



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>

Research Article

**PREMENSTRUAL SYNDROME: PREVALENCE,
SEVERITY AND IMPACT ON DAILY LIFE ACTIVATES
AMONG MEDICAL STUDENTS AT NAJHRAN UNIVERSITY
KSA.**Wafaa Taha Ibrahim Elgzar¹¹Assistant prof. of maternity and childhood nursing department, nursing college, Najhran University, KSA.

Article Received: July 2019

Accepted: August 2019

Published: September 2019

Abstract:

Background: more than 80% of reproductive age woman reported at least one premenstrual symptom. In certain conditions, these symptoms are sever enough to affect negatively daily life activities.

Aim: this study aims to evaluate the relationship between premenstrual syndrome and daily life activities among Medical College student at Najhran University KSA.

Setting: This study was conducted at medical college campus at Najhran University KSA.

Research design: A descriptive correlational design.

Subjects: a comprehensive sample of 360 female student who fulfilled the inclusion criteria.

Tools: Two tools were used for data collection: socio demographic and menstrual history questionnaire and modified version of premenstrual symptoms screening tool for clinicians.

Results: The results of the study revealed that 38.3% of the students have mild PMS symptoms, while 20.0% and 5.8% have moderate and severe form of PMS symptoms, respectively. Moreover, the effect of PMS on daily life activities was mild among 47.5%, moderate among 20.8% and severe among 4.2%. Positive highly statistically significant correlations ($P < .01$) were found between students' total PMS symptoms scores and their daily life activities score.

Conclusion: Premenstrual syndrome is significant health problem that can negatively influence the student daily life activities.

Recommendation: Health education programs should be conducted in all educational institutions for girls and their mothers to increase their awareness about PMS influence on daily life activities and its management strategies.

Keywords: Premenstrual syndrome, daily life activities medical colleges, Najhran University.

Corresponding author:Wafaa Taha Ibrahim Elgzar, (wafaa22006@yahoo.com)Assistant prof. of maternity and childhood nursing department,
nursing college, Najhran University, KSA.

QR code



Please cite this article in press Wafaa Taha Ibrahim Elgzar., *Premenstrual Syndrome: Prevalence, Severity and Impact on Daily Life Activates among Medical Students at Najhran University Ksa., Indo Am. J. P. Sci.*, 2019; 06(09).

INTRODUCTION:

Premenstrual syndrome (PMS) is a group of physical, psychological and behavioral symptoms that occur during the luteal phase of the menstrual cycle prior to menses. The prevalence of PMS is relatively high among reproductive age woman. More than 80% of reproductive age women reported at least at least one PMS that appear within the two weeks before menses and evaporates after it. PMS is neglected medical problem that may significantly alter woman daily activities. [1]

More than 300 PMS symptoms have been reported. They are classified as: physical, psychological and behavioral. Physical symptoms include breast tenderness, bloating, weight gain, headache, swelling of the hands or feet, and aches or pains. Despair, irritability, crying spells, anxiety, and confusion; are common PMS psychological symptoms. Finally, the common PMS behavioral symptoms are poor concentration, sleep disturbance, appetite changes and outburst of anger toward self and others. [1-2]

The causes of PMS are not clear. However, there are many theories that tried to explain its etiology and pathophysiology. They are pointed as ovarian hormone theory, psychosocial theory and cognitive and social learning theory. The ovarian hormone theory is the most accepted because PMS only affects reproductive age women. It is hypothesized that the female gonadal hormones may alter serotonergic activities in the brain. According to this theory, PMS results from disturbance of estrogen to progesterone ratio, with a relative insufficiency in progesterone. [3]

The psychosocial theory suggested that the PMS is a conscious demonstration of a woman's unconscious conflict about femininity and motherhood. ⁽⁴⁾ Cognitive and social learning theory proposes that the onset of menstrual flow can be an aversive psychological event for some females. These women might have destructive and extreme beliefs about menstruation that further increase PMS severity. They may develop maladaptive coping strategies, such as mood swing, absence from school or work and overeating in an effort to reduce the instant tension. [5]

