

JOURNAL OF BASIC and CLINICAL REPRODUCTIVE SCIENCES

Official Publication of the Society of Reproductive Biologist of Nigeria

Volume 5 / Issue 1 / January - June 2016

www.jbcrs.org

J B C R S

Menstrual Pattern and Disorders and Impact on Quality of Life Among University Students in South-Western Nigeria

Wasiu Olalekan Adebimpe, Emmanuel Oludele Farinloye¹, Najeemdeen Ajao Adeleke¹

Departments of Community Medicine and ¹Obstetrics and Gynecology, College of Health Sciences, Osun State University, PMB 4494, Osogbo, Nigeria

ABSTRACT

Background: Menarche is one of the signals of a woman's transition from childhood to adulthood. Abnormal menstrual pattern could cause morbidities that may disrupt daily activities. **Aim:** To assess the pattern of menstrual disorders and impact on the quality of life among university students in South-Western Nigeria. **Subjects and Methods:** This descriptive, cross-sectional study was carried out among 494 university students in South-Western Nigeria, selected using multistage sampling method. Research instruments were semi-structured, self-administered, and pretested questionnaires. Data were analyzed using the SPSS software, version 17.0 (Chicago, IL, USA). **Results:** Mean age at menarche was 13.6 (1.1) years. About 89.1% (440/494) were aware or foretold of the coming of menarche. Major sources of information include parents, relatives, friends, and health care workers. About 82.8% (409/494) had regular monthly menstrual flow pattern, 21.9% (108/494) had menorrhagia, 16.0% (79/494) had oligomenorrhea, 9.1% (45/494) had polymenorrhea, while 65.8% (325/494) had occasional associated dysmenorrhea. About 10.7% (53/494) had treated dysmenorrhea in a health facility in the last 1 year. Menstruation usually puts tension on 46.2% (228/494) of respondents, disrupted work at school in 38.9% (192/494), and at home among 42.9% (212/494) of them, while it had prevented going to school for at least 1 day in the last 6 months among 15.6% (77/494) of respondents. Girls with irregular menstrual pattern were 1.4, 1.8, and 1.6 times more likely to have experienced pressure or lenition on them, had school work, and home work disrupted, respectively. Girls who were precounseled about menarche were twice less likely to have had disruptions of school activities compared to those who were not precounseled (odds ratio = 0.5, 95% confidence interval: 1.96–3.01, $P = 0.01$). **Conclusion:** This study demonstrated that menstrual disorders constitute a challenge to a significant percentage of adolescents. This also underscores the need for guided sexuality and menstrual related information targeted at youths.

KEY WORDS: Menstruation, menarche, menstrual disorders, university students

INTRODUCTION

Menstruation is an important component of the active reproductive life of a woman. Starting with menarche in young girls, it becomes a regular monthly event that culminates into social, sexual, and reproductive life that later terminates with menopause. However, it could come with traumatic experience in some women^[1,2] and may be associated with menstrual syndromes. Common menstrual disorders reported among young women include dysmenorrhea, irregular frequency of menstruation, premenstrual syndrome, irregular duration of flow amenorrhea, polymenorrhea, and

oligomenorrhea.^[3] Globally, little attention has been paid to menstrual disorders and many of such presentations go unnoticed. In many cultures, issues of menstruation are a taboo that should not be discussed openly and were regarded as strictly personal affairs.^[1,2] In some settings, it was regarded as normal traumatic events that adolescent girls should pass through.

Address for correspondence

Dr. Wasiu Olalekan Adebimpe,
Department of Community Medicine, College of Health Sciences,
Osun State University, PMB 4494, Osogbo, Nigeria.
E-mail: lekanadebimpe@gmail.com

Access this article online

Quick Response Code



Website:

www.jbcrs.org

DOI:

10.4103/2278-960X.175741

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: reprints@medknow.com

How to cite this article: Adebimpe WO, Farinloye EO, Adeleke NA. Menstrual pattern and disorders and impact on quality of life among university students in South-Western Nigeria. *J Basic Clin Reprod Sci* 2016;5:27-32.

