

The Impact of Menstrual Periods on Physical Conditions, Academic Performance and Habits of Medical Students

Huda Y Khamdan, Khadija M Aldallal, Eman M Almoosa, Najla J AlOmani, Aalaa SM Haider, Zahra I Abbas, Aalaa AM Haji, Sahar Z Aljamri and Randah R Hamadeh*

College of Medicine and Medical Sciences, Arabian Gulf University, Manama, Kingdom of Bahrain

Abstract

Background: Menstrual period is a critical time in the life of females. It influences different daily life aspects, including physical status, academic performance, mood, diet, exercise and sleep pattern. Few studies were conducted to investigate its impact on medical students.

Objective: To determine the impact of the menstrual period on female medical students.

Methods: This is a cross sectional study on Arabian Gulf University medical students. A self-administered questionnaire was developed for the purpose of this study. It included the following variables: socio-demographic characteristics, menstrual history, academic performance and habits (sleeping, appetite, exercise, mood and social relationships) during the menstrual period. The questionnaires were distributed to two hundred twenty-six female medical students during the academic year 2011-2012.

Results: The mean age at menarche of the study population was 12.7 ± 1.5 years. The majority (90.7%) of the students experienced symptoms during their menstrual period, with the commonest five being abdominal cramps (90.7%), backache (82.7%), tiredness (80.4%), pelvic pain (74.0%) and bloating (65.2%). Pain was reported as the most common cause of exercise discontinuation during menstruation (42.86%). The menstrual period affected their amount of sleep (73.3%), sleep quality (60%), diet (73.8%) and exercise (60.7%). Academic performance was affected as well; study time (76.0%), concentration (65.8%), group activities (58.1%), examination performance (51.8%) and attendance (40.8%).

Conclusion: It can be concluded that the menstrual cycle has different effects on female medical students' physical conditions, academic performance and habits. Further research should be conducted to study the effect of menstruation on Arab females.

Keywords: Menstruation; Women's health; Academic performance; Medical student; Dietary habits; Physical activity; Sleeping patterns

Introduction

The menstrual cycle involves many psychological changes, such as irritability, mood liability, depression and anxiety. The most prevalent physical symptoms of the menstrual cycle include breast tenderness, diarrhea, back pain, vomiting and fluid retention [1-4]. The duration of the menstrual cycle, which usually occurs every 28 days, varies from 4-10 days with an average of 6 days [5]. Moreover, some women reported increased appetite and food craving with chocolate being the most commonly craved food item [6]. Overweight, physical activity and stress increased the duration of the menstrual cycle of female college students in the United States [7]. Although the majority of women experience negative effects during the menstrual period, some find that it positively influences their mood and mental status [1-4].

The menstrual period has a notable role on the academic performance of students [8]. Women with heavy and painful menstrual periods have more problems affecting their academic and social lives [9]. Moreover, dysmenorrhea is one of the commonest gynecological problems among female adolescents and is the leading cause of short-term school absenteeism, which negatively influences their social, academic and sports activities. A study on the menstrual pattern and common menstrual disorders among Turkish university students reported that dysmenorrhea caused absenteeism and physician consultation among female students [10]. The academic performance of women varies during their menstrual cycle, in a way that the mental status is decreased during and several days before the period. However, some research on the performance of well academically qualified women has shown that they were less likely to be negatively affected by menses [1-4].

The management of dysmenorrhea is through many pharmacological and non-pharmacological treatments. The non-steroidal anti-inflammatory drugs (NSAIDs), the most common pharmacological type of treatment are highly effective. Resting, applying heating pads, drinking tea, eating low-fat diet, intake of herbs and exercising are some of the used non-pharmacological treatments [1-4].