The PMS is widespread among female university students. It may significantly be associated with psychological impairment, poor quality of life. Severe form of PMS have negative influence on social and academic performances of the female student. It may results in frequent absenteeism, exams missing, low grade scoring and academic withdrawal, which have negative impact on quality of life of the students. [6]

The PMS can be treated according to the severity of the symptoms. Rapkin, 2003 recommended diet modifications strategy for treatment of PMS such as eating smaller portions of meal more often, consuming meals that are high in carbohydrate and low in salt or refined sugar, reducing the consumption of caffeine and quitting smoking. [7]

Significance of the Study:

Up to 80% women of reproductive age report having some of PMS symptoms. These symptoms classify clinically significant. [8] Therefore, PMS is a common problem in young girls, which adversely affects their educational performance and emotional wellbeing, and therefore represents a significant main public health problem in young girls in Saudi Arabia. Strategies should be adopted for detection and management of PMS in young girls. [9]

PMS and other menstrual problems are dealt with great shame among Saudi girls. In addition, PMS is taken as package with normal growth and development process. Girls always suffer in silence as speaking in such issues are in acceptable in Saudi society. Moreover, some researches have shown that PMS have negative impact on daily life activities. The most affected domains are home duties, followed by social participation, school activities and occupational activities. [10,11] However, data about prevalence, associated symptoms and impact of PMS on daily life activities is lacking in Saudia Arabia. This raises the attention to investigate such health problem among both sensitive population & areas, especially among medical college girls, who will be the woman caregiver in the future. The availability of such information could be important for the development and provision of the appropriate health care services.

SUBJECTS AND METHODS:**Setting:**

This study was conducted at medical colleges' at Najran University (females' campus)

Research design:

A descriptive correlational design.

Subjects:

The study comprised a comprehensive sample of all female students registered in the Najran university medical colleges in the academic year 2017-2018 first semester (medicine, nursing and applied medical sciences) and fitted to the inclusion criteria. Inclusion criteria are age ranged from 19-25 years, had regular menstruation, unmarried, did not use hormonal medication for any reason, and accepted to participate

in the study. Total number was 360 female students were included in the study.

Tools of data collection:

Two tools was used for data collection:

Tool I; socio demographic and menstrual history questionnaire. It was developed by the researcher to collect information related to demographic data such as: college, age, residence, marital status, weight, height and income. It also includes the menstrual history such as: age of menarche, menstrual interval, and duration.

Tool II, a modified version of premenstrual symptoms screening tool for clinicians (PSSST) (Steiner et al, 2003). [12] It is composed of two main sections:

Section one describes PMS physical, psychological and behavioral symptoms. The first entails 14 items its score ranges from 0 to 42, the second is composed of 12 items its score ranges from 0 to 36, and the later contains 6 items its score ranges from 0 to 18. For each one of the 32 items the subject has to choose one of four alternatives: (0) absent, (1) mild, (2) moderate, or (3) severe. The total tool score ranges from 0 to 96. **Section two** describe the effect of PMS on daily life activities. It contains four items. For each one of the 4 items the subject has to choose one of four alternatives: (0) absent, (1) mild, (2) moderate, or (3) severe. The total tool score ranges from 0 to 12.

All tools were tested for content validity by a panel of five expertise (four from nursing filed and one from biostatistics filed). The reliability of the tools was done using Cronbach Alpha Coefficient test ($r=0.86$).

Methods:

- official permissions:
An official permission was obtained from the deanship of nursing college at Najran University.

RESULTS:

Table 1: Demographic characteristics and medical history of the study participants. (n= 360).

demographic characteristics and medical history	No (360)	%
Age interval		
18 -20 years	183	50.8
21-25 years	177	49.2
Mean \pm SD	20.61 \pm 1.62 years	
College		
College of education	57	15.8
Community college	120	33.3
Science and art	18	5.0
Languages and translation	48	13.3
Health colleges	117	32.5

The research proposal was approved from the ethical committee at college of nursing Najran University. Other permission was taken from the deans of the other two medical colleges (medicine and applied medical sciences). Oral consent was taken from each student. All students were ensured about confidentiality and anonymity of their data as it is used only for research purpose.