Disease burden associated with menstrual disorders include dizziness, headache, depression, and anxiety, calling for medical attention. Primary dysmenorrhea or painful menstruation without pelvic abnormalities may be associated with vomiting, fatigue, back pain, and diarrhea while secondary dysmenorrhea refers to painful menstruation due to pelvic abnormalities. Menstrual disorder is one of the most common cause of regular absenteeism of young women from schools and work places and inability to meet up with some social functions.^[4-6] In a study, the most common effect of menstrual problems on daily routine reported was in the form of prolonged resting hours (54%) followed by inability to study (50%).^[7] Other activities that could be affected by dysmenorrhea include reduction in class concentration, sports, class participation, socialization, homework, test-taking skills, and grades.^[7]

Several studies have shown that youths with dysmenorrhea reported that it affects their academic performance and social and sports activities, a distressing finding given the availability of effective medications.^[4,8] One of the studies reported a high likelihood that stressful menstrual conditions may lead to young women seeking medical attention. Women with menstrual irregularities and discomfort were about 5 times more likely to seek medical attention compared to women with normal menstruation and this observation was statistically significant ($P < 0.05$). The study concluded that great number of university students suffered menstrual disorders and discomfort with impact on their health status, productivity at homes, and school as well as social functions, and interactions with others in their environment.^[9] Despite these evidences, huge paucity of data on the effect of menstrual disorders on the quality of life exists locally here, while evidence of its effect on health status and social integration among youths are scarce, most especially in Nigeria. This study, therefore, assessed the pattern of menstrual disorders and impact on the quality of life among university students in South-Western Nigeria.

SUBJECTS AND METHODS

Study area

The State of Osun is located in South-Western Nigeria and have a population of about 3.5 million.^[10] There are three Tertiary Institutions in Osogbo city, which is the state capital, namely Osun State University, LAUTECH College of Health Sciences and Fountain University. Osun State University has the main campus (with only two colleges) in Osogbo. LAUTECH has only the College of Health Sciences in Osogbo city. Fountain university, though a private university, unlike the other two, has only one campus, which is located in Osogbo city. The total population of students in these institutions in Osogbo is about 12,000.

Study design

This was a descriptive, cross-sectional study of the pattern of menstruation and menstrual disorders and impact on the quality of life among female university undergraduates in South-Western Nigeria. Registered female students of these universities whose ages were 15 years and above constitute the target population.

Sample size estimation

Using the Leslie Fischer's formula for the calculation of sample size for a population above 10,000,^[11] a sample size of 459 was calculated using menstrual disorders prevalence rate of 54.0.^[12] This was increased to 500 to take care of possible attrition from this study.

Sampling method

A multi stage sampling method was used in selecting participants into this study. In the first stage, two out of three universities were selected at random employing simple balloting and this evolved Osun State University and Fountain University. In the second stage, a list of all colleges and departments in these universities were obtained from the university authorities. Using simple random sampling, two colleges and two departments per college were randomly selected from each of the universities employing simple balloting. In each department, 2 level classes were randomly chosen giving a total of 16 level classes. Equal allocation technique was used in sharing the questionnaires among classes.

In the lecture hall while preparing for classes, participants were recruited into the study using a systematic sampling of one in three students according to that day's sitting arrangement. This continued until questionnaires allocated to that class got exhausted. In the class where questionnaires were not exhausted, another class was chosen using simple random sampling and participants were recruited in the same way.

