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

Huda Y Khamdan, Khadija M Aldallal, Eman M Almoosa, Najia 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 (42.8%). 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].

*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


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.
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).

Meditation 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%).

**Figure 1:** Experienced symptoms during menstruation.
Management of symptoms during menstruation by students.

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

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

Table2: Effect of menstruation on food selection.

<table>
<thead>
<tr>
<th>Item</th>
<th>Eat more during my period</th>
<th>Eat less during my period</th>
<th>No effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chocolate</td>
<td>133</td>
<td>59.4</td>
<td>75</td>
</tr>
<tr>
<td>Other sweets</td>
<td>98</td>
<td>43.9</td>
<td>105</td>
</tr>
<tr>
<td>Savories (salty food)</td>
<td>43</td>
<td>19.9</td>
<td>140</td>
</tr>
<tr>
<td>Soft drinks</td>
<td>34</td>
<td>15.7</td>
<td>126</td>
</tr>
<tr>
<td>Tea/Coffee</td>
<td>77</td>
<td>34.7</td>
<td>111</td>
</tr>
<tr>
<td>Dairy products</td>
<td>32</td>
<td>14.7</td>
<td>152</td>
</tr>
<tr>
<td>Junk food</td>
<td>51</td>
<td>23.1</td>
<td>139</td>
</tr>
</tbody>
</table>

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].

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 examination performance, 51.8% and class attendance, 40.8%). The results of this study cannot be generalized to the female medicine students of AGU. 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


