

## Premenstrual Syndrome, Anxiety and Positive Negative Experiences in Sports Girls

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### Abstract

Premenstrual syndrome involves different psychological and physical changes which further results in anxiety. The this study relationship between premenstrual syndrome, anxiety, and positive and negative experiences in sports girls was assessed, and predictors of positive and negative experiences were also analyzed. Sample was selected through purposive sampling, consisted of 250 sports girls and was selected from different educational institutes in Lahore. Premenstrual Syndrome Scale (Gencdogen, 2006), Hamilton Anxiety Scale (Hamilton, 1959), and Scale of Positive and Negative Experiences (Diener & Diener, 2009) were used. Pearson Product Moment Correlation Coefficient results depicted that there is a significant positive correlation between premenstrual syndrome, anxiety, and negative experiences. Results of Multiple hierarchical regression analyses showed that years of playing games, premenstrual syndrome, and anxiety were likely to predict negative experiences in sports girls. This research has great implications for sports psychology. The impact of the results highlighted the importance of precautions about premenstrual syndrome for sports girls, and this also emphasized the need for psychological intervention for sports girls.

**Keywords:** *Premenstrual syndrome, anxiety, positive negative experience*

Premenstrual syndrome is a cluster of psychological, emotional & physical changes in women during their premenstrual i.e. (luteal phase) menstrual cycle. Females go through many negative experiences during early luteal phase. This predisposes individuals to poor adaptation of experience (Bui et al., 2019). The negative affective experience results in the diffused state known as anxiety which signifies fear about future unexpected events and this fear usually affects the performance level of sports girls as they are engaged in more regular and intensive physical activities as compared to any other group (Delaney, 2008). Every person has the optimal level of pre-performance anxiety that further affects peak performance (Hanin, 2000).

If the pre-performance anxiety of any person is outside the zone of his optimal functioning either too high or too low, usually that will decrease the performance level (Walker, 2008). Menstrual Cycle is monthly cycle and ovaries & uterus lining are changed during this cycle. It usually starts with egg preparation, after that prepared egg follicle in ovary breaks, and it is then released for the process of fertilization (Harrison, 2020).

The menstrual cycle has four phases, the last is the luteal phase, this phase is difficult for most women as they might start feeling symptoms of Premenstrual Syndrome (PMS) like increased irritability, fatigue, pain, lack of concentration, mood changes, anxiety, headaches, bloating and carbohydrates food craving (Ginsburg, 2018). Anxiety is known as a dispersed state, which is considered an unpleasant affective experience also by significant fear degree about future events (Salecl, 2019). This is a tense emotional state characterized by palpitations, chest pain, breath shortness, self-doubt, abnormal apprehension, reality threat, and assumption of less coping potential. The nervous system of humans is designed in a way that mobilizes and prepares us to respond in different ways to a dangerous threat. Simos and Hofmann (2021) narrated that the perceived threat of an anxious person is powerful; this is differentiated from the term fear which is response to that stimulus which is validated as scary.

Menstruation leads to many hormonal changes which cause emotional and physical effects that contribute to anxiety. Progesterone and estrogen are the powerful hormones that regulate the menstruation cycle and their disturbance further affects the energy level, digestion, appetite, and states of mind and impacts the psychological functioning and aerobic capacities of a female (O'Brien et al., 2021). Women suffering from PMS are likely to have heavy bleeding, intense cramping, worry about recurrent pain, feelings of discomfort, and excessive anxiety, although different women react differently to their bodily changes (Stossel, 2018). During the premenstrual period, the stress hormone known as cortisol is increased. Anxiety is the form of long-term stress and due to stress anxiety

symptoms become worse (Zvolensky & Smits, 2020).

Sports girls are involved in different games which are both indoor i.e. table tennis and outdoor like cricket, hockey, basketball, lawn tennis, and badminton, they have their specified sport for which they are skilled enough to play (Daum, 2003). It also depends on the game type and how many hours of practice they require to improve their performance, sports either indoor or outdoor require regular physical exertion, or the athletic performance of female

**Table 1**

*Demographic Characteristics of the Sample N = 250*

<i>Variables</i>	<i>f (%)</i>	<i>M(SD)</i>
Age		18.88(2.07)
Years of paying gam		1.74(0.44)
1-5 years	177 (70.8%)	
5-10 years	73 (29.2%)	
Daily Practice hours		
1-4 hours	169 (67.6%)	
5-9 hours	81 (32.4%)	

### Method

In this study correlational research design was used to study relationship between premenstrual syndrome, anxiety and positive and negative experiences in sports girls. 250 sports girls were selected and purposive sampling was used, within age range of 16 to 22 years ( $M_{age}=18.88$ ,  $SD=2.07$ ). They all were chosen from 5 women colleges/universities of Lahore. All the participants were briefed about study purpose and informed consent was also given to them. Moreover, all the details about privacy and confidentiality were also explained to them.

