

Halima Mohamed, Adam

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# The prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

**Halima Mohamed, Adam**

Ph.D. Clinical Psychology

Assistant Professor- Psychology department

Hail University – kingdom Saudi Arabia

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## **Abstract:**

During their lives, from puberty to menopause, women are exposed to a number of hormonal changes that affect their daily lives, the most prominent of which is the occurrence of the menstrual cycle. The study aims to identify the extent of the prevalence of premenstrual dysphoric disorder symptoms among women in the city of Hail and its relationship to exercise.

A cross-sectional study was conducted in the period from October to December 2021. The health status questionnaire, preliminary data, and premenstrual dysphoric disorder (PMDD), scale were used to detect the symptoms and severity of the disorder.

The total of participants in the study is 556 women from Hail city. The prevalence of premenstrual distress symptoms was 85%; 19% of them have severe symptoms. The study revealed that lack of exercise is a risk factor for the high degree of the disorder; It also leads to the emergence of the main and secondary symptoms of the disorder. In addition, the age factor has a role in causing differences in the severity of the disorder; The age group from (20 to 29) is the most affected, and the high body mass index (BMI) factor contributes to the high severity of the disorder, while the incidence of chronic diseases has no role in causing differences between women.

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

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The study concluded that the prevalence of premenstrual dysphoric disorder among women in the city of Hail is high. The severity of the disorder was affected by exercise and body mass index.

**Keywords:** premenstrual dysphoric disorder; Sports Exercise; body mass index.

## المستخلص:

تتعرض المرأة خلال حياتها، من سن البلوغ إلى سن اليأس، لعدد من التغيرات الهرمونية التي تؤثر على حياتها اليومية، ومن أبرزها حدوث الدورة الشهرية. تهدف الدراسة إلى التعرف على مدى انتشار أعراض اضطراب الانزعاج السابق للحيض بين النساء في مدينة حائل وعلاقتها بالتمارين الرياضية.

أجريت دراسة عرضية مقارنة في الفترة من أكتوبر إلى ديسمبر ٢٠٢١. تم استخدام استبيان الحالة الصحية والبيانات الأولية ومقياس اضطراب الانزعاج السابق للحيض (PMDD) للكشف عن أعراض الاضطراب وشدته. كما بلغ إجمالي المشاركات في الدراسة ٥٥٦ سيدة من مدينة حائل.

وضحت نتائج الدراسة أن معدل انتشار أعراض اضطراب الانزعاج السابق للحيض ٨٥٪؛ ١٩٪ منهم يعانون من أعراض شديدة. وكشفت الدراسة أن عدم ممارسة الرياضة هو عامل خطر لارتفاع درجة الاضطراب، كما يؤدي إلى ظهور الأعراض الرئيسية والثانوية للاضطراب. بالإضافة إلى ذلك، يلعب عامل العمر دورًا في إحداث اختلافات في شدة الاضطراب؛ الفئة العمرية من (٢٠ إلى ٢٩) هي الأكثر تضرراً، ويسهم ارتفاع مؤشر كتلة الجسم (BMI) في ارتفاع شدة الاضطراب، في حين أن الإصابة بالأمراض المزمنة ليس لها دور في إحداث فروق بين النساء.

وخلصت الدراسة إلى أن انتشار اضطراب الانزعاج السابق للحيض بين النساء في مدينة حائل مرتفع، كما تأثرت شدة الاضطراب بممارسة التمارين ومؤشر كتلة الجسم.

**الكلمات المفتاحية:** اضطراب الانزعاج السابق للحيض؛ ممارسة التمارين

الرياضية؛ معدل كتلة الجسم.

**prevalence of premenstrual dysphoric disorder and  
exercise among women in the City of Hail**

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**1. Introduction**

Women face many challenges on various levels, especially health ones, due to the nature of women's body and the hormonal changes that they experience on a monthly basis which affect their life activities even before menstruation. One of the most prominent psychological disorders associated with hormonal changes experienced by women is premenstrual dysphoric disorder (PMDD), which includes a mix of mental and physical symptoms that lead to functional impairment ( Lanza & Pearlstein. 2019). Both the PMS is defined by the American College of Obstetricians and Gynecologists as any psychological or physical symptom that results in functional impairment (O'Brien et al. 2011). The International Society of Premenstrual Disorders also states that this condition happens during the luteal phase of ovulatory cycles, and that individuals exhibit emotional or physical symptoms that affect function (American Psychiatric Association.2013).

A systematic review of studies from different countries of the world reported that for women of reproductive age, PMDD prevalence rates varied from 3 to 8 percent (Rapkin, Korotkaya, & Taylor.2019; and, Gupta, Dua, Kaur, & Grover. 2019). The American Psychiatric Association (2013), indicates that 20% to

25% of women suffer moderate to severe premenstrual symptoms, that make up the so-called premenstrual syndrome (PMS) whereas 85% of women only have mild symptoms, as well as the fact that just 5% of the lowest groups fit the diagnostic criteria for premenstrual dysphoric disorder (PMDD).

Women with PMDD experience hormonal fluctuations, which can affect serotonin, GABAA receptors, and various brain circuits that perform emotional and cognitive functions (Lanza & Pearlstein. 2019). Changes in the estrogen receptor alpha (ESR-1) gene also play a role in susceptibility to the disorder (Zachar, & Kendler. 2014). Elevation in steroid hormones and their receptors in the ovary results in symptoms of low mood (Schmidt et al. 2017).