- A pilot study:
Pilot study was carried out on 10% of the students (who were excluded from the study sample). The pilot study revealed the applicability of the tools then the necessary changes was undertaken.
- Data collection:
Data was collected from the students using questionnaire. Each student was given about 15-20 minutes to complete the questionnaire. Data was collected daily during break time for a period of four weeks from the beginning of March 2018 till its end. The teaching staff helped the researcher in the data collection process.
- The statistical analysis:
After the completion of data collection, it was entered to Statistical Package for Social Sciences (SPSS version 20). Correlation coefficients were used to answer the research questions. Descriptive statistics such as frequency, percentage, arithmetic mean and standard deviation were used to describe characteristics of the students, including demographic characteristics and severity of their PMS symptoms. Fisher exact test was used to examine the relation between variables if there is small expected value. A statistically significant difference was considered at $p\leq 0.05$ and a highly statistically significant difference was considered at $p\leq 0.01$ while the p -value >0.05 indicates non-significant results.

Residence		
Urban	339	94.2
Rural	21	5.8
Family income		
Enough and can save	156	43.3
Enough	195	54.2
Not enough	9	2.5
Mothers' level education		
Illiterate	81	22.5
Read and write	132	36.7
Secondary education	51	14.2
University education	96	26.7

proportion (94.2%) of the students were rural area residence. As regard their family income, more than half (54.2%) of them had enough family income. Regarding their mothers' level education, more than one third (36.7%) of the students' mothers read and write.

Table 1. illustrates the distribution of the study subject according to their demographic characteristics. It is clear from the table that about half (50.8%) of the students were aged from 18-20 years, with a mean age 20.61 ± 1.62 years. Furthermore, one-third (33.3%) of them were studying at community college. The largest

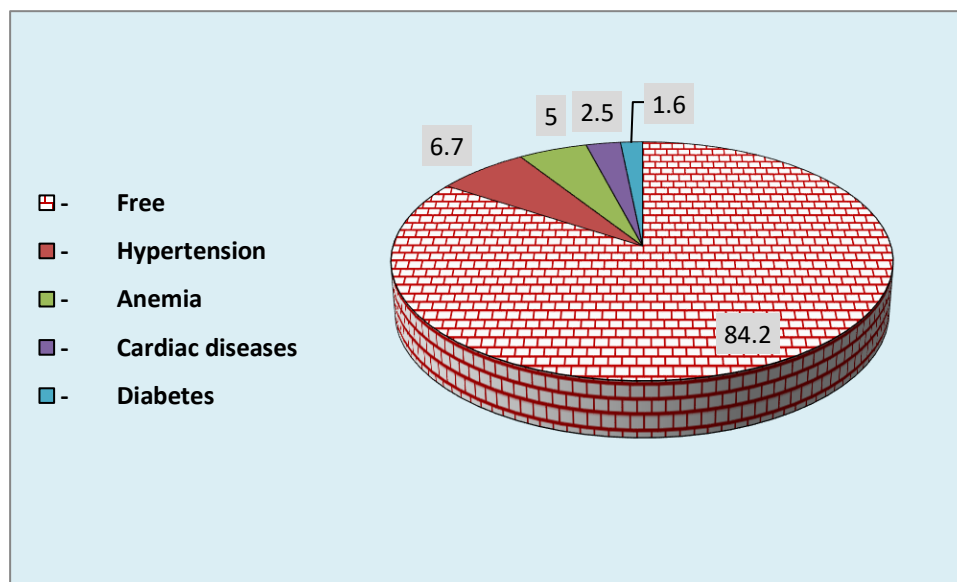


Fig 1. Distribution of the study subject according to their medical history (n= 360).

positive medical history students, followed by anemia 5% among the students. Only 2.55% and 1.6% of them had cardiac disease and diabetes, respectively.

