

## **Prevalence of Premenstrual Syndrome and its Impact on the Daily Activities of Students in King Faisal University**

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### **Abstract**

**Background.** *Premenstrual syndrome (PMS) is one of the most common disorders in women, yet little is known about factors that influence its development. Aim: We conduct this study in order to promote physical health of female and to project the need for adolescent health services in our community. So we aimed to document the effect of premenstrual syndrome (PMS) and quality of life also to examine the association of PMS severity and possible food habits in adolescent girls. Methods: A cross sectional study conducted on 354 King Faisal University students. Students aged between 19 to 25 years completed a self-reported questionnaire, in which biographical data, PMS symptoms, and possible risk factors that may influence the experienced physical impairment during PMS. Multiple regression analysis was performed to determine the different correlations. Results: The results revealed that 92.2% of the participants experienced moderate to severe PMS. The degree in which physical impairment was experienced was significantly associated with excessive sweet food consumption, tea and coffee intake, and passive smoking. Conclusion: It was concluded that PMS is common among King Faisal University students. Thus, the establishment of a national school and college awareness program was recommended to raise the awareness about PMS among the population.*

**Keywords:** *PMS, physical impairment, risk, factor, sweet food, coffee, tea, exercise.*

### **1. INTRODUCTION**

Premenstrual syndrome (PMS) is one of the most common disorders in women at reproductive age that could significantly interfere with activities of daily life [1]. The term is used to describe a collection of physical, cognitive, affective, and behavioral symptoms that occur cyclically during the luteal phase of the menstrual cycle and resolve quickly at or within a few days of the onset of menstruation [2], such as water retention, pain, cramping, and dysphoric mood. [3].

The etiology of the syndrome is multifactorial and not fully defined. The effects of hormonal disturbances, especially a low level of progesterone in the luteal phase, disturbed function of aldosterone activity leading to sodium and water retention, imbalance of the hypophyseal–pituitary–adrenal axis leading to inadequate secretion of adrenal hormones, disturbed secretion of neurotransmitters with

functional hyper- prolactinemia, dietary deficits of calcium, magnesium, and pyridoxine, alcohol, carbohydrate tolerance disturbances, obesity, and environmental factors, e.g. stress, have all been postulated [4,5,6]. Also, Several studies show a significant relationship between the presence of PMS and daily life habits. In one study, PMS was significantly associated with sedentary life style, excessive coffeedrinking, and frequent consumption of fast food [7].

Premenstrual syndrome is considered to be a fairly common problem in young girls, which adversely affects their educational performance and emotional wellbeing [8]. Multiple studies show that women with PMS have reported reduced work productivity and more interference with normal daily tasks and greater number of workdays missed for health reasons [9].

### **1.1 Aim of the work**

As there has been barely enough published studies and national data about the effects of PMS on adolescents in Saudi Arabia, we decided to conduct this study in order to Promote physical health of females and to project the need for adolescent health services in our community. So we aimed to document the effect of premenstrual syndrome (PMS) and quality of life also to examine the association of PMS severity and possible food habits in adolescent girls.

## **2. Subjects and Methods**

This cross-sectional study was conducted on king Faisal University female students in AL Ahsa'a; Saudi Arabia during the second term of the academic year 2013-2014 with the following objectives:

- I. Assess the frequency of PMS among college students.
- II. Detect the PMS severity score among participants.
- III. Determine the association between PMS frequency with life style on the physical impairment.

### **2.1 Criteria of Inclusion in This Study**

Healthy King Faisal University female students aged between 19 and 25 years with normal weights and heights.

### **2.2 Sample:**

The sample was derived from several faculties chosen randomly from a listing frame representing all faculties of King Faisal University.