Research instruments

Semi-structured, self-administered questionnaire was used in data collection. This was pretested among university students in Ile Ife in Osun State, and the responses were used to modify and validate the questionnaires. Study was carried out during the Harmattan semester of the 2013/14 academic session. The study variables sought included sociodemographic data, preparation for and occurrence of menarche, and pattern of menstruation. Toward ensuring validity of data collected, the pretesting was complimented by training of research assistants on how to conduct and re-assure respondents of privacy in data collection and confidentiality of information volunteered. Boys were duly separated from the girls during data collection to prevent undue interference. Quality of life related variables include

effect of menstrual irregularities on daily homework such as cooking, and going on errands for parents; effect on academic activities at home such as going for home lessons, and academic activities in schools such as reading, preparation for school work, and attendance at class sessions. Others include attendance at social functions such as parties and religious activities.

Ethical clearance

Ethical clearance to conduct the study was obtained from LAUTECH Teaching Hospital Ethical Review Committee. Consent was obtained from the heads of selected departments, the lecturer who were in class with students on the day of data collection and the respondents who took part in the study. Written informed consent was obtained from each respondent who were also assured of confidentiality of findings.

Data management

The SPSS software, version 17.0 (Chicago, IL, USA) was used for data entry and analysis after sorting out the questionnaires. Validity of data was done by double entry and random checks for errors and outlier values. Relevant frequency distributions tables and measures of central tendency indices were generated. The binary regression model was used for multivariate analysis of quantitative variables, while level of statistical significance was set at $P \leq 0.05$ in determination of relationships between categorical variables.

RESULTS

The mean age of respondents studied was 20.8 (2.7) years, with 15–19 years age group constituting 39.1% (193/494) of study population. Three-hundred and ninety-six (98.4%) were single, while 74.5% (368/494) were Christians by religion. All academic levels or year of study of students were represented, and all the respondents were female students [Table 1].

Table 2 shows that 46.2% (228/494) exercised fears when menstruation first appeared. Mean age at menarche was 13.6 (1.1) years. Four-hundred and forty (89.1%) were foretold of the commencement and coming of menstruation and counseled. Sources of this information included parents, relatives, friends, teachers, and health care workers. Major premenarche messages or advice received from these sources included abstaining from sexual intercourse and to improve on personal hygiene once menstruation starts. Three-hundred and twenty-five (65.8%) of respondents told their parents when menstruation eventually came.

For a period of about 3 years after the onset of menarche, 82.8% (409/494) had regular monthly menstrual pattern, 21.9%

Table 1: Sociodemographic characteristics of respondents

Sociodemographic (n=494)	n (%)
Age in years	
15-19	193 (39.1)
20-24	238 (48.2)
25-29	54 (10.9)
30 and above	9 (1.8)
Year of study	
100 or first year	47 (9.6)
200 or second year	214 (43.3)
300 or third year	162 (32.8)
400 or fourth or final year	71 (14.4)
Marital status	
Married	8 (1.6)
Single	396 (98.4)
Religion	
Christian	368 (74.5)
Muslim	105 (21.3)
Traditional	14 (2.8)
Others	7 (1.4)

Table 2: Information about menarche and menstruation

Variable (n=494)	n (%)
Age at first ever menstruation in years (n=494)	
<10 years	1 (0.2)
10-14	344 (69.6)
15-19	135 (27.4)
20 and above	14 (2.8)
Have older female siblings	255 (51.6)
Had fear when menstruation first appeared	228 (46.2)
Foretold or precounseled of coming of menstruation	440 (89.1)
Source of information	
Parents	213 (43.1)
Relatives	31 (6.3)
Friends	28 (5.7)
Teacher	88 (17.8)
Health care workers	80 (16.2)
Others	53 (10.7)
Premenarche message or advise given	
Abstain from sex	266 (53.8)
Improve personal hygiene	78 (15.8)
Avoid dating	54 (10.9)
Avoid sugary things	16 (3.2)
Received counseling of meaning of menstruation	23 (4.7)
Counseled on social behavioral change in adult life	34 (6.9)
Reassured	28 (5.7)
Who did you tell when you saw first menstruation	
Parents	325 (65.8)
Relatives	49 (9.9)
Friends	47 (9.5)
Teachers	36 (7.3)
Health care workers	18 (3.6)
Nobody	19 (3.8)
I was well prepared for my menarche	208 (42.1)