Fig. (1) Illustrates the distribution of the study subject according to their medical history, it is clear that 84.2% of the study subjects have free medical history. Hypertension is the most common (6.7%) among the

Table 2 distribution of the study subject according to their menstrual history (n= 360).

Menstrual history	No (360)	%
Age at menarche		
Less than 14 years	126	35.0
14 years and more	156	43.3
Did not remember	78	21.7
Menstrual duration		
3-5 days	156	43.3

6-7 days	204	56.7
Menstrual regularity		
Regular	219	60.8
Irregular	141	39.2
Amount of blood loss		
Mild	66	18.3
Moderate	243	67.5
Sever	51	14.2

duration 6-7 days. While around two thirds (60.8%) of them had regular menstrual cycle. As regard the amount of blood loss, about two thirds (67.5%) of the students reported moderate amount of blood loss.

Table 2. Clarifies the distribution of the study subject according to their menstrual history. It is apparent from the table that less than half (43.3%) of the students have their menarche at 14 years and more. In addition, more than half 56.7% of them have menstrual

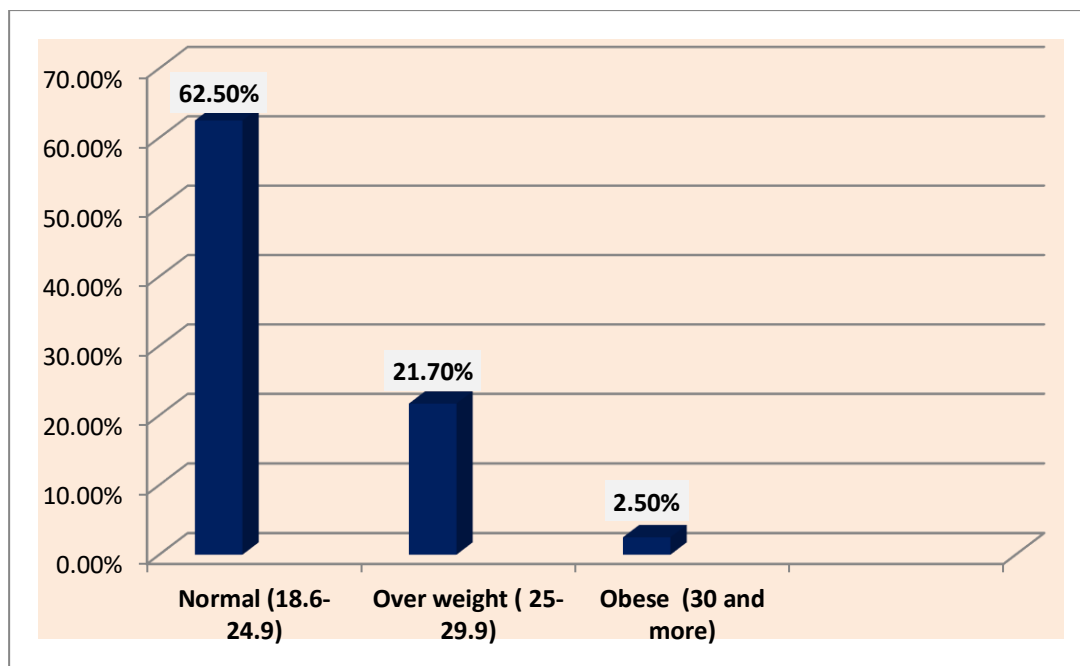


Fig. 2: Distribution of the study subject according to their body mass index (n= 360).

Fig 2. Shows that less than two-thirds (62.5%) of the students were normal body weight. Moreover, 21.7% of them were overweight. Only 2.5 % of the students were obese girls.

Table 3. Distribution of the study subjects according to the prevalence and severity of their PMS symptoms (n= 360)

Total is not mutually exclusive

PMS symptoms	No PMS		Mild PMS		Moderate PMS		Sever PMS	
	No	%	No	%	No	%	No	%
Physical symptoms	126	35.0	156	43.3	57	15.8	21	5.8
Psychological symptoms	123	34.2	117	32.5	87	24.2	33	9.2
Behavioral symptoms	162	45.0	123	34.2	60	16.7	15	4.2
Total PMS symptoms#	129	35.8	138	38.3	72	20.0	21	5.8

symptoms. Around one third (34.2%) of the students have mild PMS behavioral symptoms. While, only 4.2% of them have severe form of PMS behavioral symptoms. As regard total PMS symptoms, 38.3% of the students have mild PMS symptoms, while 20.0% and 5.8% have moderate and severe form of PMS symptoms, respectively.