### **2.3 The sample size:**

The sample size was calculated using the equation considering the percentage of PMS, confidence level, and margin of error.

$$\text{Formula. } n = t \times p (1-p) / m$$

#### **Description**

$n$  = required sample size.  $\left[ \begin{matrix} \text{---} \\ \text{SEP} \end{matrix} \right]$

$t$  = confidence level at 95% (standard value of 1.96).  $\left[ \begin{matrix} \text{---} \\ \text{SEP} \end{matrix} \right]$

$p$  = estimated prevalence of PMS in the study area (36%).

$m$  = margin of error at 5% (standard value of 0.05).  $\left[ \begin{matrix} \text{---} \\ \text{SEP} \end{matrix} \right]$

$$n = (1.96)^2 \times 0.36(1 - 0.36) / (0.05)^2 \cdot \left[ \begin{matrix} \text{---} \\ \text{SEP} \end{matrix} \right]$$

$n = \sim 354$ .

The female students were invited to participate in this study by two ways. First, by meeting them in person. Second, by publishing an online announcement in social media websites. Those who agreed were included. Data was collected by a self-administered structured questionnaire that included sociodemographic data, PMS symptoms, family history, and its possible risk factors (dietary habits and physical exercise). Each participant was given 10 minutes to complete the questionnaire.

Scores were assigned based on whether the symptom was described as mild (score = 1; noticeable but not troublesome), moderate (score = 2; interfere with daily activities), severe (score =3; intolerable), and not at all (given score 0) [10].

#### **2.4 Data Analysis:**

Data were coded, analyzed and presented using the Statistical Package For the Social Sciences, SPSS Inc., Chicago, IL (SPSS version 16.0). Frequency tables presented the biographical data and PMS scores. The rest of the data was analyzed and compared using different forms of bar and pie graphs as well to represent the ordinal and categorical variables. On top of that, A Chi- square test was done to test if there is a significant correlation between the experienced physical impairment during premenstrual syndrome and certain possible risk factors. In order to evaluate the relationship between each two variables tow variables (independent or dependent variable), A P- Value of < 0.05 was considered significant.

#### **2.5 Ethical Consideration:**

Approval was taken from the ethical committee of Faculty of Medicine King Faisal University. Before starting the study, a verbal consent was obtained. Then, the female students were briefed about the rational of the study.

### **3. Results**

The age of the participants ranged from 18 to 25 years with a mean age ( $\pm$  SD) of 20.1166 $\pm$  1.88684 years. The premenstrual syndrome symptom scores ranged from 5 to 71. The results show that all the participants have PMS (100%). Eleven participants (3%) had a premenstrual symptom score ranged from 0 to 9 (no or mild PMS), one hundred and fourteen participants (30.6%) had a score ranged from 10 to 29 (moderate PMS), and two hundred and twenty nine participants (61.6%) had a premenstrual symptom score greater that thirty, which was considered as severe premenstrual syndrome "Fig.1"

The data analysis shows the percentages in which PMS symptoms are experienced for the participant. The percentage of women who experienced PMS symptoms were as follow: fatigue (75%), mood swings (93%), anxiety (77.7%), irritability (87.9%), insomnia (68%), nervous tension (84.1%), depression (77.7%), confusion (60.2%), crying (69.9%), excessive thirst (62.9%), aggression (63.4%), headache (71%), sweets craving (57.8%), forgetfulness (60.8%), abdominal bloating (80.6%), disorientation (54%), heart pounding (61.3%), increased appetite (71.8%) dizziness 53.5 bad breath 48.7 physical impairment 78.5 abdominal pain 91.7 backache 92.5 decreased productivity( 71.2%) breast tenderness (54.8%) weight gain (58.1%). It also shows that the most severe, experienced symptoms, which were accompanied together in 178 participants, were the abdominal pain and the backache with a Percentage of 50.3. On the other hand, the least severe, experienced symptom was the bad breath with a percentage of 1.3.

Regarding when PMS symptoms are experienced, two hundred and sixteen participants experienced the symptoms before and during menstruation, eighty-three participants experienced them during menstruation only, and only nineteen participants experienced the symptoms before menstruation "Fig.2

In Table1, it was found that there was a significant relationship between the severity in which PMS is experienced and physical impairment. As all participants, who had experienced mild PMS, were able to perform their usual activities without any impairment compared to the participants who experienced sever PMS, in which 95.7% of them were physically impaired from doing their usual daily activities.