As the menstrual period is known to affect women's lives, the aim of our study was to determine the impact of the menstrual periods on AGU female medical students' physical conditions, academic performance and habits. The Arabian Gulf University (AGU) is a university serving the six Gulf Cooperation Council (GCC) countries and is located in the Kingdom of Bahrain. The university has two colleges; the College of Medicine and Medical Sciences (CMMS) and the College of Graduate Studies. CMMS offers an undergraduate program in medicine and graduate programs in health policy, medical education, laboratory medicine, and molecular medicine. The CMMS has adopted a Problem Based Learning (PBL) technique and self-directed student-centered

*Corresponding author: Professor Randah R. Hamadeh, Vice Dean for Graduate Studies and Research, College of Medicine & Medical Sciences, Arabian Gulf University, P.O. Box 22979, Manama, Kingdom of Bahrain, Tel: (+973) 17239423; Fax: (+973) 17239495; E-mail: randah@agu.edu.bh

Received July 25, 2014; Accepted August 18, 2014; Published August 23, 2014

Citation: Khamdan HY, Aldallal KM, Almoosa EM, AlOmani NJ, Haider ASM, et al. (2014) The Impact of Menstrual Periods on Physical Conditions, Academic Performance and Habits of Medical Students. J Women's Health Care 3: 185. doi:10.4172/2167-0420.1000185

Copyright: © 2014 Khamdan HY, 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.

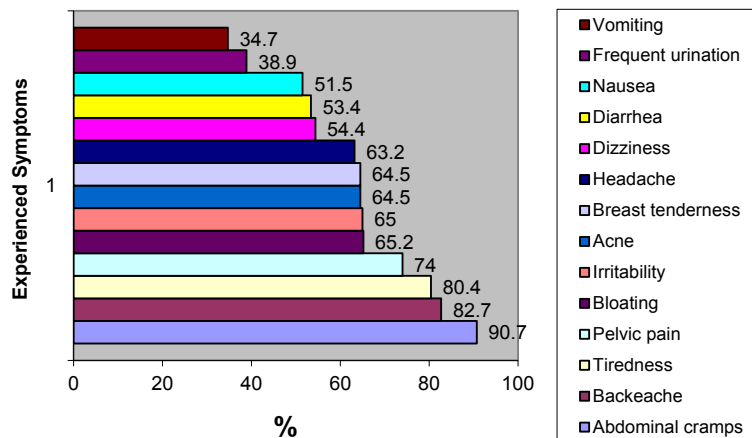


Figure 1: Experienced symptoms during menstruation.

education as its educational philosophy since its establishment in 1982. The medical curriculum is based on small group tutorials that encourage student knowledge exchange and teamwork [11]. It is a six-year programme of three phases; phase 1 (year 1) followed by phase 2 (years 2-4) comprising of 3 years of PBL, and phase 3 (years 5-6), the clerkship phase that is divided into 4 rotations each year.

Methods

This study was a cross sectional study conducted in November 2011 on AGU female medical students. Two hundred twenty-six students were invited to participate in the study out of all the female students (508) enrolled at CMMS during the academic year 2011-2012. The sample size was calculated with the assumption that 0.5% of the CMMS female medical students are affected by the menstrual period and an error of 0.05. The sample was stratified into six categories according to the distribution of the student population by academic year. Students were selected at random from English classes for phase 1 of the curriculum, tutorial groups for phase 2, and lecture attendees for phase 3. All the students in the selected classes /groups/rotations were included in the sample.

A self-administered questionnaire was constructed for the study, which included demographic data (medical year, year of birth, nationality and accommodation), menstrual history, academic performance and habits (sleeping, appetite, exercise, mood and social relationships) during the menstrual period. Exercise was defined as doing any physical activity at least two times per week. The English teachers of phase 1 students whose groups were selected were given the questionnaires to distribute to the students. For all phase 2 students, the questionnaires were distributed and collected by three of the research members at the beginning of the Sunday and Thursday tutorial sessions. Female students in two rotations of years 5 and 6 were selected at random for phase 3. Clerkship phase students were identified from various rotations. The researchers asked all selected students if they are willing to participate.

The students were informed that the questionnaire is anonymous and that their participation in the study was not compulsory. They were also told in the study that the researches would clarify any query they had in filling the questionnaire. Ethical approval was obtained for the conduction of the research from the Research and Ethics Committee at CMMS. Permission was sought from the Vice Dean for Academic

Affairs; Phase 1 Director, as well as the respective PBL tutors and English class teachers.