According to the result of a recent study by Sara, and Kristina (2020), the evidence confirms that the use of SSRIs continuously or during the luteal phase gives effective results. First-line therapies include serotonin reuptake inhibitors. Oral contraceptives containing drospirenone are among the second-line therapies, another ovulation-suppressing techniques, calcium, and raspberry, and CBT (Lanza & Pearlstein. 2019). The primary goal of therapeutic attempts is to relieve the physical and emotional symptoms of menstruation, to treat neurological dysregulation using of antidepressant drugs, and to prevent or reduce hormonal fluctuations (Nevatte et al. 2013).

Pearlstein (2012) study reported that lifestyle modifications relieve women suffering from PMS and PMDD. Small changes in diet such as reducing caffeine, snacks, reducing sugar and artificial sweeteners, and increasing complex carbohydrates. These changes contribute to maintaining a stable glucose level in the blood, reduce food cravings before menstruation increase the synthesis of serotonin in the brain. Moreover, exercise has the ability to improve symptoms because it increases beta-endorphin levels and thus increases well-being (Taghizadeh, Shirmohammadi, Feizi, & Arbabi.2013). Cognitive behavioral therapy (CBT) can be undertaken to reduce PMDD symptoms, particularly to manage mood and anxiety symptoms (Kleinstäuber, Witthöft, & Hiller. 2012

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

and Busse et al. 2009). CBT can also be effective as modifying negative thoughts, increasing coping strategies, and improving emotional regulation skills (Petersen et al. 2016). In addition, mindfulness contributes to reducing the stress that appears with PMDD (Bluth et al. 2015).

The researcher aims in this study to identify the prevalence of premenstrual dysphoric disorder (PMDD), and the relationship of exercise to reduced disorder, in addition to the differences between sample members according to demographic and health variables.

### The Study Problem

Premenstrual syndrome (PMS) is defined by the presence of mental symptoms as well as physical symptoms in the absence of a psychiatric disease. It also harms women's health and then fades or vanishes with menstruation (Dilbaz & Aksan2021). According to epidemiological research, 80 to 90 percent of women exhibit at least one PMS symptom, but only 2.5 to 3 percent of women experience the illness to the point where it interferes with daily activities and social interactions. Premenstrual dysphoric disorder is the name of this disorder (Gudipally & Sharma, 2021). Studies have examined the dangers of smoking, having a history of traumatic experiences, having an anxiety illness, and having a higher daily difficulty score when it comes to getting PMDD (Cohen et al., 2002; Perkonigg et al.,2004; ).

From the above, the study problem can be formulated in the following question:

Are premenstrual dysphoric disorder and exercise prevalent among women in the Hail city?

### Study hypothesis

- Is there a statistically significant prevalent at the significance level ( $\alpha \leq 0.05$ ) in the premenstrual dysphoric disorder and exercise?
- Are there statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in the PMDD according demographic?

- Are there statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in the PMDD according health variables?

## **Study Objectives**

The research aimed to accomplish the following objectives:

- Identifying the prevalence of premenstrual dysphoric disorder, and practicing sports activities in the city of Hail.
- Detection of differences between women in PMDD and exercise according to demographic variables.
- Identify the differences in PMDD and exercise according to health factors.

## **The importance of the study**

This study has a theoretical and practical importance represented in:

- Improving women's mental health by shedding light on what they suffer from on a monthly basis; which leads to obstruction of their daily life, and results in a weakness in the performance of essential aspects of life.
- This study is considered one of the scientific resources for researchers and those interested in women's mental health, and the relevant institutions for its statistical and descriptive information, and research tools.
- The results of the study are also relied upon in developing health plans, policies and programs that help women improve their quality of life and motivate them to work towards achieving sustainable development for society.

## **2.Theoretical framework and previous studies**

Since Hippocrates' time, descriptions of a condition marked by premenstrual psychological and physical anguish have been documented. The monthly bleeding of a woman was thought to "purge her evil humors" at the time. There are young ladies who feel relieved when the menses are called forth, said Trotula of Salerno, a female gynecologist who lived in the 11th century, in The Diseases

## **prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail**

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of Women (Mason-Hohl, 1940). Premenstrual tension syndrome (Frank, 1931) or premenstrual syndrome are two terms used to describe a group of premenstrual symptoms in modern times (Epperson et al., 2012).

### **Definition:**

It is a group of psychological and physical symptoms that vary in severity of symptoms that Premenstrual dysphoric disorder is a group of psychological and physical symptoms that affect women before menstruation, and vary in severity (Lanza & Pearlstein, 2019).

In earlier versions of the DSM, PMDD was included in the Appendix as a disease that required further study before being recognized as a mental disorder. PMDD was initially included as a depressive illness in the main text of the most current DSM-5 version (DSM-5, 2013). This choice was supported by data demonstrating the disorder's uniqueness from other disorders and predicting treatment response (Epperson et al, 2012).

