intercourse (88.3%). Finally, 65.9% (525) of the respondents were prepared.

Table 3 shows the respondents knowledge of menstruation and menstrual hygiene where higher proportion (88.7%) of the respondents knew that menstruation is not a disease. Only few of the respondents (16.9%) opined that pregnant women menstruate. While only few claimed that menstrual blood comes from the stomach where food is digested, more than half 619(77.7%) of the respondents said that menstrual blood comes from the womb. A larger percentage (96.0%) said that mature girls experience monthly/ cyclical flow of blood (menstruation) as well as

(92.1%) said they know that sanitary products exist for menstrual protection. A higher proportion 703(88.3%) said they were aware that poor menstrual hygiene predispose people to infection. However, about (75.4%) stated that they prepared standby commercial sanitary pads to collect menstrual blood during menarche. While majority 705 (88.5%) said they were prepared for the expected change of menstrual sanitary materials, only 36.8% opined that the ideal method of disposing used

menstrual material is by burning. The mean knowledge score as revealed in Table 3 shows that 69.3% of the respondents had good knowledge scores of menstruation and menarche

The statistical analysis of the data is presented in Table 4. There was no statistically significant association between preparedness for menarche and age at menarche ($p = 0.074$), and mother's education level ($p = 0.501$). A statistically significant association was found between preparedness for menarche, and age of respondents and having ever being informed about menarche before it sets in ($p = 0.006$). No statistically significant association was found between knowledge score and age at menarche ($P = 0.257$), mothers' education ($P = 0.361$) and ever being informed about menarche ($P = 0.545$).

Binary logistic regression analysis indicated that there was no difference in likelihood of preparedness for menarche among respondents whose mothers had primary education compared to those whose mothers had higher than primary level education. This observation was found not to be statistically significant (OR: 0.9, 95%CI: 0.457-1.689, $P = 0.501$). Respondents who commenced menarche between 17 and 19 years were one and a half times more likely to be prepared for menarche compared to those who commenced menarche between 10 and 16 years. This observation was found not to be statistically significant. (OR: 1.5, 95%CI: 0.913-2.375 and

$P = 0.112$). Respondents who were pre-informed about menarche before it sets in were about six times more likely to be prepared compared to those who were not informed/ this observation was also found not to be statistically significant (OR: 5.8, 95%CI: 0.693 – 2/019 and $P = 0.265$).

Respondents who commenced menarche between 17 and 19 years were one and a half times more likely to have good knowledge of menarche and menstruation compared to those who commenced menarche between 10 and 16 years (OR: 1.6, 95%CI: 0.560-4.790 and $P = 0.189$). Respondents whose mothers education was above primary were 1.3 times more likely to have good knowledge of menarche and menstruation compared to respondents whose mothers education was just primary (OR: 1.3, 95%CI: 0.689-2.319 and $P = 0.361$). Respondents who were pre-informed about menarche before it sets in were four times more likely to have good knowledge of menarche and menstruation compared to those who were not informed. This observation was also found not to be statistically significant (OR: 4.3, 95%CI: 0.471-1.739 and $P = 0.545$).

Respondents who had their first sexual intercourse at age 17-19 years were about five times more likely to have good knowledge of menarche and menstruation compared to those who had their first sexual intercourse at age of 10-16 years. This observation was found not to be statistically significant (OR: 5.4, 95%CI: 0.001-1.196 and $P = 0.132$). Thus, the

predictors of being prepared for menarche included higher age at menarche and being pre-informed about menarche before its onset.

Predictors of good knowledge about menarche and menstruation include higher age at

menarche, having a more educated mother, being pre-informed about menarche and having age at first sexual intercourse at a later period of adolescence.

Table 1: Socio-demographic characteristics of female secondary school students in Ile-Ife (N=797)

Variables	% (n)	
Age range in years	10-13	3.5 (28)
	14-16	44.5 (355)
	17-19	51.9 (414)
Names of Classes	Junior Secondary School 3 (JSS 3)	9.5 (76)
	SSS 1	27.2 (217)
	SSS 2	28.0 (223)
	SSS 3	35.3 (281)
Marital Status	Single	94.5 (752)
	Engaged/married	5.5 (45)
Religion	Christianity	82.8 (660)
	Islam	15.1 (120)
	Traditional African Religion	2.1 (17)
Educational Status of mothers	Primary school	8.5 (68)
	Secondary school	27.9 (222)
	Above secondary school	63.6 (507)
Monthly Income of parent {Currency: Naira; One Naira = USD}	below N50000	29.5 (235)
	N50000 to N100000	34.5 (275)
	Above N100000	36.0 (287)