#### Inclusion Criteria

Those sports girls were included in the study who are officially registered in any of the following sports in their college (like; cricket, basketball, badminton, table tennis, lawn tennis, hockey, and swimming). The practice hours were during the whole day at college and at home and those participants were included in the studies that were able to comprehend English.

#### Exclusion Criteria

The sports girls going through any physical injury were not included in the study.

#### Measures

##### Demographic Sheet

The demographic sheet was used to collect essential details of every individual in the sample and before completing the questionnaire was filled by them. The required demographics included: age, years of playing that sport(s), number of daily practice hours (college & home), and both indoor & outdoor games (table tennis, badminton, basketball, cricket, lawn tennis, hockey, and swimming).

##### Premenstrual Syndrome Scale (PMSS) (Gencdogen, 2006)

This scale aims to measure premenstrual symptom severity. It has 44 items, 5-point Likert scale i.e. (0) not present, (1) mild, (2) moderate, (3) severe, (4) very severe. It has nine subscales which include (depressive mood, depressive thoughts, irritability, anxiety, fatigue, pain, appetite changes, swelling, and sleep changes). PMSS total score is calculated by the sum of all items. The lowest score is 44 and the highest score is 220. The lowest scores on symptoms indicate the presence of mild PMS and the highest scores indicate severe PMS.

athletes usually gets impaired during certain menstrual cycle phases (Frontera et al., 2007)

#### Hypotheses

1. There is a significant relationship between Premenstrual syndrome, anxiety, and negative experiences in sports girls.
2. Premenstrual syndrome and anxiety are likely to predict negative experiences in sports girls.

##### Hamilton Anxiety Rating Scale (HAM-A) (Hamilton, 1959)

This scale measures the anxiety symptoms severity. It has 14 items and series of symptoms define every item. 5-point Likert scale is used to rate each item i.e. (1) never, (2) rarely, (3) sometimes, (4) very often, (5) always. Mild anxiety is indicated by lowest score and the highest scores indicate severe anxiety. 0-56, is the range of total scale where <17 indicated mild anxiety, 18-24 shows moderate anxiety, and 25-30 shows moderate to severe anxiety. Alpha Coefficient was found 0.72 for the present sample.

##### Scale of Positive and Negative Experiences (SPANE) (Diener & Diener, 2009)

Positive feelings (SPANE-P), and negative feelings (SPANE-N) are measured by this scale. It is 5-point Likert scale and has 12 items i.e. (1) very rarely or never, (2) rarely, (3) sometimes, (4) often, (5) very often or always. For the scale of Positive Feelings (SPANE-P) add all the scores for the six items positive, good, pleasant, happy, joyful, and contented and total score can range from 6 to 30. Low level of positive experiences is indicated by lowest score and the high level of positive experiences is indicated by highest scores. For the scale of negative feelings (SPANE-N) add all scores for six items negative, bad, unpleasant, sad, afraid, and angry and total score can range from 6 to 30. Low level of negative experiences is indicated by lowest scores and high level of negative experiences is indicated by highest scores.

#### Ethical Considerations

Initially permission was taken from institutes for collection of data. Informed consent was given to the participants. They all were briefed about aim of research. All of them were informed that they can withdraw from this study at any point if they feel the need. Moreover, they were informed about the data confidentiality. They were assured that all the information and data will be kept private and confidential.

#### Procedure

Institutional approval was taken from 5 women's colleges/ universities in Lahore. A sample of 250 students was gathered from each institution. Those sports girls who were registered officially in any sport of college team, were selected as a sample after the selection of sample, they were further briefed about aim of study. We assured all the participants regarding privacy and confidentiality of study

data, and formal informed consent was also taken from them. After going through all the previous steps, all the participants filled the demographic form and all three questionnaires of the study.

#### Data Analysis

For purpose of data analysis, Statistical Package of Social Sciences (version 21) was used. To study the relationship between premenstrual syndrome, anxiety, and

positive and negative experiences in sports girls, Pearson Product Moment Correlation was run (see Table 3). Moreover, to examine predictors of positive and negative experiences of sports girls. Multiple hierarchical linear regression analyses were applied (See Table 4).