Several dietary patterns have been shown to be significantly influencing the physical impairment experienced during PMS. A significant influence has been shown for sweet- food consumption as the participants who have not, or only consumed sweets once or twice a day showed less impairment, in which only 40.5% of the participants had experienced physical impairment during their PMS compared to the participants who consumed sweets more than three times a day, in which 46.1% had experienced the impairment as well (P= 0.030) "Fig.3").

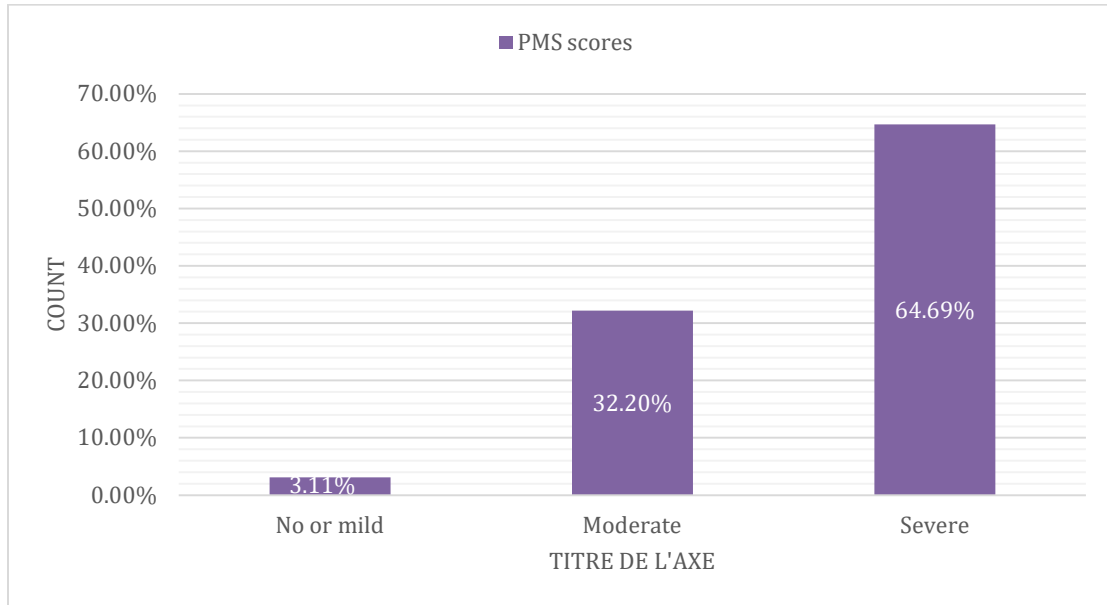
About 58.3% of the participants, who were not physically impaired during their PMS, had not drunk coffee compared to the rest 40.7% of the participant who had not experienced physical impairment as well (P= 0.001)"Fig.4".

A significant relationship was shown between physical impairment and drinking tea. About 51.63% of the participants, who were physically impaired during their PMS, were tea drinkers compared with the rest 48.6% of the non tea-drinking participants, who were physically impaired (P= 0.001) "Fig.5". Another significant relationship was observed between exposure to passive smoking and physical impairment, as 43,2% of those who were exposed to passive smoking had experienced physical impairment during their PMS compared to 41,8% of those who have not been exposed to passive smoking (P = 0.001)(Graph6).