### **Etiologic theories:**

Theories for PMDD include: a sudden spike in ovarian steroid hormones and their metabolites is being supported by new data (Schmidt et al., 2017). Allopregnanolone's effect on GABA-A receptors has been specifically mentioned as a factor in the pathophysiology of PMDD, while some evidence also links estradiol to the condition (Martinez et al., 2016). Although further investigation is needed to reveal the precise pathophysiology, there are already medications that target a number of different hypothesized processes (Carlini & Deligiannidis, 2020). Furthermore, genetic factors (polymorphisms in the ESR1 gene) may have a role in explaining the damage, and the condition may be caused by aberrant reactions in brain areas that process and control emotions during the luteal phase (Lanza & Pearlstein, 2019).



**Diagnostic criteria:**

Specialists in (ICD-10) issued by the World Health Organization report that if at least one of the premenstrual symptoms is present, the diagnosis of premenstrual tension syndrome is met (Beddig, & Kuehner. 2017). As for the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (2013), it defines the diagnostic criteria for the disorder which the researcher in this study relied on. Seven diagnostic criteria have been identified that emphasize the importance that disorders, such as depression, panic disorder, or personality disorder, are not the source of the symptoms. Also, should be ensured The physiological consequences of drug use do not cause the symptoms, or a medical condition such as hyperthyroidism. Moreover, At least five symptoms must arise a week before the start of menstruation, start to improve a few days later, and become minor or disappear in the week after menstruation. Symptoms should occur in the majority of menstrual cycles. Additionally, one (or more) of the following signs and symptoms must exist: depression, a sense of helplessness, or self-deprecating ideas - anxiety, tension, malaise - swings mood; sudden feeling of sadness, crying or significant irritation, wrath, or a rise in personal disputes, along with enhanced sensitivity to rejection). Additionally, in order to meet the prior criterion's requirement of five symptoms, one (or more) of the following symptoms must also be present; these symptoms are (lack of interest in usual activities , difficulty concentrating , lethargy or tired easily or loss of energy ,noticeable Increased or decreased appetite, or craving for certain types of foods, excessive sleep or sleeplessness, confused, sense of dyscontrol Physical symptoms such as( breast tenderness, joint or muscle pain, bloating, and weight gain). With all of the above, the association of symptoms with clinically significant distress and impact on activities, it is important to look into issues like social activity and decreased effectiveness at the job, education, or home.

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

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### **Treatment:**

There are various treatment options for women suffering with PMDD, including; lifestyle changes, eat a balanced diet, restrict coffee and alcohol, and use pain relievers psychosocial counseling and therapy. Also can be used medications that assist reduce physical and emotional symptoms. (Steiner, 2006). Exercise has a good effect on symptoms and may help to alleviate the sad mood and fluid retention that occur before menstruation (Steege & Blumenthal, 1993). In PMDD situations, psychological assistance and education can result in good outcomes. Additionally, stress reduction and relaxation training are crucial for enhancing the mental health of women (Pearlstein & Steiner, 2000).

Medication should be given if there is no improvement after at least two months of care. (Steiner, 2006). The gold-standard therapy for PMDD and severe mood-related PMS is antidepressants such SSRIs. Small to medium effect sizes for SSRIs have been discovered in several meta analyses, nevertheless (Hantsoo & Epperson, 2015). The use of combination oral contraceptives that contain the synthetic progestin drospirenone and drospirenone plus ethinyl estradiol provides some evidence for the efficacy of hormonal treatment for PMDD (Lopez et al., 2012).

### **3. Materials and methods**

#### **3.1. Method:**

This study population cross-sectional study included 566 women residing in Hail. The study was conducted from October to December of 2021.

#### **3.2. Participants:**

Social media applications (WhatsApp, Twitter, and Snapchat) were used to send the survey link online through simple random sampling. According to the latest official statistics issued by the General Authority for Statistics (2016), the number of women in Hail is 267850. The appropriate number for the sample was

determined using Stephen Thompson's equation, (Thompson. 2012), where the appropriate number was 384. See Figure 1.

$$n = \left[ \frac{N \times p(1-p)}{\left[ N-1 \times \left( d^2 \div z^2 \right) \right] + p(1-p)} \right]$$

The researcher randomly targeted 1050 women, from the list of additives, 556 questionnaires were returned, which is a percentage of 54% of all surveys given. The link supplied contained information on the study's title and objectives, the survey's content, privacy and confidentiality policies, and the anticipated completion time (maximum 15 minutes).

### 3.3. Instruments:

#### 3.3.1. Personal and health information questionnaire

A self-reported online questionnaire was used which gathered data on demographics (marital status, age, height, and weight), and general health (chronic disease - and exercise). See table (1).

*Table 1*

Personal and health information of the sample members

Variables	N	%	Mean	Std.Deviation
Age	>20	48	8.7%	1.1259
	20 to 29	430	77.3%	.332
	30 to 39	42	7.6%	
	< 40	36	6.5%	
body mass index	Underweight	58	10.5%	2.3669
	Normal weight	304	54.7%	.829
	Overweight	126	22.7%	
	Obesity	68	12.2%	
Sports Exercise	Yes	238	42.8%	1.571
	No	318	57.2%	.495
chronic disease	Yes	70	12.6%	1.1259
	No	486	87.4%	.332

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

### 3.3.2. The Premenstrual Dysphoric Disorder Scale (PMDD)

The Premenstrual Dysphoric Disorder Scale (PMDD) is a valid and accurate measure of determining the level of distress and, diagnosis made using criteria of premenstrual dysphoric disorder derived from the (DSM-5). The scale consists of 43 statements, representing seven diagnostic criteria. The subject must obtain at least one score in the two criteria (A,F), and the subject must obtain a score of zero in the two criteria (E,G), in addition to that, the subject must obtain a total of five symptoms from the two criteria (B,C). When the previous criteria are met, the woman can be assessed as suffering from (PMDD).