Table 2: Awareness and preparedness for menarche

Variables	% (n)	
Were you foretold or informed about the coming of a menstruation before its onset (n = 797)	Yes	89.6 (714)
	No	10.4 (83)
Who informed you (n=714)	Mother	73.8 (527)
	Sister	17.2 (123)
	Father	0.4 (3)
	Friend	8.5 (61)
What was your response to what you were told (n=714)	Discarded it	6.4 (46)
	Prepared your mind	74.9 (535)
	Got scared	18.6 (133)
When you started menstruating, did you tell anyone (n = 797)	Yes	90.2 (719)
	No	9.8 (78)

Who did you tell (n=719)	Mother	70.7 (508)
	Sister	21.8 (157)
	Father	0.97 (7)
	Friend	6.5 (48)
Were you celebrated at home when you first had your menses (n = 797)	Yes	23.1 (184)
	No	76.9 (613)
Have you started ever menstruated (n =797)	Yes	93.4 (744)
	No	6.6 (53)
Age at first ever menstruation (n = 744) (mean age 13.5 ± 4.9 years)	10-13	17.3 (129)
	14-16	71.8 (534)
	17-19	10.9 (81)
How did you feel when you started menstruating (n = 797)	Happy	57.0 (454)
	Sad	21.5 (171)
	Ashamed	21.6 (172)
Do you plan not to eat or drink sugary foods at the onset of menarche? (n = 797)	Yes	67.5 (538)
	No	32.5 (259)
Do you plan to take some school leave days once menarche sets in (n = 797)	Yes	24.4 (194)
	No	75.6 (603)
What are the things you feel you would skip once menarche sets in (n = 797)	Visit religious place	6.5 (52)
	Touch growing plants	4.8 (38)
	Nothing	0.5 (4)
	Sexual intercourse	88.2 (703)
Mean preparedness score	Good	65.9 (525)
	Poor	34.1 (272)

Table 3: Knowledge of menstruation and preparedness among respondents (N=797)

Items	Parameters	Percentage (n)
Menstruation is a disease	Yes	11.3 (90)
	No	88.7 (707)
Pregnant women menstruate	Yes	16.9 (135)
	No	83.1 (662)
Menstrual blood comes from the stomach where the food is digested	Yes	18.1 (144)
	No	81.9 (653)
Menstrual blood comes from the womb	Yes	77.7 (619)
	No	22.3 (178)
Mature girls experience monthly/ cyclical flow of blood (menstruation)	Yes	96.0 (765)
	No	4.0 (32)
Pain during menstruation means that someone is sick	Yes	15.7 (125)
	No	84.3 (672)
It is harmful for a woman's body if she runs or dances during her period	Yes	21.7 (173)
	No	78.3 (624)
There are sanitary products for menstrual protection	Yes	92.1 (734)
	No	7.9 (63)
Poor menstrual hygiene predisposes to infection	Yes	88.2 (703)
	No	11.8 (94)
The following should normally be used to collect menstrual	Rag	2.3 (18)

blood	Homemade pads	16.1 (128)
	Commercial sanitary pads	75.4 (601)
	Others	6.3 (50)
Hands-washing is recommended after each clean up	Yes	94.0 (749)
	/No	6.0 (48)
The following are ideal methods of disposing used menstrual material	By burning	36.8 (293)
	Throw into waste bin	33.1 (264)
	Drop in pit latrine	24.7 (197)
	Washing, drying & reusing	5.4 (43)
Knowledge score	Good	69.3 (552)
	Poor	30.7 (245)

Table 4: Associations between socio-demographic data and preparedness for menarche and knowledge of menarche and menstruation

Variables	Preparedness for menarche N (%)		X ²	P value	OddsRatio	P value
	Good	Poor				
Age at menarche						
10-16*	103(79.1)	27(20.9)	2.547	0.074	1.5	0.112
17-19	523(84.8)	94(15.2)				
Mothers education						
Primary*	53(77.9)	15(22.1)	0.016	0.501	0.9	0.501
> primary	573(78.6)	156(21.4)				
Pre- informed about menarche						
No*	563(78.9)	151(21.1)	0.228	0.006	5.9	0.265
Yes	63(75.6)	20(24.4)				