The Statistical Package for the Social Sciences (SPSS version 16) was used for data entry and analysis. Descriptive statistics and cross tabulations by academic year for the variables were done. The chi square test was applied for the qualitative data to evaluate if there were statistically significant differences.

Results

The average age of the AGU female medical students was 21 years old with 42.5% Bahraini, 27.9% Saudi, 22.1% Kuwaiti and 7.5% Omani and other nationalities. Only 26.5% of the students lived at the university's residence halls.

The mean age at menarche was 12.7 ± 1.5 years old. The average duration of the menstrual cycle lasted between 2-11 days with a mean of 6.6 ± 1.5 days. In addition, the average between two succeeding cycles was 28.0 ± 4.0 days.

The majority (90.7%) of the students experienced symptoms during their menstrual period with abdominal cramps (90.7%), backache (82.7%), tiredness (80.4%), pelvic pain (74.0%) and bloating (65.2%) the most reported (Figure 1). There were no statistically significant differences between medical years except for breast tenderness (0.048).

Medication was the main method used for the management of abdominal cramps (50.8%) while resting was the commonest practice by the students for most of the other symptoms (backache, 59.9%; pelvic pain, 46.7%; and tiredness, 82.5%). As for bloating, 56.4% of the students did nothing at all (Table 1).

Only 28.8% of the students usually exercised, 38% of whom continued to exercise and 62% stopped exercising during their period. The most reported reasons that stopped students from exercising were: pain (42.9%), mood change (15.9%), fear from leakage (14.3%), laziness (11.1%) and cultural reasons (4.8%). Further, exercise increased menstrual flow (60.7%) and menstrual pain (77.3%) of the students who exercised.

Academic performance was affected by menstruation in several ways mainly study time (76%), concentration (65.8%), participation in group activities (58.1%), examination performance (51.8%) and class attendance (40.8%).

Management Symptoms	Rest	Use medication	Use herbal medicine	Adjust diet	Use a heating pad	Consult a physician	Do nothing
Backache	59.9	33.5	7.1	1.1	31.9	1.6	7.1
Abdominal cramps	38.5	50.8	17.9	4.6	33.3	3.1	6.2
Pelvic pain	46.7	41.3	6.7	1.3	22.7	1.3	14
Headache	35.7	61.2	5.4	0.0	0.8	0.8	11.6
Dizziness	73.2	14.3	0.9	0.9	1.8	0.0	19.6
Tiredness	82.5	13.1	0.6	0.6	1.9	0.0	13.1
Vomiting	36.2	18.8	7.2	7.2	1.4	7.2	40.6
Frequent urination	20.0	4.0	5.3	0.0	2.7	4.0	70.7
Breast tenderness	24.8	3.1	3.1	0.0	1.6	3.1	67.4
Diarrhea	19.8	8.1	6.3	6.3	1.8	0.9	61.3
Irritability	41.4	4.7	3.1	0.8	2.3	0.8	50.8
Nausea	26.2	16.5	6.8	6.8	1.9	2.9	48.5
Acne	10.1	10.1	3.9	2.3	2.3	6.2	69.0
Bloating	28.2	4.3	6.8	8.5	2.6	1.7	56.4

Table1: (%) Management of symptoms during menstruation by students.

	Eat more during my period		Eat less during my period		No effect	
	No	%	No	%	No	%
Chocolate	133	59.4	16	7.1	75	33.5
Other sweets	98	43.9	20	9.0	105	47.1
Savories (salty food)	43	19.9	33	15.3	140	64.8
Soft drinks	34	15.7	57	26.3	126	58.1
Tea/Coffee	77	34.7	34	15.3	111	50.0
Dairy products	32	14.7	33	15.2	152	70.0
Junk food	51	23.1	31	14	139	62.9

Table2: Effect of menstruation on food selection.