#### Results

**Table 2**

*Reliability Analysis of Major Study Variables N = 250*

Variables	K	M	SD	$\alpha$	Skewness
PMSS	44	139.64	16.8	.76	-.16
HAS	14	28.9	8.56	.72	-.35
Spame-P	6	12.24	2.89	.61	.51
Spame-N	6	22.3	3.05	.46	-.86

*Note.* PMS= premenstrual syndrome; HAS= Hamilton Anxiety Scale; Spame-P= Scale of positive and negative experiences-Positive; Spame-N= Scale of Positive and Negative Experiences-Negative; k = No of items,  $\alpha$  = Cronbach's alpha, M = Mean, SD = Standard Deviation

**Table 3**

*Pearson Product Moment Coefficient for the relationship of Premenstrual syndrome, anxiety and positivenegative experiences in sports girls (N = 250)*

	1	2	3	4	M	SD
1. PMS	-				139.6	16.8
2. Anx	.49***	-			28.9	8.56
3.Spame-P	-.03	.05	-		12.24	2.89
4.Spame-N	.19**	.32***	.33***	-	22.3	3.05

*Note.* PMS= Premenstrual syndrome Scale, HAS= Hamilton Anxiety Scale, Spame-P= Scale of Positive and Negative experiences – Positive, Spame-N= Scale of Positive and Negative experiences – Negative, M= mean, SD= standard deviation \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Pearson product-moment correlation was applied to explore relationship between premenstrual syndrome, anxiety, and positive and negative experiences in sports girls. Results indicated a significant positive relationship between premenstrual syndrome, anxiety, and negative experiences

**Table 4**

*Multiple Hierarchical Linear Regression Analyses Predicting Positive and Negative Experiences (N = 250)*

	Positive Experiences		Negative Experiences	
	$\Delta R^2$	B	$\Delta R^2$	$\beta$
Step I	.02	-	.06**	
Games Type		.03		-.10
Years of Playing Game		.15		.23***
Daily practice hours		-.10		.02
Step II	.00		.03**	
PMS		-.10		.04
Step III	.01		.06***	
Anxiety		.12		.29***
Total R <sup>2</sup>	.04		.15***	

*Note.* Control variables included age, number of daily practice hours, and game Type (dummy coding: 0 = indoor and 1 = outdoor), years of playing games (dummy coding: 0 = 1-5 years and 1 = 6-10 years). \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

To identify the predictors of positive and negative experiences multiple hierarchal linear regression analyses was used. Positive and negative experiences, both were added as dependent variables separately. In

Step I, game type, years of playing game, and daily practice hours were added as control variables. Their effects were controlled so attribution can be given to premenstrual syndrome and anxiety only. In Step II and

Step III, PMS and anxiety are entered as independent variables respectively. Other assumption of no perfect multicollinearity and assumption of independent errors were met in all regression outputs.

In 1<sup>st</sup> step of positive experiences game type, years of playing games and daily practice hours were added,  $\Delta R^2=0.02$  explains a 2% variance of positive experiences and the model was non-significant ( $F(3,246)=1.913$ ,  $p = 0.12$ ). In 2<sup>nd</sup> step of positive experiences, independent variable i.e. premenstrual syndrome was added and it kept the model non-significant,  $\Delta R^2=0.00$ , ( $F(4,245)=1.566$ ,  $p = 0.18$ ).

Model 2 is non-significant and effect of game type, years of playing the game, and daily practice hours were excluded from it,  $\Delta R^2=0.00$ , ( $F(1,245)=0.53$ ,  $p = 0.46$ ). In the 3<sup>rd</sup> step of positive experiences independent variable anxiety was added which keeps the model non-significant,  $\Delta R^2=0.01$ , ( $F(5,244)=1.74$ ,  $p = 0.12$ ). Model 3 remains non-significant when the effect of game type, years of playing games, daily practice hours, and premenstrual syndrome was excluded,  $\Delta R^2=0.01$ , ( $F(1,244)=2.447$ ,  $p = 0.11$ ).