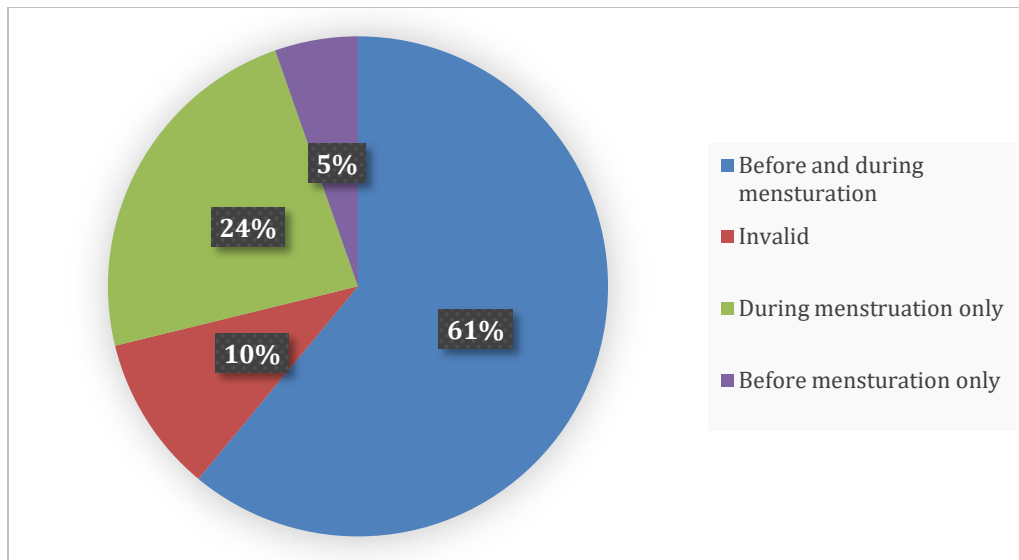
The results did not show a significant correlation between sedentary life style and dietary patterns, that concerns the type of food consumed mostly, with the experienced physical impairment during PMS in this study.

**Table1: Distribution of women according to premenstrual syndrome (PMS) scores and physical activity (~354).**

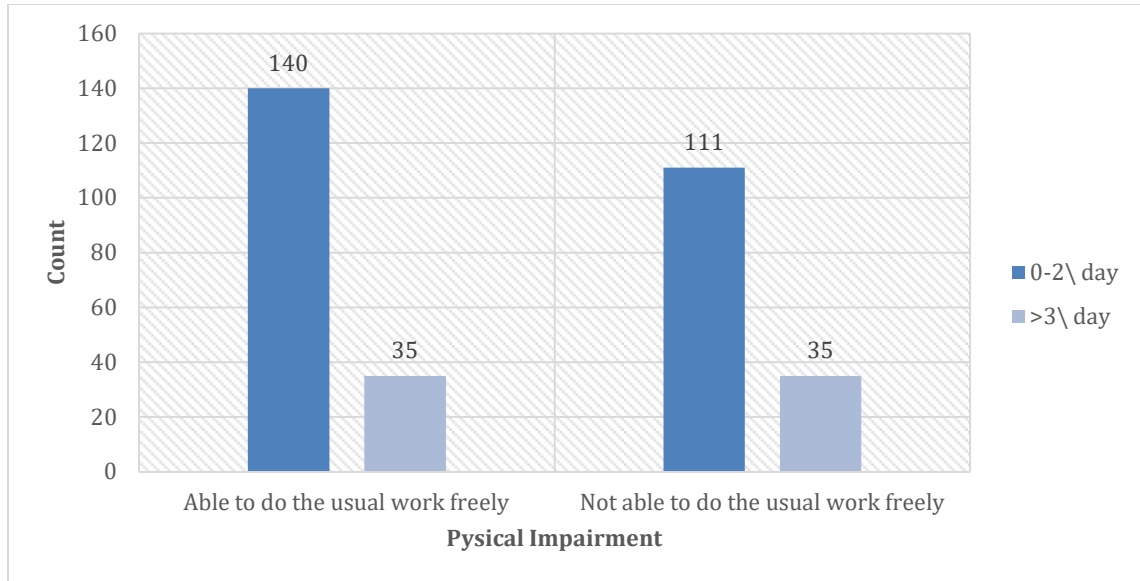
		PMS scores			Total
		No or mild	Moderate	Severe	
Physical impairment	Invalid	0	4	27	31
	Able to do the usual work freely	11	84	80	175
	Not able to do the usual work freely	0	26	122	148
	Total	11	114	229	354