(108/494) had irregular, 16.0% (79/494) said menstruation could skip 1 or more months before coming, 9.1% (45/494) had polymenorrhea, while 65.8% (325/494) had associated dysmenorrhea, according to Table 3, 208 (42.1%) said they were eventually prepared for menarche. At present, duration of menstrual flow was 3–5 days among 78.9% (390/494) of respondents, while it flows for more than 5 days among 12.6% (62/494). Sixty-two (12.6%) had heavy flow (menorrhagia), 13.8% (68/494) had reduced flow, while 75.7% (364/494) had normal flow. Fifty-three (10.7%) had treated dysmenorrhea in a health facility in the last 1 year. Four-hundred and sixty-nine (94.9%) students usually have full or painful breast few

Table 3: Pattern of menstruation among respondents

Variables	n (%)
Common premenstrual symptoms (multiple responses)	
Lower abdominal pains	98 (19.8)
Back pain	56 (11.3)
Breast symptoms	21 (4.3)
Facial skin changes	34 (6.9)
Diarrhea	26 (5.3)
Nausea and vomiting	23 (4.7)
Fever, cold and catarrh	14 (2.8)
Increase appetite	8 (1.6)
Mood changes	16 (3.2)
Common pattern of menstruation ever experienced since menarche (multiple responses)	
My menstruation is regular and comes monthly	409 (82.8)
Regular, comes every 6 weeks	30 (6.1)
Regular, comes every 3 weeks	45 (9.1)
Irregular but still comes every month	108 (21.9)
Can skip one or more months without coming	79 (16.0)
Number of days menstruation usually comes	
<3 days	42 (8.5)
3-5 days	390 (78.9)
>5 days	62 (12.6)
Volume of blood loss as described by subject	
Normal flow	364 (73.7)
Heavy flow	62 (12.6)
Reduced flow	68 (13.8)
Other associated menstrual pathologies	
Respondent usually experienced associated dysmenorrhea	325 (65.8)
Have treated menstrual pains in a HF in the last 1 year	53 (10.7)
My breast usually full/painful few days or hours to menstruation	469 (94.9)
Menstruation usually puts pressure or tension on me	228 (46.2)
Menstruation usually disrupts my work at school	192 (38.9)
Menstruation usually disrupts my work at home	212 (42.9)
It had prevented me from going to school for 1 day at least in the last 6 months	77 (15.6)
Subject can do a 6 months recall of her LMPs	212 (42.9)
Have a written record of monthly menstruation in the last 6 months	181 (36.6)

LMPs=Last menstrual periods

days or hours to menstruation. Menstruation usually puts pressure or tension on 46.2% (228/494) and usually disrupts work at school among 38.9% (192/494). Menstruation usually disrupts work at home among 42.9% (212/494), while it had prevented going to school for 1 day at least in the last 6 months among 15.6% (77/494) of respondents. Only 42.9% (212/494) of respondents could do a 6 months recall of her last menstrual periods (LMPs), while 36.6% (181/494) claimed to have a written record of monthly menstruation in the last 6 months. Having dysmenorrhea was statistically, significantly associated with age at menarche, duration of menstrual flow, missing school days, and disruption of activities at home and in school ($P = 0.01$).

Table 4 shows that girls with irregular menstrual pattern were 1.4, 1.8, and 1.6 times more likely to have experienced pressure or lenition on them (odds ratio [OR] = 1.38, 95% confidence interval [CI]: 0.60–3.12 and $P = 0.45$); had school work disrupted (OR = 1.76, 95% CI: 1.55–5.62 and $P = 0.04$); or had their homework disrupted (OR = 1.62, 95% CI: 0.19–1.95 and $P = 0.42$), respectively.