In 1<sup>st</sup> step of negative experiences game type, years of playing games and daily practice hours were added,  $\Delta R^2=0.06$  explains a 6% variance of negative experiences and model was significant ( $F(3,246)=5.562$ ,  $p = 0.00$ ). In 2<sup>nd</sup> step of negative experiences, independent variable i.e. premenstrual syndrome was added which keeps the model significant,  $R^2=0.03$ , ( $F(4,245)=6.525$ ,  $p = 0.00$ ). Model 2 is significant when effect of game type, years of playing games, and daily practice hours were excluded,  $\Delta R^2=0.03$ , ( $F(1,245)=8.88$ ,  $p = 0.00$ ). In step 3 of negative experiences independent variable anxiety was added which keeps the model significant,  $\Delta R^2=0.00$ , ( $F(5,244)=9.23$ ,  $p = 0.00$ ). Step 3 was significant when effect of game type, years of playing game, daily practice hours, and premenstrual syndrome was excluded,  $\Delta R^2=0.06$ , ( $F(1,244)=18.251$ ,  $p = 0.00$ ). Anxiety is positively correlated with negative experiences, keeping contribution of each predictor specified. Results of study indicated that years of playing games and anxiety predict the negative experiences in sports girls.

### Discussion

The study explores impact of premenstrual syndrome and anxiety on the positive and negative experiences of sports girls. Results depict a positive significant relationship between premenstrual syndrome, anxiety, and negative experiences which accounted for many reasons. When any sports girl has premenstrual syndrome they suffer from fatigue, body discomfort, and low energy along with concentration difficulty which affects their feeling and perception. Sports girls strive for high-standard achievement; when they face failure due to their syndrome this results in negative effects as sometimes, they cannot meet unrealistic standards during the menstrual cycle which develops disappointment, decreased motivation, and increased anxiety in them. These psychological factors of premenstrual syndrome specified that when sports girls are more anxious and have less ability to cope with stress it makes them more vulnerable to experiencing negative moods as supported by earlier findings (Derman et al., 2004). Similarly, PMS is

related to psychological distress, anxiety, and negative experiences in sports girls (Dickerson, 2003).

Results of multiple hierarchical linear regressions revealed that anxiety and PMS do not predict positive experiences in sports girls. Premenstrual syndrome and anxiety are unconstructive, downbeat, and unenthusiastic which cannot lead to positive experiences. On the contrary, the PMS and anxiety model significantly predicted negative experiences in sports girls even after controlling the effect of demographic variables. Derman, Nuray, Kanbur, Tokur, and Kutluk (2004) found that premenstrual syndrome, anxiety, and stress are associated with negative experiences in adolescent girls. Sitwat, Abid, Arif, Basit, and Anwar (2013) examined premenstrual syndrome and its how much prevalent it is in students, which revealed negative experiences like anger, aggressiveness, irritability, anxiety, and bad performance related to PMS.

Further, the findings show that years of playing games is a significant predictor of negative experiences. Daniel (2007), Reeg, (2004), and Siegel (2009) also found an association between years of playing games and negative experiences. Anxiety as an independent variable predicts negative experiences in sports girls. Firstly, anxiety is a psychological state that may result in decreased productivity of individuals and enhanced negative experiences (Borenstein & Dein, 2006). Secondly, different physical, cognitive, and emotional activities of sports girls develop feelings of restlessness and discomfort which affects their performance within their comfort zone. In this way, they would not fulfill expectations of their coaches which also bent to negativity (Aspinwaal, 2001). So due to this they further have many negative experiences like anger outbursts and withdrawal from different social activities (Gelban, 2009).

### Conclusion

The current study examined the relationship between premenstrual syndrome, anxiety, and positive and negative experiences in sports girls. Positive and negative experiences & their predictors in sports girls were also explored. The research concluded that there is an association between premenstrual syndrome, anxiety, and negative experiences. Moreover, it was found that premenstrual syndrome, anxiety, and duration of playing games predict the negative experiences in sports girls. The study also reveals that there is a difference in years of playing games and premenstrual syndrome, anxiety, and positive and negative experiences, and the length of a sports career is conducive to these symptoms. Furthermore, there is no difference in premenstrual syndrome, anxiety, and positive or negative experiences of girls playing indoor or outdoor games.

### Limitation

Different personality types should also be studied as PMS as different type of personalities perceive negative events in a different way.

### Recommendations

Other demographics and attribution factors should

be studied to extend the study. Also data could be collected from a diverse sample.

### Implications

The current study has wide application in sports psychology. This will help the sports girls to understand the reasons why they feel anxious during their menstrual cycles and the factors affecting their negative experiences. Trainers and coaches can better understand the major reasons behind why the girls are not performing well and feel disruptive during specific days. Trainers can arrange different training programs for the sports girls workshops and exercises can be taught to handle their PMS. Sportpsychologists can introduce those procedures that can identify whether sports girls are going through Premenstrual Syndrome or not. Rules of sports and schedules of sports hours can be adjusted so sports girls can perform to their maximum potential.