Table 3. Portrays the distribution of the study subjects according to the prevalence and severity of their PMS symptoms. It is depicted from the table that 43.3% of the students have mild PMS physical symptoms while; only 5.8% of them have severe form of PMS physical symptoms. Moreover, one-third 32.5% of the students have mild PMS psychological symptoms while, 9.2% have the severe form of PMS psychological

Table 4. Distribution of the study subjects according to the impact of their PMS symptoms on their daily life activities (n=360).

Daily life activities	No effect		Mild effect		Moderate effect		Sever effect	
	N	%	N	%	N	%	N	%
Academic achievement	126	35.0	135	37.5	66	18.3	33	9.2
Human relationships	132	36.7	111	30.8	78	21.7	39	10.8
Social activities	114	31.7	132	36.7	66	18.3	48	13.3
House work	111	30.8	114	31.7	78	21.7	57	15.8
Total effect of PMS on daily life activities#	99	27.5	171	47.5	75	20.8	15	4.2

activities and house work were mild affected by PMS among 30.8% , 36.7% and 31.7%, respectively. At the same time, they severely affected among 10.8%, 13.3% and 15.8% respectively. Moreover, the total effect of PMS on daily life activities was mild among 47.5%, moderate among 20.8% and severe among 4.2%.

Total is not mutually exclusive

Table 4. Clarifies the distribution of the study subjects according to the impact of their PMS symptoms on their daily life activities. According to the table that 37.5% of the students had mild effect of PMS on their academic achievement while 9.2% of them had severe effect. As regard to human relationships, social

Table 5. The relation between study subjects PMS symptoms and the total effect of daily life activities (n=360).

PMS symptoms		Total effect of daily life activities								FET	P value
		No effect		Mild		Moderate		Sever			
		No	%	No	%	No	%	No	%		
Physical symptoms	No	54	54.5	66	38.6	6	8.0	0	0.0	26.266	0.001*
	Mild	33	33.3	81	47.4	39	52.0	3	20.0		
	Moderate	9	9.1	18	10.5	21	28.0	9	60.0		
	Sever	3	3.0	6	3.5	9	12.0	3	20.0		
Psychological symptoms	No	60	60.6	57	33.3	6	8.0	0	0.0	39.543	0.000*
	Mild	33	33.3	57	33.3	27	36.0	0	0.0		
	Moderate	6	6.1	45	26.3	33	44.0	3	20.0		
	Sever	0	0.0	12	7.0	9	12.0	12	80.0		
Behavioral symptoms	No	66	66.7	78	45.6	18	24.0	0	0.0	30.055	0.000*
	Mild	30	30.3	54	31.6	36	48.0	3	20.0		
	Moderate	3	3.0	33	19.3	21	28.0	3	20.0		
	Sever	0	0.0	6	3.5	0	0.0	9	60.0		
Total PMS score	No	60	60.6	63	36.8	6	8.0	0	0.0	42.628	0.000*
	Mild	33	33.3	63	36.8	42	56.0	0	0.0		
	Moderate	6	6.1	45	26.3	15	20.0	6	40.0		
	Sever	0	0.0	0	0.0	12	16.0	9	60.0		
Total		99	100.0	171	100.0	75	100.0	15	100.0		

* The relation is statistically significant at $P \leq 0.001$

Table 5. Shows the relation between study subjects PMS symptoms and the effect of daily life activities. It is illustrated from the table that statistical significant differences ($P < 0.001$) were observed between students' PMS physical, psychological and behavioral symptoms and their total effect of daily life activities. Generally, there was a highly statistical significant difference (FET= 42.628, $P=0.000$) between students' total PMS symptoms and their total effect of daily life activities.