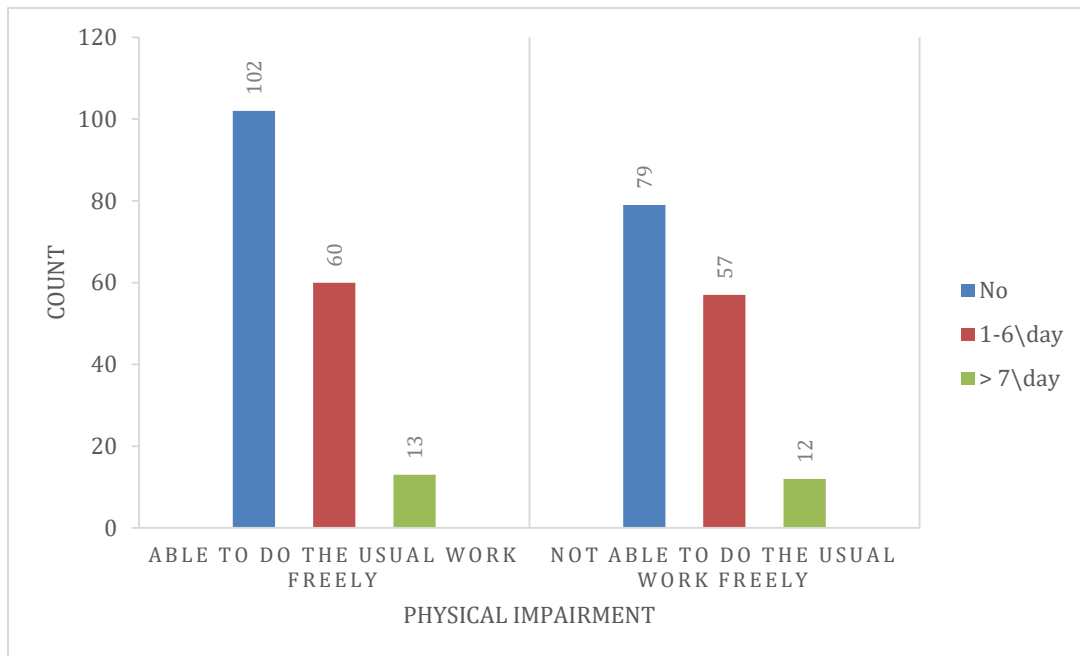
**Fig.1: Distribution of KFU students according to PMS scores (~354).**