### References

- Bianchin, L., Bozzola, M., Pier, A. B., Bernasconi, S., Bona, G., Buzi, F., De Sanctis, C., De Sanctis, V., Tonini, G., Radetti, G., Rigon, F., & Perissinotto, E. (2019). Menstrual Cycle and Headache in Teenagers. *Indian Journal of Pediatrics*, 86(S1), 25–33. <https://doi.org/10.1007/s12098-018-2829-3>
- Bieber, E. J., Sanfilippo, J. S., Horowitz, I. R., & Shafi, M. I. (2015). *Clinical Gynecology*. Cambridge University Press.
- Bui, E., Charney, M. E., & Baker, A. W. (2019). *Clinical Handbook of Anxiety Disorders: From Theory to Practice*. Springer Nature.
- Burton, D., & Raedeke, T. D. (2008). *Sport Psychology for Coaches*. Human Kinetics.
- Carmichael, M. A., Thomson, R. L., Moran, L. J., & Wycherley, T. P. (2021). The Impact of Menstrual Cycle Phase on Athletes' Performance: A Narrative Review. *International Journal of Environmental Research and Public Health*, 18(4), 1667. <https://doi.org/10.3390/ijerph18041667>
- Czajkowska, M., Drosdzol-Cop, A., Gałazka, I., Bąk-Sosnowska, M., & Olszanecka-Glinianowicz, M. (2015). Menstrual Cycle and the Prevalence of Premenstrual Syndrome/Premenstrual Dysphoric Disorder in Adolescent Athletes. *Journal of Pediatric and Adolescent Gynecology*, 28(6), 492–498. <https://doi.org/10.1016/j.jpog.2015.02.113>
- Delaney, J., Lupton, M. J., & Toth, E. (1988). *The Curse: A Cultural History of Menstruation*. University of Illinois Press.
- Derman, O., Kanbur, N., Tokur, T. E., & Kutluk, T. (2004). Premenstrual syndrome and associated symptoms in adolescent girls. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 116(2), 201–206. <https://doi.org/10.1016/j.ejogrb.2004.04.021>
- Eberle, S. G. (2013). *Endurance Sports Nutrition*. Human Kinetics.
- Eysenck, M. (2014). *Anxiety and Cognition: A Unified Theory*. Psychology Press.
- Frontera, W. R., Herring, S. A., Micheli, L. J., & Silver, J. K. (2007). *Clinical sports medicine: medical management and rehabilitation*. <http://ci.nii.ac.jp/ncid/BA80181781>
- Ginsburg, B. (2018). *Premenstrual Syndrome: Ethical and Legal Implications in a Biomedical Perspective*. Springer.
- Halbreich, U., Borenstein, J. T., Pearlstein, T., & Kahn, L. S. (2003). The prevalence, impairment, impact, and burden of premenstrual dysphoric disorder (PMS/PMDD). *Psychoneuroendocrinology*, 28, 1–23. [https://doi.org/10.1016/s0306-4530\(03\)00098-2](https://doi.org/10.1016/s0306-4530(03)00098-2)
- Hanin, Y. (2000). *Emotions in Sport*. Human Kinetics.
- Harrison, M. (2020). *Self-help for Premenstrual Syndrome*. Random House (NY).
- Jenkins, S. (2005). *Sports science handbook: the essential guide to kinesiology, sport and exercise science*. <http://ci.nii.ac.jp/ncid/BA74586177>
- Jenkins, S. P. R. (2005). *Sports Science Handbook: I-Z*. Multi-science publishing.
- Karageorghis, C. I., & Terry, P. C. (2010). *Inside Sport Psychology*. Human Kinetics Publishers.
- Khademi, A., Tabatabaefar, L., Akbari, E., Alleyassin, A., Ziaee, V., & Asghari-Roodsari, A. (2008). Comparison of Prevalence of Premenstrual Syndrome in Swimmer And Non-Swimmer Students: A Historical Cohort Study. *Acta Medical Iranica*, 46(4), 307–313. [https://www.sid.ir/en/VEWSSID/J\\_pdf/86520080413.pdf](https://www.sid.ir/en/VEWSSID/J_pdf/86520080413.pdf)
- Khamdan, H. Y. (2014). The Impact of Menstrual Period on Physical Condition, Academic Performance and Habits of Medical Students. *Journal of Women's Health Care*, 03(05). <https://doi.org/10.4172/2167-0420.1000185>
- Laird, J. D. (2007). *Feelings: The Perception of Self*. Oxford University Press.
- Lavallee, D., Kremer, J., & Moran, A. (2012). *Sport Psychology: Contemporary Themes*. Bloomsbury Publishing.
- Lu, Z. J. (2001). The relationship between menstrual attitudes and menstrual symptoms among Taiwanese women. *Journal of Advanced Nursing*, 33(5), 621–628. <https://doi.org/10.1046/j.1365-2648.2001.01705.x>
- Mock, S. (2019). *The Menstrual Cycle and Athletic Performance: An Updated Systematic Review*.
- Nisar, N., Zehra, N., Haider, G., Munir, A. A., & Sohoo, N. A. (2008a). Frequency, intensity, and impact of premenstrual syndrome in medical students. *PubMed*, 18(8), 481–484. <https://pubmed.ncbi.nlm.nih.gov/18798584>
- Nisar, N., Zehra, N., Haider, G., Munir, A. A., & Sohoo, N. A. (2008b). Frequency, intensity, and impact of premenstrual syndrome in medical students. *PubMed*, 18(8), 481–484. <https://pubmed.ncbi.nlm.nih.gov/18798584>
- Nylan, M. (2021). *The Chinese Pleasure Book*. Princeton University Press.
- O'Brien, P. M. S., Rapkin, A., & Schmidt, P. J. (2021). *The Premenstrual Syndromes: PMS and PMDD*. CRC Press.
- O'Connell, A. N., & Russo, N. F. (1990). *Women in Psychology: A Bio-bibliographic Sourcebook*. Greenwood Publishing Group.
- O'Connor, D. P., & Fincher, A. L. (2014). *Clinical Pathology for Athletic Trainers: Recognizing Systemic Disease*. Slack Incorporated.
- Salecl, R. (2019). *On Anxiety*. Routledge.
- Samadi, Z., Taghian, F., & Valiani, M. (2013). The effects of 8 weeks of regular aerobic exercise on the symptoms of premenstrual syndrome in non-athlete