Girls who were precounseled on menarche were 2.2 times less likely to be caught unaware of menarche compared to

Table 4: Binary logistic regression showing association between irregular menstrual pattern and some selected menstruation related variables

	OR	95% CI		P
		Lower	Upper	
Having irregular menstruation				
Puts pressure on me (reference category = no)	1.38	0.60	3.12	0.45
Disrupt work at school (reference category = no)	1.76	1.55	5.62	0.04
Disrupt work at home (reference category = no)	1.62	0.19	1.95	0.42
Precounseled for menarche				
Caught unaware of menarche (reference category = no)	0.45	1.01	4.30	0.01
Prepared for menarche (reference category = no)	1.4	2.03	3.71	0.02
Had disruption of school work (reference category = no)	0.5	1.96	3.01	1.12

OR=Odds ratio, CI=Confidence interval

those who were not counseled (OR = 2.2, 95% CI: 1.01–4.30, $P = 0.01$). Similarly, those who were precounseled about menstruation were 1.4 times more likely to have prepared for menstruation (OR = 1.4, 95% CI: 2.03–3.71, $P = 0.02$) and twice less likely to have had disruptions of school activities compared to those who were not precounseled (OR = 0.5, 95% CI: 1.96–3.01, $P = 0.01$), though these observations were found to be statistically significant.

DISCUSSIONS

Menstruation is an important component of the active reproductive life of a woman. Though it is a natural phenomenon and an important indicator of women's health,^[3,13] it could come with traumatic experience in some women, most especially those who were not prepared for any departure from the normal menstrual pattern.^[11,2]

The mean age at menarche of around 13.6 years in this study supports similar other studies including 13.7 (1.68) years in Nigeria,^[8] 12.5 (standard deviation [SD] 1.0) years in Lebanon,^[14] 13.6 (SD 1.7) years among some other Lebanon girls, and (12.3 [SD 1.1] years) in Islamic Republic of Iran.^[15] Others include Saudi Arabia (12.0 [SD 1] years),^[16] Hong Kong (12.3 [SD 1.1] years),^[17] and Malaysia (12.3 [SD 1.1] years).^[18] This mean age in this study was, however, younger when compared to a similar Nigerian cross-sectional study (similar sample size and nature and mean age of respondents) done in 2010 that reported a mean age of 14.2 years.^[19] These comparative studies may have suggested a possible drop in age at menarche over about a 4 years period. However, further studies are required to validate this observation. Menarche is the hallmark or cardinal event of a woman's secondary sexual characteristics signifying sexual maturity and childhood transition to adulthood. The possible declining age of menarche could be attributed to better living standards, for example, adequate nutrition and health care. These trends have implications for reproductive health among university girls and adolescents as regards commencement of dating, giving up to peer influences, sexual relationships, including

sexual intercourse, transmission of sexually transmitted infections, and unintended pregnancies. Thus, there is a need for the parents to prepare young girls for menarche at earlier age, and give them correct and well-guided information, though other sources of information on menarche to the young girls may also offer early counseling roles to these girls.

Majority of our studied subjects had regular monthly menstrual pattern. This proportion is, however, higher when compared to other studies,^[6,14] both of which reported about a third only having regular menstrual period. This still suggest that menstrual-related diseases are not uncommon.^[18] Menstrual irregularities reported in this study include menorrhagia, oligomenorrhea, polymenorrhea, and this supports several other studies.^[3,6,14,20] With a significant two-thirds presenting with painful menstruation and about one-tenth of them having sought treatment for dysmenorrhea, this complain appears very common among young girls as reported by some other studies (60–93%).^[3,13,19,21,22] Much lower figure of dysmenorrhea of 38.1% was reported in another study^[3] and extremely lower figure of about 6.2% of the studied girls in another study experienced dysmenorrhea.^[23] All these data further suggested that dysmenorrhea is about the most common gynecologic and menstrual-related disorder among female youths.