DISCUSSION:

PMS is a serious health problem that may negatively affect girls' daily life activities. It may decrease woman productivity in all her life aspects. PMS increase physical, psychological and social burden of the woman and her families. Woman is the operator of the whole family, consequently, if she is burdened it will be reflected on the whole family and community. [13]

The finding of the present study showed that less than one-half of the students have mild PMS physical symptoms. In addition, around one-third of them have mild PMS psychological and behavioral symptoms. Generally, more than one third of the study subjects have mild total PMS symptoms, while more than one quarter of them have moderate PMS symptoms. Only 5.8% of them have severe form of PMS symptoms.

This finding are supported by at least other five other researches. *The First Molugulu and Tumkuret al. (2016)*. [14] They evaluated "PMS among future healthcare professionals in master skill global college". They reported that 37% out of 300 participants diagnosed with PMS. Out of them 22% mild PMS, 9% moderate PMS and 5.3% severe PMS. In more details, they reported that 58%, 56% and 56% among their participants had mild physical, psychological and social symptoms, respectively. *The second Raval et al., (2016)* [15] who explored the "incidence of PMS and premenstrual dysphoric disorder among college students at Bhavnagar, Gujarat". They concluded that severe to moderate PMS was reported among 14.7% of their participants. While, premenstrual dystrophic disorder is found among 3.7%. They further added that the most prevalent symptoms among their participant were fatigue/lack of energy, decrease interest in work, and anger/irritability. They did not classify PMS symptoms to physical, psychological or social.

The third is *Shhadeh and Mansour (2017)*.⁽¹⁶⁾ They studied "Prevalence and association of PMS and premenstrual PMDD with educational achievement

among female university students". They reported that PMS prevalence was around 92.3% and PMDD was 7.7%. *The fourth is Elgzar and Ibrahim, 2017*. [17] They explored "the relationship between dietary habits and severity of PMS among medical college students at Najran University". They showed that around one third of the participant complained from moderate PMS symptoms. The severe PMS represented only 5.6%. They further added that severe psychological symptoms was present among 14% of their study participant. While severe physical and social symptoms were present among 5.6% and 9.8%, respectively. *The Fifth Henz et al., (2018)* [18] who had conduct a "comparative study between the daily record of severity of problems and the premenstrual symptoms screening tool". Stated that the percentages of women with severe PMS form were 3.9%.

On the other hands, *Kelbessa et al., 2017* [19] evaluated the prevalence of PMS and its coping strategies among student females at Guder preparatory school, Ethiopia. They reported different findings and documented that about one-third of their study participant had moderate PMS symptoms, while one quarter of them had severe PMS symptoms which interfere their daily activities like school performance and interpersonal relationships. They further added that headache and breast tenderness were the most reported symptoms among their participants. The difference between *Kelbessa et al.* [19] study and the current one may be attributed to the difference diagnostic criteria for PMS assessment. Where in the current study we used premenstrual syndrome screening tool with standardized scoring system but in *Kelbessa et al.* [19] one they used a self-administered questionnaire included twenty-two symptoms of premenstrual syndrome to assess its severity.

The results of the current study revealed that statistical significant differences ($P < 0.001$) were observed between students' PMS physical, psychological and behavioral symptoms and their total effect of daily life activities. This finding is in the same line with at least other five researches. *The first is Taghizadeh et al., (2008)*. [20] They investigated the "impact of PMS on adolescent girls' quality of life". They reported that PMS is associate with considerable burden on the adolescent girls' quality of life. Furthermore, increasing the PMS severity is seems to be associated with decreased physical, psychological and social wellbeing. *The second is Dennerstein et al. (2010)*. [21] They had evaluated "the impact of PMS on daily life activities". They reported that, all premenstrual symptoms were found to have significant effects on daily life activities with no significant differences

between the impacts of physical, mental or social premenstrual symptoms in this regard.