The severity of the disorder is determined based on the criteria of major symptoms, minor symptoms, and complications. A cutoff score <36 indicates mild disturbance, 36 to 70 means moderate, 71 to 105 severe, and <106 means very severe.

This scale is a reliable and useful tool for determining the severity of the disorder. The scale's validity and reliability were confirmed by presenting it to university professors and specialists in clinical and health psychology. The internal consistency was confirmed by using the Pearson correlation coefficient for all items See table (2), this shows that it is statistically significant at the significance level (0.05), and that all items are positively sign and have internal consistency with the total degree of the scale. Moreover, the Guttman split-half Coefficient, Spearman-Brown Coefficient, and Cronbach's Alpha have been used See table (3).

**Table 2**  
**Pearson correlation coefficient for all scale items**

Item No	correlation coefficient	Item No	correlation coefficient	Item No	correlation coefficient
١	.574	١٢	.618	٢٣	.434
٢	.٤51	١٣	.502	٢٤	.650
٣	.519	١٤	.655	٢٥	.448
٤	.442	١٥	.622	٢٦	.578

### Halima Mohamed, Adam

٥	.542	١٦	.699	٢٧	.531
٦	.459	١٧	.459	٢٨	.407
٧	.388	١٨	.723	٢٩	.517
٨	.482	١٩	.469	٣٠	.430
٩	.572	٢٠	.552	٣١	.539
١٠	.538	٢١	.682	٣٢	.472
١١	.613	٢٢	.689	٣٣	.581
				٣٤	.517

**Table 3**  
**Reliability Statistics**

Cronbach's Alpha	Guttman Split-Half Coefficient	Spearman-Brown
.912	.855	.862

#### 3.4. Statistical analysis:

The researcher applied the Statistical Package for the Social Sciences (SPSS) PC version 21.0, following descriptive statistics were used: mean, standard- deviation, frequencies, and percentages. The One-sample t-test also used to identify the general characteristics of the sample members. The variables were compared using both one-way and multiple analysis of variance. whereas the presence of a correlation between the variables was confirmed using the Pearson correlation coefficient. Statistical significance was defined as a p-value 0.05.

Spearman-Brown Coefficient, Guttman split-half Coefficient, and Cronbach's Alpha were used to assess the validity of the tools research.

## 4. Results

### 4.1. The prevalence and severity of premenstrual dysphoric disorder among the sample members

To find out whether women in Hail have a significant premenstrual dysphoric disorder; the researcher used a one-sample t-test. Table (2) showed the results that women have disorder

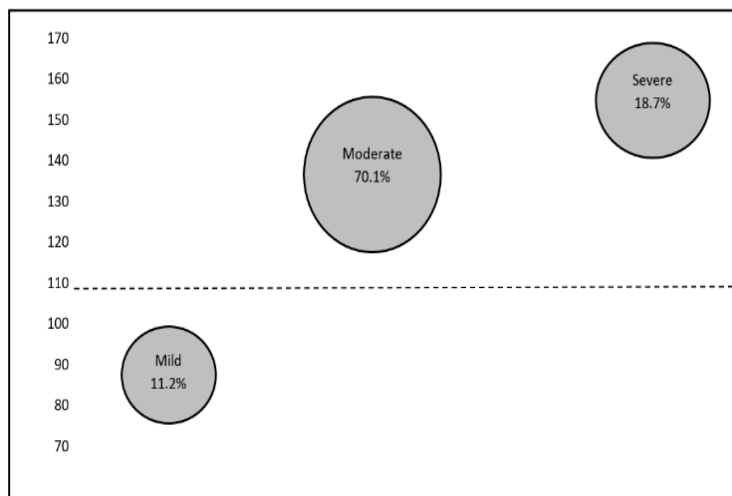
## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

(PMDD),  $t(555) = 17.74$ ,  $p = .000$ . Moreover, Figure No. (2) Shows that all sample members have PMDD to varying degrees, 70% of them suffer moderately, while 18.7% suffer severely.

**Table (4)**

**The prevalence of PMDD among the sample members:**

Variables	t	df	p	Mean	S.D
PMDD	17.74	555	.000	107.61	21.25



**Figure 1. Severity of PMDD among the sample members**

### 4.2. The prevalence of exercise among the sample members

To identify the prevalence of sports practice among women, descriptive statistics were used, where it became clear that the more than half of women do not do exercise  $N= (318)$ ,  $(M = 111.1, \pm 20.1)$ , 57.2%. The number of women who play sports has reached  $N= (238)$ ,  $(M = 102.96, \pm 21.9)$ , 42.8%. Figure (3) shows this result.