Menstruation usually puts pressure or tension on nearly half of respondents, disrupts home work among two-fifths, and school work among a third including preventing going to school for 1 day at least in the last 6 months. Common effects of menstrual problems on daily routine reported by other supportive studies include prolonged resting hours (54%), followed by inability to study (50%),^[17] reduced concentration in the class (59%), reduced performance in sports (51%), reduced class participation (50%), socialization (46%), homework (35%), test-taking skills (36%), grades (29%), and school absenteeism.^[4-6] This further supports the fact that menstruation could bring discomfort and eventually low quality of life as a result of inability to cope with the usual and expected social functions and gender roles.

In this study, majority of respondents had discussed menstruation with some significant others including parents, siblings, and friends. This supports other studies in which more than half (52%) of the subjects discussed their menstrual problems with their mother.^[7] About one-tenth of our respondents had consulted a health facility for menstrual-related problems, compared to half^[7] and 7.5%^[14] of the students who decided to seek medical attention for menstrual abnormalities in other reports. This pattern of health-seeking behavior was better than 5.3% reported

among rural young adolescents consulting doctors for menstrual problems, with 22.4% taking over-the-counter medications.^[17] In other studies, two-thirds had opted for allopathic treatment for their menstrual problems,^[7] while self-medication was practiced by 7.13% of the adolescent girls.^[23] Since outcome of treatment of present illness is a co-determinant of future gynecological outcomes, it is important that young girls have adequate information and unhindered access to quality health care, most especially at the University Health Services. Dysmenorrhea being a predictor of having negative menstrual experiences and missing of school days, its association with age at menarche and length of bleeding also supports findings from other studies.^[8,13]

In this study, less than half of respondents could do a 6 months recall of their LMP, while about one-third claimed to have a written record of monthly menstruation in the last 6 months. These information or knowledge have a lot of implications for the awareness of ovulation period as related to possible ongoing sexual activities and its consequences. The association between being foretold of the coming of menarche and preparing for it and having less disruption of home and school activities supports findings from several other studies.^[6,8,14,20] Students who were precounseled are more likely to have expect these complaints and may worry themselves less compared to others since many of these menstrual presentations could be a temporary occurrence for some months. This underscores the need for guided sexuality and menstrual-related information targeted at youths. These information and counseling could come from the various significant others who gave premenarche counseling to girls studied such as parents, guardians, and teachers, the importance of university-based seminars and counseling sessions at the University Health Services and Centers should not be under estimated. One limitation of this study is our inability to use a standardized instrument to measure the quality of life of the participants, rather we used self-drafted quality of life and related questions. However, questions asked in our research instrument were representative of most quality of life assessment questionnaire in use. No WHO or other agency quality of life questionnaires on menstruation were found online for possible adoption.

CONCLUSION

Age at menarche appeared to have dropped and menstrual disorders are common among Nigerian university students studied, disrupting routine activities at school and homes. Youths need unhindered access to early counseling on menarche and menstrual issues. While parents need to move closer to their children for guided information on

menstruation and other reproductive health issues as a matter of right, University Health Services should make treatment of menstrual problems easily accessible to undergraduates in Nigerian institutions of higher learning.