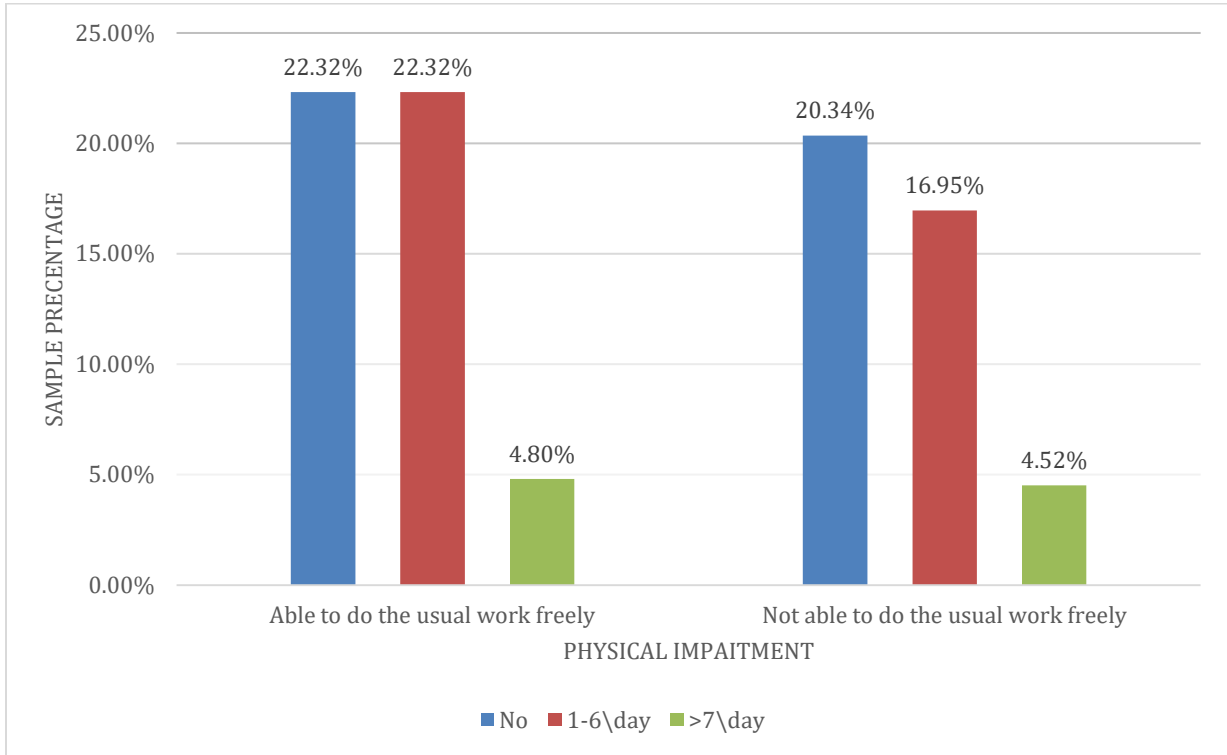
**Fig.2: Distribution of women by premenstrual symptom score according to duration of PMS (~354).**



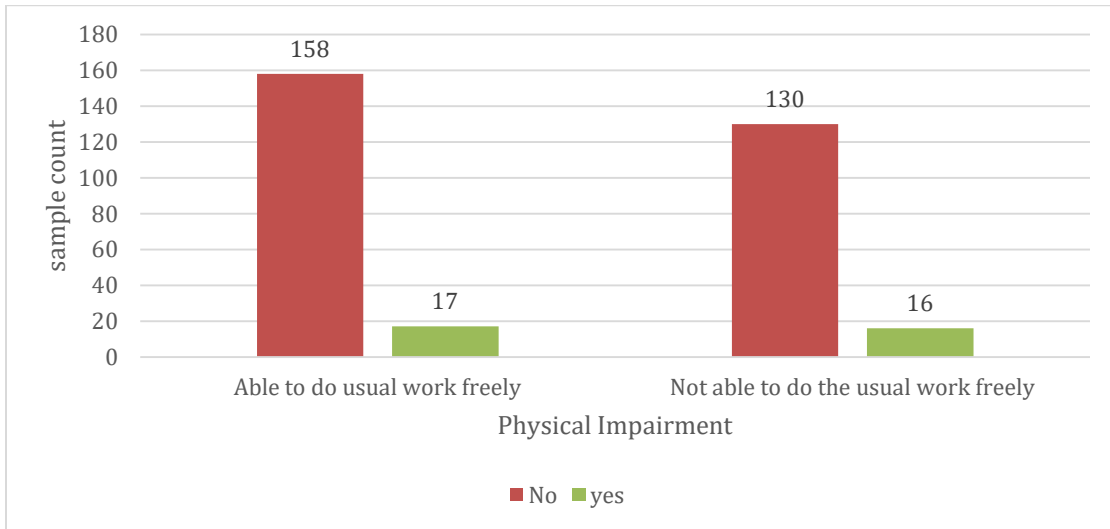
**Fig.3: Distribution of women with intake of sweet-tasting food and physical impairment among KFU students (~354).**



**Fig.4: Distribution of women with coffee consumption and physical impairment among KFU students (~354).**



**Fig.5: Distribution of women with tea consumption and physical impairment among KFU students (~354).**



**Fig.6: Distribution of women exposed to passive smoking and physical impairment among KFU students (~354).**

#### **4. Discussion**

Premenstrual syndrome (PMS) is one of the most common disorders in women, yet little is known about factors that influence its development [11]. The results of the present study show a high prevalence of PMS among KFU students. It has been found that 92.2 % of the participants have moderate to severe PMS. Similar findings (89%) were reported by Bakr and Ez-Elarab in a study conducted among medical students of Ain Shams University, Egypt [12].