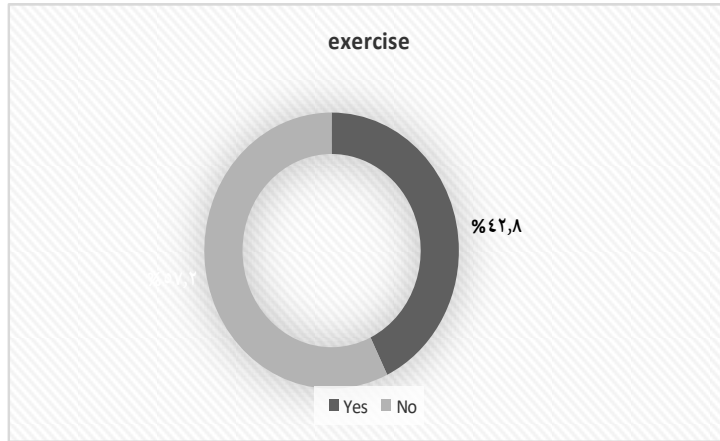


Figure 3. The prevalence of exercise among the sample members

#### 4.3. Differences in the PMDD according demographic and health variables:

To identify the differences in the PMDD according demographic and health variables, the One-way ANOVA test was used. Table (3), showing the differences, it was found that there were statistically significant differences. According to exercise in favor of women who do not do exercise ( $M = 111.1, \pm 20.1$ ) [ $F(1,554) = 20.56, P=.000$ ]. As for the chronic disease variable, it was found that there are no statistically significant differences ( $M = 111.3, \pm 2.54$ ) [ $F(1,554) = 1.21, P=.274$ ]. After examining the differences according to the variable body mass index (BMI), it became clear that the overweight of women explains the high PMDD, ( $M = 3.16, \pm 0.482$ ) [ $F(3,551) = 2.8, P=.040$ ]. In addition to what was mentioned above, the age variable causes statistically significant differences in favor of women in the age group from 20 to 29 years, ( $M = 109.7, \pm 20.73$ ) [ $F(4,551) = 3.06, P=.017$ ].

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

*Table (5)  
Differences in the PMDD according of demographic and health variables*

variables		Sum of Squares	df	Mean Square	F	Sig.
exercise	Between Groups	8951.1	1	8951.1	20.56	.000
	Within Groups	241197.1	554	435.4		
	Total	250148.1	555			
chronic disease	Between Groups	٥٤٢,٦٦٥	1	٥٤٢,٦٦٥	١,٢١	.274
	Within Groups	124531.8	554	451.202		
	Total	125074.4	555			
BMI	Between Groups	٢,٤٢٠	4	.807	2.799	.040
	Within Groups	٧٨,٩٩٣	551	.288		
	Total	٨١,٤١٤	555			
Age	Between Groups	5368.7	4	١٣٤٢,١٩	2.799	.040
	Within Groups	11971.7	551	٤٣٨,٤٨٢		
	Total	125074.5	555			

### 5. Discussion

The results of the current study indicated that 18.7% of the women suffer from severe PMDD, and all the sample members fulfilled the diagnostic criteria for the disorder. The results are consistent with recent studies, and it may be noted that there is a difference with the results of studies conducted 5 years ago. Rezende and colleagues (2022), conducted a study on 1115 female university students in Brazil, and it was found that PMS is prevalent in (46.9%) and PMDD is in 11%. Appleton reported in her study (2018), that more than half of the study sample suffer from PMDD, but they differ in the severity of these symptoms from 20% to 30% of them suffer from severe to moderate symptoms, and from 3% to 8% they have symptoms that are not affected by the score that has met the PMDD diagnostic criteria. In 2013, global estimates indicated that PMDD has a prevalence of 5% and that of pre-menstrual syndrome symptoms is present in 20% (Nevatte et al. 2013).

The study showed differences in the severity of the disorder among young women aged from 20 to 29 years, which is different



from studies that reported that PMDD is more prevalent among adolescents (Rapkin, & Mikacich. 2013; and Steiner et al. 2011). Bhuvanewari and the research team (2019) reported that the prevalence of PMS among female undergraduate students was 62.7%. Physical symptoms were the most prominent, followed by emotional symptoms. In addition, their quality of life was affected and weakness was noted in various areas of life. About 10% have severe symptoms that require medical care. Moreover, these symptoms affect women's ability to carry out activities of daily life, whether homework or work. (Halbreich, Borenstein, Pearlstein, & Kahn.2003.). It was also observed that women with moderate or severe symptoms had lower work performance, and more days of absence from work compared to others (Heinemann, Do Minh, Filonenko, & Uhl-Hochgräber. 2010). Premenstrual dysphoric disorder symptoms negatively affect women's quality of life, which is reflected in poor daily activities and social relationships (Heinemann, Minh, Heinemann, Lindemann, & Filonenko.2012).

PMDD is associated with mood disorders and anxiety, and it may appear as a type of comorbidity. It is clear that 47.4 suffer from anxiety disorders, and 29.8% of them suffer from mood disorders (Wittchen, Becker, Lieb, & Krause. 2002). Other studies indicate that major depressive disorder, anxiety, and panic disorder are the most prominent mental disorders associated with PMDD (Kepple, Lee, Haq, Rubinow, & Schmidt. 2016). Postpartum depression is probably also at risk for PMDD (Buttner et al. 2013). Moreover, the increased risk of depression after menopause (Richards, Rubinow, Daly, & Schmidt. 2006). The danger lies in the complications associated with it that affect the course of life and cause severe weakness (Halbreich, Borenstein, Pearlstein, & Kahn. 2003; and Heinemann et al. 2012). In addition, advancing age is not enough for a change in the same women. The study of Wittchen and colleagues (2002) showed that after following 1500 adolescent girls and young women for two years, no positive change was observed in the course of the disorder. The study of Hong and colleagues (2012), and the study of Pilver and colleagues (2013),

## **prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail**

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indicated that one of the most prominent problems that increase the risk of dysphoric disorder is its association with suicidal tendencies, suicidal ideation, planning and suicide attempts.