- girls. *PubMed*.  
<https://pubmed.ncbi.nlm.nih.gov/23983722>
- Sanders, D., Warner, P., Bäckström, T., & Bancroft, J. (1983). Mood, Sexuality, Hormones and the Menstrual Cycle. I. Changes in Mood and Physical State: Description of Subjects and Method. *Psychosomatic Medicine*, 45(6), 487–501. <https://doi.org/10.1097/00006842-198312000-00003>
- Schlabach, G. A., & Peer, K. S. (2007). *Professional Ethics in Athletic Training*. Elsevier Health Sciences.
- Shafaie, F. S., Homaee, H. M., & Zoodfekar, L. (2013). Comparison of the frequency of menstrual disorders (amenorrhea, oligomenorrhea, dysmenorrhea, and premenstrual syndrome) between athletes and non-athletes female students of Tabriz universities, Tabriz, Iran. *Iranian Journal of Obstetrics, Gynecology and Infertility*, 16(51). <http://eprints.mums.ac.ir/4805/>
- Shangold, M. M., & Mirkin, G. (1994). *Women and Exercise: Physiology and Sports Medicine*. Oxford University Press.
- Simos, G., & Hofmann, S. G. (2021). *CBT For Anxiety Disorders: A Practitioner Book*. John Wiley & Sons.
- Stossel, S. (2018). *My Age of Anxiety*. Random House.
- Tabassum, S., Afridi, B., Aman, Z., Tabassum, W., & Durrani, R. (2005). Premenstrual syndrome: frequency and severity in young college girls. *PubMed*, 55(12), 546–549. <https://pubmed.ncbi.nlm.nih.gov/16438276>
- Walker, A. (2008). *The Menstrual Cycle*. Routledge.
- Zehra, S., Azhar, A., Arif, A., Ansari, B., & Qureshi, M. A. (2016). Premenstrual syndrome symptoms (pms) and prevalence among university students in Karachi, Pakistan. *International Research Journal of Pharmacy*, 4(4), 113–116. <https://doi.org/10.7897/2230-8407.04420>
- Zvolensky, M. J., & Smits, J. a. J. (2020). *Anxiety in Health Behaviors and Physical Illness*. Springer Science & Business Media.

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