Relationship between Mindfulness and Premenstrual Syndrome among Faculty Nursing Students

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Abstract

Premenstrual syndrome (PMS) is a complex set of symptoms which include physical, psychological and behavioral changes of varying severity. These symptoms can interfere with the lives of the affected females, as well as their interpersonal relationships. Researches reveal a sound influence of mindfulness on the mind, somatic aspect, and conduct, claiming that educating a further mindful way of being is related to fewer psychological suffering, more optimistic condition of mind, and improved quality of life. Despite the existence of many experimental studies revealing the consequences of cognitive mindfulness-based therapy on the premenstrual tension, few studies attempted to study the relation between mindfulness level and premenstrual symptoms severity among affected women. **Objective:** Examine the relation between mindfulness level and premenstrual syndrome among faculty nursing students. **Setting:** The study was conducted on nursing students at the Faculty of Nursing, Damanhour University. **Subjects:** A sample of 291 nursing students was chosen by simple random sampling method. **Tools:** Two questionnaires were used namely; Five Factors Mindfulness Questionnaire (FFMQ) and a modified version of Premenstrual Symptoms Screening Tool for clinicians (PMSST) in addition to socio-demographic data and menstrual history structured interview schedule. **Results:** Study findings indicated that the only statistical significant relation was present between mindfulness and behavioral symptoms. However, no statistical significant relationships were found between mindfulness and total score of premenstrual symptoms as well as the rest of subscales of premenstrual symptoms. **Conclusion:** Mindfulness is significantly related to behavioral premenstrual symptoms. **Recommendations:** Mindfulness training can be used to address premenstrual behavioral symptoms.

Keywords: Premenstrual syndrome; Mindfulness; Nursing students.

Introduction

Premenstrual syndrome (PMS) points to a state where by some females experience certain behavioral and/or somatic symptoms, occurring before menstruation or within a few days of the onset of menstruation. It has been emphasized that these symptoms must be repeated and of enough severity to warrant medical treatment[1]. Chin and Nambiar (2016) reported that premenstrual syndrome affect a large number of females in the reproductive period. It has been rated that PMS influence three to five percent of women in the reproductive age group[2].

Nour et al. (2009) assessed the incidence of premenstrual symptoms and its prevalence among female college students; aged from eighteen to twenty seven years. Results showed that around a quarter of the studied students met the criteria of premenstrual syndrome. Most common symptoms were: feeling of drowsiness, miserable mood, sudden feeling of sorrow,

nervousness, back pain and sleep troubles. It was concluded that there is significant prevalence of PMS among the studied sample. Protective and management approaches for PMS were extremely recommended[3].

The medical presentation of premenstrual syndrome was recognized by Frank (1931)[4] who named it as premenstrual stress syndrome, and then in 1994 the Diagnostic and Statistical Manual of Mental Disorders named it as premenstrual dysphoric disorder. It was divided into a set of not otherwise specified depressive disorders[5]. For making diagnosis, at least five of eleven signs and symptoms stated in diagnostic and statistical manual (DSM) criteria should be displayed. Symptoms should impair function and be present at least for two successive months. (Soyda Akyol et al, 2013)[6]. Criteria of premenstrual syndrome include both somatic & behavioral symptoms. Somatic symptoms of premenstrual syndrome include (breast ache, gastric distension, headache, skin disorders, increased weight, joint ache, and back ache. Behavioral & psychological symptoms include: mood swings, annoyance, nervousness, sleep trouble, overindulge or particular food hunger, tiredness, or lack of power, agitation, reduced attention, social isolation, anhedonia, and despair[5].

The exact cause of premenstrual disorder is still not verified. One of biological interpretation of the symptoms of premenstrual syndrome relates it to the stages of the menstrual phases, which is reasoned through alteration in the intensity of ovarian hormones. Yet, it is not apparent how ovarian hormones induce premenstrual symptoms. It has been found that Estrogen and progesterone are recognized to affect metabolism of prostaglandin in definite intended tissues i.e., the womb. Also there is some proof that prostaglandin reconcile the consequence of sex steroids on the hypothalamus and displays numerous actions on the central nervous system, including effects on somatic and behavioral function, cerebral blood flow and alteration of neurotransmitters discharge[7].

Generally, it is seen that premenstrual syndrome affects health quality of life among women and may lead to impairment in work productivity[3,8]. This was emphasized by Farrokh-Eslamlou et al. (2015) who conducted a descriptive study on female medical students at Urmia University of Medical Sciences. Results showed that 39.4% of subjects meet criteria for premenstrual syndrome and this affects their quality of life[9].