The current study indicated that high BMI is a risk factor and its rise coincides with the high degree of premenstrual dysphoric disorder. The results of Yen and colleagues' study (2020), reported that young women with PMDD had a high BMI due to increased food intake during the luteal phase. In a 2022 study by Lu and his research team, PMDD was associated with symptom onset 20 years earlier. When analyzing the change of body mass index over time, when comparing the body mass index of women, it became clear that those with high BMI in adolescence have a greater burden than those with normal body mass index in adolescence.

Moreover, the present study's results showed that exercise has a role in causing differences between the sample members, and that exercise contributes to a decrease in the degree of PMDD. This result is consistent with the result of the study of Pearce et al. (2020), which reported that exercise is an effective treatment for a syndrome before menstruation, as it relieves behavioral, psychological, as well as physical symptoms. Furthermore, both the Royal College of Obstetricians and Gynecologists (RCOG) and, the National Institute for Health and Care Excellence (NICE), have recommended exercise as a treatment for the disorder, along with SSRIs and other medications (Green, O'Brien, Panay, & Craig. 2017; and Pearce et al. 2020). This positive effect of sports is attributed to the fact that exercise raises the levels of neurotransmitters such as endorphins, and regulates the synthesis of progesterone and estrogen 12.14. Which contributes to reducing symptoms of depression and other psychological symptoms coinciding with the menstrual cycle (Pritchett, Daley, & Jolly. 2017). Lifestyle changes are recommended as an effective way to treat PMDD symptoms, and the (ACOG) has recommended that women exercise to relieve PMDD symptoms (Appleton.2018). In

addition, Shah, & Christian (2020), recommend women exercise to prevent PMDD.

## **6. Conclusion**

The results of the study concluded that premenstrual dysphoric disorder is high among women in Hail region, and that the age group from 20 to 29 is the most affected. In addition, the high body mass index has a role in the high degree of disorder, while exercise has a role in reducing the degree of PMDD, and the incidence of chronic diseases does not make any differences.

The researcher recommends the necessity of conducting a survey study is to include all regions of the Kingdom, and to study the various demographic and health variables. It is also advisable to take care of spreading awareness among women in schools, universities and various sectors, and to pay attention to a healthy lifestyle due to its importance in maintaining the psychological and physical health of women and girls.

## **7. Recommendations**

At the conclusion of this study, the researchers recommended:

- Conducting comparative studies between women in different Arab environments to identify their premenstrual dysphoric disorder.
- Implementation of therapeutic and counseling programs to train women in the skills of dealing with stress and psychological well-being.
- Urging work institutions and social facilities to provide places designated for practicing sports and facilitating access to sports activities services.

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### **Declaration of Conflicting Interests**

Regarding the research, writing, and/or publishing of this work, the author declared that there were no possible conflicts of interest.

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

### References

- American Psychiatric Association, D. S., & American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (Vol. 5). Washington, DC: American psychiatric association.
- Appleton, S. M. (2018). Premenstrual syndrome: evidence-based evaluation and treatment. *Clinical obstetrics and gynecology*, 61(1), 52-61.
- Beddig, T., & Kuehner, C. (2017). Current aspects of premenstrual dysphoric disorder-a review. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, 67(12), 504-513.
- Bhuvanewari, K., Rabindran, P., & Bharadwaj, B. (2019). Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry. *The National medical journal of India*, 32(1), 17–19. <https://doi.org/10.4103/0970-258X.272109>
- Bluth, K., Gaylord, S., Nguyen, K., Bunevicius, A., & Girdler, S. (2015). Mindfulness-based stress reduction as a promising intervention for amelioration of premenstrual dysphoric disorder symptoms. *Mindfulness*, 6(6), 1292-1302.
- Busse, J. W., Montori, V. M., Krasnik, C., Patelis-Siotis, I., & Guyatt, G. H. (2009). Psychological intervention for premenstrual syndrome: a meta-analysis of randomized controlled trials. *Psychotherapy and psychosomatics*, 78(1), 6-15.
- Buttner, M. M., Mott, S. L., Pearlstein, T., Stuart, S., Zlotnick, C., & O'Hara, M. W. (2013). Examination of premenstrual symptoms as a risk factor for depression in postpartum women. *Archives of women's mental health*, 16(3), 219-225.
- Carlini, Sara V.; Deligiannidis, Kristina M. (2020). *Evidence-Based Treatment of Premenstrual Dysphoric Disorder. The Journal of Clinical Psychiatry*, 81(2), -. doi:10.4088/JCP.19ac13071
- Cohen, L. S., Soares, C. N., Otto, M. W., Sweeney, B. H., Liberman, R. F., & Harlow, B. L. (2002). Prevalence and predictors of premenstrual dysphoric disorder (PMDD) in older premenopausal women: the Harvard study of moods and cycles. *Journal of affective disorders*, 70(2), 125-132.