This study showed that the severity of PMS is directly proportional to the extent in which physical impairment is experienced. 95.7% of the participants who suffered from severe PMS were physically impaired from doing their daily activities. This is similar to the results of a study conducted in Korea by Dooseok Choi, et al, which states that PMS occurs frequently and have a significant impact on daily life for a proportion of Korean women [13].

The study also showed a significant influence of caffeinated drinks on the experienced physical impairment during PMS. Our results were in agreement with the observations of A. M Rossignol and H bonnlander, which revealed that consumption of caffeine-containing beverages is strongly related to the presence and severity of premenstrual syndrome [14]. Phillis suggested that the depressive action of adenosine on central neurons was the mechanism by which caffeine might cause PMS [15].

A significant correlation between sweet food consumption and the physical impairment during PMS was shown in the study, in which participants who excessively consumed sweet foods had experienced physical impairment more than the participants who did not, or moderately consumed sweet food. Similar findings were shown in a study conducted in Egypt by Amany Edward Seedhom, et al [7].

Our findings on the impact of passive smoking on the severity of PMS, which directly determines the degree of the experienced physical impairment, were consistent with the observations of Elizabeth R. Bertone, et al, in which they suggested that cigarette smoking, especially during adolescence and young adulthood, may increase a woman's likelihood of developing moderate to severe PMS [11].

Exercising did not have an influence on the experienced physical impairment during PMS. Our findings contradicted with what a group of Iranian scientist had observed [16]. In their research, they stated that aerobic exercise effectively reduces PMS symptoms. It is possible that our cross-sectional design led to several biases and that the temporal relationship between physical activity and PMS could not be examined in a cross-sectional study. The relationship between physical activity and PMS remains unclear. Thus, Further research should be conducted before concluding that physical activity and PMS are associated.

The dominant type of food consumed by the participants did not have an influence on the physical impairment as well. This might be due to the design of the cross-sectional study as well, which had affected the final results and the possible relationships.

#### **5. Conclusion**

In conclusion, this study suggests that moderate to severe PMS is highly common among King Faisal University students in AL-Ahsa, although it may be exaggerated, misdiagnosed by the Participants while doing the survey. It was also concluded that the experienced physical impairment during



premenstrual syndrome was significantly associated with: excessive sweet food consumption, tea and coffee intake, and passive smoking.

### **5.1 Limitations of The Study**

- I. Because of the cross-sectional design of the study, we are only able to determine the association not causality, in which we could not determine which factor caused the other.
- II. The participants were included in the study based on absence of medical chronic disorders, and they were not screened for other possible medical diagnoses when they reported PMS symptoms.

### **5.2 Recommendations**

It was recommended that an awareness program needed to be established in KFU in order to educate its female students about the properties of PMS, different preventive techniques, in which PMS symptoms that interferes with their lives, can be reduced. Also, since Saudi Arabia has a PMS prevalence of 36%, the ministry of health must participate in arranging national school -awareness programs to reach a larger population of females that are in their reproductive age.

Also, further studies must be conducted on a larger sample of population with more preferably prospective approach to confirm the results and to plan out strategies for better detection and management of PMS.

### **5.3 possible applications**

The outcomes of this study are relevant to female student in KFU, as well as the other Saudi women who suffer from PMS.

### **5.4 Conflict of Interest**

No conflict of interests was declared

## **6. Acknowledgement**

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