Menstruation affected students' sleep duration and quality. 73.3% of the students reported that the duration of their sleep changed and 60.0% had interrupted sleep. 44.7% of the students slept more, 28.3% slept less and the rest had the same hours of sleep during their menstrual period. Dietary intake changed in 73.9% of the students with almost equal proportions reporting eating more (36.4%) and eating less (37.3%). There was a high tendency to eat more chocolate (59.4%) and other sweets (43.9%) while consumption of savories, soft drinks, tea/coffee, dairy products and junk food were not that affected (Table 2). There were statistically significant differences by medical year for the intake of chocolate and soft drinks only. The proportions of students increasing their chocolate intake during the menstrual period were 61.5% (year 1), 54.1% (year 2), 60.0% (year 3), 70.7% (year 4), 38.2% (year 5) and 68.4% (year 6). For soft drinks, the corresponding percentages were 28.9%, 16.2%, 14.7%, 15.4%, 6.2% and 10.8%, respectively.

Over half (53.6%) of the students preferred to be alone, 2.7% became more sociable and the social life of the rest (43.7%) was not affected during menstruation.

Discussion

This study examined the association between menstrual cycle and physical conditions, habits and academic performance among AGU female medical students. Abdominal cramps were the most reported symptoms similar to those US female adolescents [10]. Dysmenorrhea was the main cause limiting exercise, similar to that reported for Hispanic female adolescents [4]. The commonest methods used for the management of abdominal cramps was chemical medication (50.8%) similar to Isra University students (50 %) but higher than Kuwaiti female students (44%) who particularly used analgesics (28.2%) to relieve their pain [1,2,5].

The menstrual period affected the class concentration (65.8%) and participation in group activities (58.1%) of the majority of the students in this study. This is in accordance to the Kuwait study, which showed that 75.5% of the participants perceived menstrual discomfort as having negative effects on their participation [5] and the Hispanic study that reported that the class concentration of the students was highly affected [3].

Dysmenorrhea and migraine are the leading conditions of work or school absenteeism and substantially impact quality of life [12]. Studies on menstrual pain in women with primary dysmenorrhea reported that they had a significant reduction in quality of life at the time of experiencing severe menstrual pain compared with their pain-free phase [13].

The results of this study were in accordance to that of Hormones and Timko (2011) with respect to the increase of chocolate craving during the menstrual period. About 20% of American women experienced chocolate craving at the time around ovulation or at the onset of menstruation. Evidence does not support the role of hormonal fluctuations, rather it is hypothesized that craving occurs as a response to abstinence from high caloric foods in an attempt to manage cyclically occurring weight fluctuations [6]. Similar to other study findings, exercise affected the premenstrual physical symptoms, menstrual flow and pain of AGU students [3]. Exercise could reduce dysmenorrhea and improve emotional distress [3]. A study on the effects of the different phases of the menstrual cycle on physical working capacity showed that the female resting heart and respiratory rates during the menstrual cycle were decreased, having adverse effects on physical work output and sport participation [14].

Moreover, it has been reported that menstrual flow is affected by

changes in dietary habits. Ramadan fasting showed that increased flow was found in those who fasted more than 15 days, compared to those who fasted less than this period [15]. Arab women usually do not publicly disclose when they have their menstrual period. In Ramadan, menstruating Arab Muslim women are excused from fasting for religious reasons. However, our study was not performed during the month of Ramadan to seek further knowledge of this matter. AGU medical students' quality and duration of sleep was affected during menstrual cycle. A study of midlife menstruating women reported that sleep efficiency declined [16].

Our study population was mainly young female adolescents, who are at higher risk of getting anemia secondary to poor nutrition as well as to menorrhagia. This may necessitate regular hemoglobin check-up, and provision of proper nutrition advice and iron supplements if necessary [17].

The social relationships of female AGU students is affected during the menstrual period, as most of the students preferred to be alone. This finding is in contrast to the results shown by a Turkish study, which reported no effect of menstrual period on the social life [18].

The results of this study cannot be generalized to the female population in the GCC countries due to the age of the study population and the proportions of female CMMS students by nationality. Further, the educational level of the medical students is not representative of the total female population.