- Dilbaz, B., & Aksan, A. (2021). Premenstrual syndrome, a common but underrated entity: review of the clinical literature. *Journal of the Turkish German Gynecological Association*, 22(2), 139. DOI: 10.4274/jtgga.galenos.2021.2020.0133
- Epperson, C. N., Steiner, M., Hartlage, S. A., Eriksson, E., Schmidt, P. J., Jones, I., & Yonkers, K. A. (2012). Premenstrual dysphoric disorder: evidence for a new category for DSM-5. *American Journal of Psychiatry*, 169(5), 465-475.
- Frank, R. T. (1931). The hormonal causes of premenstrual tension. *Archives of neurology & psychiatry*, 26(5), 1053-1057.
- General Authority for Statistics, Kingdom of Saudi Arabia. (2016). <https://www.stats.gov.sa/ar/230>
- Green, L. J., O'Brien, P. M. S., Panay, N., & Craig, M. (2017). Management of premenstrual syndrome: green-top guideline no 48. *Bjog*, 124(3), e73-105.
- Gudipally, P. R., & Sharma, G. K. (2021). Premenstrual syndrome. In StatPearls [Internet]. StatPearls Publishing.
- Gupta, M., Dua, D., Kaur, H., & Grover, S. (2019). Prevalence of premenstrual dysphoric disorder among school-going adolescent girls. *Industrial Psychiatry Journal*, 28(2), 198.
- Halbreich, U., Borenstein, J., Pearlstein, T., & Kahn, L. S. (2003). The prevalence, impairment, impact, and burden of premenstrual dysphoric disorder (PMS/PMDD). *Psychoneuroendocrinology*, 28, 1-23.
- Hantsoo, L., & Epperson, C. N. (2015). Premenstrual dysphoric disorder: epidemiology and treatment. *Current psychiatry reports*, 17(11), 1-9
- Heinemann, L. A., Do Minh, T., Filonenko, A., & Uhl-Hochgräber, K. (2010). Explorative evaluation of the impact of severe premenstrual disorders on work absenteeism and productivity. *Women's Health Issues*, 20(1), 58-65.
- Heinemann, L. A., Minh, T. D., Heinemann, K., Lindemann, M., & Filonenko, A. (2012). Intercountry assessment of the impact of severe premenstrual disorders on work and daily activities. *Health Care for Women International*, 33(2), 109-124.
- Hong, J. P., Park, S., Wang, H. R., Chang, S. M., Sohn, J. H., Jeon, H. J., ... & Cho, M. J. (2012). Prevalence, correlates, comorbidities, and suicidal tendencies of premenstrual dysphoric disorder in a

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

- nationwide sample of Korean women. *Social psychiatry and psychiatric epidemiology*, 47(12), 1937-1945.
- Kepple, A. L., Lee, E. E., Haq, N., Rubinow, D. R., & Schmidt, P. J. (2016). History of postpartum depression in a clinic-based sample of women with premenstrual dysphoric disorder. *The Journal of clinical psychiatry*, 77(4), 8278.
- Kleinstäuber, M., Witthöft, M., & Hiller, W. (2012). Cognitive-behavioral and pharmacological interventions for premenstrual syndrome or premenstrual dysphoric disorder: a meta-analysis. *Journal of clinical psychology in medical settings*, 19(3), 308-319.
- Lanza di Scalea, T., & Pearlstein, T. (2019). Premenstrual Dysphoric Disorder. *The Medical clinics of North America*, 103(4), 613–628. <https://doi.org/10.1016/j.mcna.2019.02.007>
- Lopez, L. M., Kaptein, A. A., & Helmerhorst, F. M. (2012). Oral contraceptives containing drospirenone for premenstrual syndrome. *Cochrane database of systematic reviews*, (2).
- Lu, D., Aleknavičute, J., Kamperman, A. M., Tamimi, R. M., Ludvigsson, J. F., Valdimarsdóttir, U. A., & Bertone-Johnson, E. R. (2022). Association Between Childhood Body Size and Premenstrual Disorders in Young Adulthood. *JAMA Network Open*, 5(3), e221256-e221256.
- Martinez, P. E., Rubinow, D. R., Nieman, L. K., Koziol, D. E., Morrow, A. L., Schiller, C. E., ... & Schmidt, P. J. (2016). 5 $\alpha$ -reductase inhibition prevents the luteal phase increase in plasma allopregnanolone levels and mitigates symptoms in women with premenstrual dysphoric disorder. *Neuropsychopharmacology*, 41(4), 1093-1102.
- Nevatte, T., O'Brien, P. M. S., Bäckström, T., Brown, C., Dennerstein, L., Endicott, J., ... & Yonkers, K. (2013). ISPM D consensus on the management of premenstrual disorders. *Archives of women's mental health*, 16(4), 279-291.
- O'Brien, P. M. S., Bäckström, T., Brown, C., Dennerstein, L., Endicott, J., Epperson, C. N., ... & Yonkers, K. (2011). Towards a consensus on diagnostic criteria, measurement and trial design of the premenstrual disorders: the ISPM D Montreal consensus. *Archives of women's mental health*, 14(1), 13-21.