The third is **Choi et al., 2010**. [10] who had studied "The effect of PMS symptoms on daily life activities Korean women". They stated that the more the woman have sever PMS symptoms the more she had negative impact on daily life activities. In addition, physical symptoms had the largest impact on daily life activities. *The fourth* is **Pal et al., (2011)** [22] who investigated PMS among Pakistani woman and its influence on activities of daily living. They elaborated that sever form of PMS could have considerable influence on Pakistani woman daily life activities. *The fifth* is **Elgzar and Sayed, (2017)** [23] who had evaluated "quality of life among girls with or without clinically significant PMS" reported that sever PMS symptoms can significantly decrease girls quality of life. They further added that the most influenced quality of life domain is social activities, role impairment, and general perception of health. They concluded that sever PMS form can alter woman abilities to carry out daily activities.

On contrary, **Thwin et al., (2015)** [24] and **Muhtaseb et al., (2015)** [25] had reported different results. The former had studied the " PMS among medical female students at University of Malaysia Sabah". They stated that, theirs no statistically significant relationship was observed between PMS symptoms severity and impairment in student physical wellbeing, physical wellbeing and daily life activities. The latter had evaluated "the frequency, severity, effect of PMS among female medical students at Taibah University in Saudi Arabia". They reported that PMS seems to have no significant impact on their participants daily life activities including social activities and academic performance.

The differences between current study results and the latter study group might be the difference in PMS measurement tool. Where they mad researchers structured questionnaire to assess the impact of PMS on daily life activities, while the current study used standardized international tool (PSST).

CONCLUSION:

In the light of the study findings and answering of research questions, it was concluded that more than one third of Najran University hostel' students complain from mild PMS symptoms, while more than one quarter of them have moderate PMS symptoms. Only 5.8% of them have severe form. Moreover, a highly statistical significant relation were observed between students' PMS physical, psychological and

behavioral symptoms and the its total effect on daily life activities.

Recommendation:

- Health education programs should be conducted in all educational institutions for girls and their mothers to increase their awareness about PMS and its influence on daily life activities.
 - Including PMS and its management strategies in the girls educational circular.
 - Educational booklets about PMS and its impact of daily life activites should be designed and distributed in all primary health centers and girls schools.
 - Increase public awareness about PMS through mass media.
- ### Further researches
- Exploring the relationship between PMS and other dietary component, life style, herbal consumption, daily stressors and obesity.
 - The effect of PMS on academic achievement, social relationship, work productivity.

REFERENCES:

1. The American College of Obstetricians and Gynecologists. FAQ: Premenstrual syndrome.2015. Available at: http://www.acog.org/~media/For%20Patients/fa_q057.pdf. Retrieved on: 13/3/2018.
2. *Naeimi N. The Prevalence and Symptoms of Premenstrual Syndrome under Examination. Journal of Biosciences and Medicines 2015; 3 (8): 1-8.*
3. Cunningham J, Yonkers K. Update on research and treatment of premenstrual dysphoric disorder. *Harv Rev Psychiatry*.2009;17(4): 120-137.
4. Pinar G, Colak M, Oksuz E. Premenstrual syndrome in Turkish college student and its effects on life quality. *Sex Report Health*. 2011; 2(1):21-7.
5. Khajehei M. Aetiology, Diagnosis and Management of Premenstrual Syndrome. *J Pain Relief* . 2015;4(4):1-4. doi:10.4172/21670846.1000193
6. Tolossa F, Bekele M. Prevalence, impacts and medical managements of premenstrual syndrome among female students: cross-sectional study in College of Health Sciences, Mekelle University, Mekelle, northern Ethiopia. *BMC Womens Health*. 2014 ;29(14):40:52. doi: 10.1186/1472-6874-14-52.
7. Rapkin A. A review of treatment of premenstrual syndrome & premenstrual dysphoric disorder. *Psychoneuroendocrinology* .2003;28: 39-53.