Conclusion

It can be concluded that the menstrual cycle has a major impact on AGU female medical students' physical conditions, whereby 90.7% had abdominal cramps, 82.7% backache and 80.4% felt tired. More than half of the students had their academic performance affected (study time, 76%; concentration, 65.8%; participation in group activities, 58.1%; examination performance, 51.8% and class attendance, 40.8%). The university administration and counseling services should be aware about the results of the study and provide further facilities and understanding to female students. Further research should be conducted to study the effect of menstruation on Arab females.

References

1. Suman B, Mrunalini G, Jyoti M (2013) School Absenteeism during menstruation among rural adolescent girls in Pune. *National Journal of Community Medicine* 4: 2229-6816.
2. Parveen N, Majeed R, Zehra N, Rajar U, Munir AA (2009) Attitude and knowledge of medical students of Isra University about dysmenorrhoea and its treatment. *J Ayub Med Coll Abbottabad* 21: 159-162.
3. Jahromi MK, Gaeini A, Rahimi Z (2008) Influence of a physical fitness course on menstrual cycle characteristics. *Gynecol Endocrinol* 24: 659-662.
4. Banikarim C, Chacko MR, Kelder SH (2000) Prevalence and impact of dysmenorrhea on Hispanic female adolescents. *Arch Pediatr Adolesc Med* 154: 1226-1229.
5. Omu FE, Al-Marzouk R, Delles H, Oranye NO, Omu AE (2011) Premenstrual dysphoric disorder: prevalence and effects on nursing students' academic performance and clinical training in Kuwait. *J Clin Nurs* 20: 2915-2923.
6. Hormes JM, Timko CA (2011) All cravings are not created equal. Correlates of menstrual versus non-cyclic chocolate craving. *Appetite* 57: 1-5.
7. Harlow SD, Matanoski GM (1991) The association between weight, physical activity, and stress and variation in the length of the menstrual cycle. *Am J Epidemiol* 133: 38-49.
8. Boyle GJ (1997) Effects of menstrual cycle moods and symptoms on academic performance: a study of senior secondary school students. *Br J Educ Psychol* 67: 37-49.
9. Roberts SC, Hodgkiss C, DiBenedetto A, Lee E (2012) Managing dysmenorrhea in young women. *Nurse Pract* 37: 47-52.
10. Allen LM, Lam AC (2012) Premenstrual syndrome and dysmenorrhea in adolescents. *Adolesc Med State Art Rev* 23: 139-163.
11. Hamdy H, Anderson MB (2006) The Arabian Gulf University College of Medicine and Medical Sciences: a successful model of a multinational medical school. *Acad Med* 81: 1085-1090.
12. Mannix LK (2008) Menstrual-related pain conditions: dysmenorrhea and migraine. *J Womens Health (Larchmt)* 17: 879-891.
13. Iacovides S, Avidon I, Bentley A, Baker FC (2014) Reduced quality of life when experiencing menstrual pain in women with primary dysmenorrhea. *Acta Obstet Gynecol Scand* 93: 213-217.
14. Girija B, Veeraiah S (2011) Effect of different phases of menstrual cycle on physical working capacity in Indian population. *Indian J Physiol Pharmacol* 55: 165-169.
15. Yavangi M, Amirzargar MA, Amirzargar N, Dadashpour M (2013) Does Ramadan fasting has any effects on menstrual cycles? *Iran J Reprod Med* 11: 145-150.
16. Zheng H, Harlow SD, Kravitz HM, Bromberger J, Buysse DJ, et al. (2014) Actigraphy-defined measures of sleep and movement across the menstrual cycle in midlife menstruating women: Study of women's health across the nation sleep study. *Menopause*.
17. Bitzer, Sultan C, Creatsas G, Palacios S (2014) Gynecological care in young women: a high-risk period of life. *Gynecol Endocrinol* 30: 542-548.
18. Unsal A, Ayranci U, Tozun M, Arslan G, Calik E (2010) Prevalence of dysmenorrhea and its effect on quality of life among a group of female university students. *Ups J Med Sci* 115: 138-145.