Variables	Knowledge score N(%)		X ²	P value	OddsRatio	P value
	Good	Poor				
Age at menarche						
10-16*	24(85.7)	4(14.3)	0.831	0.257	1.6	0.189
17-19	604(78.5)	165(21.5)				
Mothers education						
Primary*	52(76.5)	16(23.5)	0.241	0.361	1.3	0.361
> primary	576(79.0)	153(21.0)				
Pre- informed about menarche						
No*	559(78.3)	155(21.7)	1.215	0.545	4.3	0.545
Yes	69(82.9)	14(17.1)				
Age at 1st sexual intercourse						
10-16*	97(75.2)	32(24.8)	1.538	0.132	5.4	0.132
17-19	494(80.1)	123(19.9)				

*Reference category

DISCUSSIONS:

Majority of the respondents were informed about menarche by their mothers, and they also informed their mothers when it eventually commenced. These findings support those of other similar studies [10-12]. Mothers traditionally appear to be in the best position of proximity with their daughters in matters like these that are usually regarded as secret and private. The society may blame mothers when their daughters are misguided in matters of sexual and reproductive health because they are naturally expected to fill in such gaps within the society [13].

The mean age of menarche in our present study supports other studies in which mean age at menarche was 13.7 years [10,14]. However, these figures were higher when compared to the mean age of 12.3 years reported by Padez [15].

A worrisome trend was the young mean age at sexual intercourse coupled with poor use of condom, at last sexual intercourse, among majority of the respondents in our present study. This was in agreement with a similar study, by Thomas et al [10]. They reported that 61% of the 1,100 girls already had sex for the first time, with a slightly higher mean age at first sexual intercourse of about 16 years [10]. This result portrays great consequences for adolescents because they are at high risk of being pregnant while in school, at higher risk of contracting Sexually Transmitted Infections

from sexual partners, at higher risk of facing an induced abortion and dropping out of school.

About two thirds of the respondents in our study had good knowledge on menstrual preparedness. This is similar to the findings by Balqis et al [16], but different when compared to other studies [17, 18] in which majority of the respondents were assessed to have inadequate knowledge.

Authors are of the opinion that when a girl is well aware and knowledgeable about an upcoming event, it is not surprising if she becomes well prepared for the event and should be able to manage such event better when it would eventually come. In this day of internet which adolescents have good access to, they might have sourced for information on menarche from the social media towards allaying their fears and anxiety on the subject matter.

A little below two thirds of the respondents in our study were well prepared for menarche while the remaining one third were not. This supports the findings in another study [19] in which only one third were reported to be unprepared for menarche. These were different when compared to other studies in which majority of their respondents were assessed to have inadequate preparation for menarche [12,17,18,20].

The high level of preparedness in this study could be as a result of high level of respondent's knowledge which could be a good

omen for good menstrual hygiene practices among the girls in future.

About half of the respondents said they felt happy when menstruation started, only a few said that they were prepared and eventually though, had some restrictions, such as not being able to go to religious places or schools. These findings are not surprising and may not be unconnected with the high level of pre-menarchial knowledge obtained by our respondents and the resulting preparedness. In a similar study [9, 21], fear and anxiety were the feelings that are associated with the coming of menarche. In yet another study, [19], majority of respondents had restrictions, though the study was conducted in a highly religious and traditional area where cultural and religious taboos may have contributed to the differences in reports presented. The relatively high age at menarche and being informed (mostly by mothers) about menarche before its onset were predictors of good preparedness for menarche in our present study. These findings were similar to other studies [12,14]. Invariably, it is expected that educated mothers are more likely to give accurate and detailed information to their daughters on when and what to expect once menarche sets in, partly because she is also knowledgeable about it. Thus, it can be assumed that older adolescents are more likely to have interacted with their friends, have better access to the internet or social media and could have read menstruation related information in the books compared to younger

adolescents. This underscores the need for mothers to get close to their daughters as soon and early as possible to acquaint them with correct information about menarche and management of menstruation.

CONCLUSION:

The results obtained indicated that a significant proportion of the respondents had knowledge gaps and were not prepared for menarche. Invariably, there is still need to fill the existing knowledge gap among the respondents through adequate school health education program. The sources and content of the information on menarche received by respondents could determine their level of preparedness, hence parents should be close to their girls in order to be able to give correct information and allay their fears and anxiety on menarche

ACKNOWLEDGEMENT:

Authors wish to thank the principals of the schools for granting permission for data collection; and each adolescent who volunteered for data collection and taking part in the successful conduct of this study.

Contributions of authors:

WO conceived the idea, wrote the concept note and took part in the whole process. OA took active part in data collection; all others were involved in the writing and review process.

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