8. Biggs W, Demuth R. Premenstrual syndrome and premenstrual dysphoric disorder. *American Family Physician*. 2011;84(8):918-924.
9. Nisar N, Zehra N, Haider G, Munir A, Sohoo N. Frequency, Intensity and Impact of Premenstrual Syndrome in Medical Student. *Journal of the College of Physicians and Surgeons*. 2008;18 (8): 481-484.
10. Choi D, Lee D, Lehert P, Lee I, Kim S, Dennerstein L. The impact of premenstrual symptoms on activities of daily life in Korean women. *J Psychosom Obstet Gynaecol*. 2010;31(1):10-5. doi: 10.3109/01674820903573920.
11. Hylan T, Sundell K, Judge R. The impact of premenstrual symptomatology on functioning and treatment-seeking behavior: experience from the United States, United Kingdom, and France. *J Womens Health Gend Based Med*. 1999;3(8):1043-52.
12. Steiner M, Macdougall M, Brown E. The premenstrual symptoms screening tool (PSST) for clinicians. *Arch Womens Ment Health* 2003;6(3):203-9.
13. Yonkers ,Simon M. Premenstrual disorders. *American Journal of Obstetrics & Gynecology*.2018; 14(9)68-74.
14. Molugulu N, Tumkur A, Nilugal K study of premenstrual syndrome among future healthcare professionals in master skill global college. *International Journal of Pharmacy and Pharmaceutical Sciences*. 2016; 2(8): 66-71
15. Raval C, Panchal B, Tiwari D, Vala A, Bhatt R .Prevalence of premenstrual syndrome and premenstrual dysphoric disorder among college students of Bhavnagar, Gujarat. *Indian J Psychiatry*. 2016 ;58(2):164-70.
16. Shehadeh H, Mansour H. Prevalence and association of premenstrual syndrome and premenstrual dysphoric disorder with academic performance among female university students. *Perspect Psychiatr Care*. 2018;54(2):176-184. doi: 10.1111/ppc.12219.
17. Elgzar, W, Ibrahim, H. The Relationship between Dietary Habits and Severity of Premenstrual Syndrome among Medical College Students at Najran University. *Merit Research Journal of Medicine and Medical Sciences*. 2017. 5(12). 646-653.
18. Henz A, Ferreira C, Oderich C, Gallon C, Castro J, Conzatti M, Fleck M, Wender M. Premenstrual Syndrome Diagnosis: A Comparative Study between the Daily Record of Severity of Problems (DRSP) and the Premenstrual Symptoms Screening Tool (PSST). *Rev Bras Ginecol Obstet*. 2018;40(1):20-25.
19. Kelbessa B, Guteta B, Negese F. Prevalence of Premenstrual Syndrome and Coping Mechanism among Female Students of Guder Preparatory School, West Shawa Zone, Oromia Regional State, Ethiopia Research & Reviews: *Journal of Medical and Health Sciences*. 2017; 6(4): 12-19.
20. Taghizadeh, Z, Shirmohammadi M, Arbabi M, Mehran A. The Effect of Premenstrual Syndrome on Quality of Life in Adolescent Girls. *Iran J Psychiatry*. 2008; 3(1):105-109
21. Dennerstein L, Lehert P, Backstrom T, Heinemann K. The effect of premenstrual symptoms on activities of daily life. 2010; 94(3): 1059-1064.
22. Pal S, Dennerstein L, Lehert P. Premenstrual symptoms in Pakistani women and their effect on activities of daily life. *J Pak Med Assoc*. 2011; 61(8):763-8
23. Elgzar W, Sayed S. Quality of Life Among Girls with or Without Clinically Significant Premenstrual Syndrome. *American Journal of Nursing Science*. 2017; 6(2): 87-98.
24. Thwin O, Naing S, Min W, Aung S, Faris A, Abdullah B, Premenstrual Syndrome Among Female Medical Students of Univerisiti Malaysia Sabah. *Health Sciences Research*. 2015; 2(5): 45-49.
25. Muhtaseb N, Al-Raddadi A, Albukhari I, Fadil E, Alghamdi N, Fahmie M. Prevalence, Severity, and Impacts of Premenstrual Syndrome among Female Medical Students at Taibah University in Saudi Arabia. *International Journal of Academic Scientific Research*. 2015;3(4):134-142.