Acknowledgment

The authors would like to thank the Heads of institutions who gave approval to conduct this study, and the students who participated in the study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Harlow SD, Campbell OM. Menstrual dysfunction: A missed opportunity for improving reproductive health in developing countries. *Reprod Health Matters* 2000;8:142-7.
2. Walraven G, Ekpo G, Coleman R, Scherf C, Morison L, Harlow SD. Menstrual disorders in rural Gambia. *Stud Fam Plann* 2002;33:261-8.
3. Karout N, Hawai SM, Altuwajiri S. Prevalence and pattern of menstrual disorders among Lebanese nursing students. *East Mediterr Health J* 2012;18:346-52.
4. Banikarim C, Chacko MR, Kelder SH. Prevalence and impact of dysmenorrhea on Hispanic female adolescents. *Arch Pediatr Adolesc Med* 2000;154:1226-9.
5. Grant C, Gallier L, Fahey T, Pearson N, Sarangi J. Management of menorrhagia in primary care-impact on referral and hysterectomy: Data from the somerset morbidity project. *J Epidemiol Community Health* 2000;54:709-13.
6. El-Gilany AH, Badawi K, El-Fedawy S. Epidemiology of dysmenorrhoea among adolescent students in Mansoura, Egypt. *East Mediterr Health J* 2005;11:155-63.
7. Sharma A, Taneja DK, Sharma P, Saha R. Problems related to menstruation and their effect on daily routine of students of a medical college in Delhi, India. *Asia Pac J Public Health* 2008;20:234-41.
8. Iliyasu Z, Galadanci HS, Abubakar IS, Ismail AO, Aliyu MH. Menstrual patterns and gynecologic morbidity among university students in Kano, Nigeria. *J Pediatr Adolesc Gynecol* 2012;25:401-6.
9. Ayotunde L, Orji EO, Ajibike L. Menstrual disorder among young female workers and its implication on job performance (Case Study of Obafemi Awolowo University, Nigeria). *IFE Psychologia* 2007;16:224-38.
10. National Population Commission (NPC). *Nigeria Demographic and Health Survey*. Calverton, Maryland: NPC and ORC Macro; 2006. p. 45-7.
11. Araoye MO. Sampling methods. In: *Research Methodology with Statistics for Health and Social Sciences*. Ilorin, Nigeria: Nathadex Publishers; 2004. p. 117-20.
12. McPherson ME, Korfine L. Menstruation across time: Menarche, menstrual attitudes, experiences, and behaviors. *Womens Health Issues* 2004;14:193-200.
13. Poureslami M, Osati-Ashtiani F. Attitudes of female adolescents about dysmenorrhea and menstrual hygiene in Tehran suburbs. *Arch Iran Med* 2002;5:219-24.
14. Santana T, Wehbe N, Ziade F. Exploring dysmenorrhoea and menstrual experiences among Lebanese female adolescents. *East Mediterr Health J* 2012;18:857-63.
15. Mohammadzadeh Z. Puberty health education in Iranian teenagers: Self-learning or lecture and discussion panel? *Iran J Med Educ* 2002;3:4-7.
16. Moawed S. Indigenous practices of Saudi girls in Riyadh during their menstrual period. *East Mediterr Health J* 2001;7:197-203.
17. Chan SS, Yiu KW, Yuen PM, Sahota DS, Chung TK. Menstrual problems and health-seeking behaviour in Hong Kong Chinese girls. *Hong Kong Med J* 2009;15:18-23.
18. Lee LK, Chen PC, Lee KK, Kaur J. Menstruation among adolescent girls in Malaysia: A cross-sectional school survey. *Singapore Med J* 2006;47:869-74.
19. Esimai O, Esan GO. Awareness of menstrual abnormality amongst college students in urban area of ile-ife, osun state, Nigeria. *Indian J Community Med* 2010;35:63-6.
20. Titilayo A, Agunbiade OM, Banjo O, Lawani A. Menstrual discomfort and its influence on daily academic activities and psychosocial relationship among undergraduate female students in Nigeria. *Tanzan J Health Res* 2009;11:181-8.
21. Hillen J, Grbavac S. Primary dysmenorrhea in young Western Australian women: Prevalence, impact and knowledge of treatment. *J Adolesc Health* 2009;2:540-5.
22. Campbell MA, McGrath PJ. Use of medication by adolescents for the management of menstrual discomfort. *Arch Pediatr Adolesc Med* 1997;151:905-13.
23. Dambhare DG, Wagh SV, Dudhe JY. Age at menarche and menstrual cycle pattern among school adolescent girls in Central India. *Glob J Health Sci* 2012;4:105-11.