- Pearce, E., Jolly, K., Jones, L. L., Matthewman, G., Zanganeh, M., & Daley, A. (2020). Exercise for premenstrual syndrome: a systematic review and meta-analysis of randomised controlled trials. *BJGP open*, 4(3).
- Pearlstein, T. (2012). Psychotropic medications and other non-hormonal treatments for premenstrual disorders. *Menopause International*, 18(2), 60-64.
- Pearlstein, T., & Steiner, M. (2000). Non-antidepressant treatment of premenstrual syndrome. *Journal of Clinical Psychiatry*, 61, 22-25.
- Perkonig A, Yonkers KA, Pfister H, Lieb R, Wittchen HU. Risk factors for premenstrual dysphoric disorder in a community sample of young women: the role of traumatic events and posttraumatic stress disorder. *J Clin Psychiatry* 2004; 65: 1314-22.
- Petersen, N., London, E. D., Liang, L., Ghahremani, D. G., Gerards, R., Goldman, L., & Rapkin, A. J. (2016). Emotion regulation in women with premenstrual dysphoric disorder. *Archives of women's mental health*, 19(5), 891-898.
- Pilver, C. E., Libby, D. J., & Hoff, R. A. (2013). Premenstrual dysphoric disorder as a correlate of suicidal ideation, plans, and attempts among a nationally representative sample. *Social psychiatry and psychiatric epidemiology*, 48(3), 437-446.
- Pritchett, R. V., Daley, A. J., & Jolly, K. (2017). Does aerobic exercise reduce postpartum depressive symptoms? A systematic review and meta-analysis. *British Journal of General Practice*, 67(663), e684-e691.
- Rapkin, A. J., & Mikacich, J. A. (2013). Premenstrual dysphoric disorder and severe premenstrual syndrome in adolescents. *Pediatric Drugs*, 15(3), 191-202.
- Rapkin, A. J., Korotkaya, Y., & Taylor, K. C. (2019). Contraception counseling for women with premenstrual dysphoric disorder (PMDD): current perspectives. *Open Access Journal of Contraception*, 10, 27.
- Rezende, A. P. R., Alvarenga, F. R., Ramos, M., Franken, D. L., da Costa, J. S. D., Pattussi, M. P., & Paniz, V. M. V. (2022). Prevalence of Premenstrual Syndrome and Associated Factors Among Academics of a University in Midwest Brazil. *Revista Brasileira de Ginecologia e Obstetrícia/RBGO Gynecology and Obstetrics*, 44(02), 133-141.

## prevalence of premenstrual dysphoric disorder and exercise among women in the City of Hail

- Richards, M., Rubinow, D. R., Daly, R. C., & Schmidt, P. J. (2006). Premenstrual symptoms and perimenopausal depression. *American Journal of Psychiatry*, *163*(1), 133-137.
- Schmidt, P. J., Martinez, P. E., Nieman, L. K., Koziol, D. E., Thompson, K. D., Schenkel, L., & Rubinow, D. R. (2017). Premenstrual dysphoric disorder symptoms following ovarian suppression: triggered by change in ovarian steroid levels but not continuous stable levels. *American Journal of Psychiatry*, *174*(10), 980-989.
- Shah, R. S., & Christian, D. S. (2020). Association of socio-demographic, dietary and lifestyle factors with Premenstrual Syndrome (PMS) among undergraduate medical students of a tertiary care institute in Ahmedabad, Gujarat. *Journal of Family Medicine and Primary Care*, *9*(11), 5719.
- Steege, J. F., & Blumenthal, J. A. (1993). The effects of aerobic exercise on premenstrual symptoms in middle-aged women: a preliminary study. *Journal of psychosomatic research*, *37*(2), 127-133.
- Steiner, M., Pearlstein, T., Cohen, L. S., Endicott, J., Kornstein, S. G., Roberts, C., Roberts, D. L., & Yonkers, K. (2006). Expert guidelines for the treatment of severe PMS, PMDD, and comorbidities: the role of SSRIs. *Journal of women's health* (2002), *15*(1), 57-69. <https://doi.org/10.1089/jwh.2006.15.57>
- Steiner, M., Peer, M., Palova, E., Freeman, E. W., Macdougall, M., & Soares, C. N. (2011). The Premenstrual Symptoms Screening Tool revised for adolescents (PSST-A): prevalence of severe PMS and premenstrual dysphoric disorder in adolescents. *Archives of women's mental health*, *14*(1), 77-81.
- Taghizadeh, Z., Shirmohammadi, M., Feizi, A., & Arbabi, M. (2013). The effect of cognitive behavioural psycho-education on premenstrual syndrome and related symptoms. *Journal of psychiatric and mental health nursing*, *20*(8), 705-713.
- Thompson, S. K. (2012). *Sampling* (Vol. 755). John Wiley & Sons.
- Wittchen, H. U., Becker, E., Lieb, R., & Krause, P. (2002). Prevalence, incidence and stability of premenstrual dysphoric disorder in the community. *Psychological medicine*, *32*(1), 119-132.
- Yen, J. Y., Lin, H. C., Lin, P. C., Liu, T. L., Long, C. Y., & Ko, C. H. (2020). Leptin and ghrelin concentrations and eating behaviors



## Halima Mohamed, Adam

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during the early and late luteal phase in women with premenstrual dysphoric disorder. *Psychoneuroendocrinology*, 118, 104713.

Zachar, P., & Kendler, K. S. (2014). A diagnostic and statistical manual of mental disorders history of premenstrual dysphoric disorder. *The Journal of nervous and mental disease*, 202(4), 346-352.