Soyda Akyol et al. (2013) conducted a study that aimed to examine resentment and annoyance levels among females having premenstrual disorder. Fifty women having premenstrual disorder were chosen and compared to fifty healthy control group using anger and appraisal of premenstrual symptoms questionnaire. Outcomes demonstrated that subjects with premenstrual disorder had higher scores of state trait anger scale compared to healthy women. Furthermore, there was a positive association between premenstrual disorders and anger scores[6].

Erbil et al. (2018) investigated frequency of depressive sign among female experiencing premenstrual symptoms and its correlated factors. Outcomes showed that the magnitude of depressive sign amongst the women with severe premenstrual symptoms and with no rigorous premenstrual signs exist in about sixty five percent. Statistically considerable affirmative correlations were originated among depression score; the sum premenstrual syndrome score and its sub items scores including depressive feelings; worry; tiredness; bad temper; depressive ideas; throbbing; and the changes in appetite[10].

Mindfulness has been shown to be helpful in many areas such as medicine and teaching. Mindfulness increases awareness of the present moment by blocking past and

future thoughts[11]. According to Kabat-Zinn (1990), mindfulness involves paying attention on purpose, in the present moment in an effort to cultivate an accepting or non-judgmental, non-reactive state of awareness[12]. This awareness has been described as a detached metacognitive state in which one is aware of his or her thought processes without being caught up in them[13]. The aim of mindfulness is for an individual to gain freedom from automatic reactions to thoughts, feelings, and events[14]. The skills taught aim to help participants identify and accept negative thought patterns and respond in intentional ways[15]. The person welcomes tensions, stress, and pain, as well as disturbing emotions such as fear, anger, and feelings of unworthiness[16].

Literature review revealed the sound influence of mindfulness on the brain, somatic aspect, and conduct. Accordingly, educating a further mindful way of being is related to fewer psychological sufferings, more optimistic condition of mind, and improved quality of life. In addition, mindfulness application can affect the mind, the autonomic nervous system, stress hormones, the immune system, and physical condition in helpful ways[17,18].

Panahi and Faramarzi (2016) conducted an experimental study to inspect the consequence of cognitive therapy based mindfulness on diminishing the premenstrual signs, nervousness & depression among females having premenstrual syndrome. Results of their study showed that mindfulness-based cognitive therapy improved depression and anxiety symptoms and total premenstrual syndrome scores[19].

It has been noted that mindfulness is useful in helping any individual cope with the pressures of everyday life but may be even more useful in healthcare, where pressures are great and the ability to deliver compassionate care is fundamental. Courses to help health practitioners understand and engage in these practices have proven

beneficial and should be considered for nursing students across the health service[20]. This may be particularly true with female nursing students experiencing premenstrual syndrome. So the current study aimed to examine the relation between mindfulness level and premenstrual syndrome among faculty nursing students.

Aim of the Study

To examine the relationship between mindfulness level and premenstrual syndrome among faculty nursing students.

Research Question

What is the relationship between mindfulness and premenstrual syndrome among faculty nursing students?

Materials and Method

Materials
Design: A descriptive correlational design was employed in this study.

Setting: The study was conducted at the Faculty of Nursing, Damanhour University.

Subjects: The Epi info 7 program was used to estimate the sample size based on using 10% acceptable error, 99% confidence coefficient, and 60% expected frequency, the program revealed a sample size to be 291 nursing students, this constitutes about 24% of the total population which are 1195 students. They were distributed as follow (58 students from first year, 77 from second year, 51 from third year and 105 students from fourth year). These numbers were determined based on total numbers of students enrolled in each academic year (2017-2018). Students were selected by simple random sampling method.

Tools: Three questionnaires were used for this study namely:

Tool I: Five Factors Mindfulness Questionnaire (FFMQ)

This scale was developed by Baer et al. (2006)[21] to measure elements of

mindfulness. It is composed of 39 items, which are rated on a five point likert scale, ranging from 1 (never or very rarely true) to 5 (very often or always true). The scale is divided into five subscales which are; observing (notice or attend to internal and external phenomena), describing (label observed phenomena such as thoughts and emotions), acting with awareness (engage with full awareness in current experience or activity), nonjudging of inner experience (nonjudgmental awareness of current experience without evaluation) and non-reactivity to inner experience (notice internal phenomena without reacting). The 39 items have a total score ranging from 39 to 195, with the scores less than 65 indicating low level of mindfulness, scores ranging from 65 to less than130 indicating moderate level of mindfulness and 130 and more indicating high level of mindfulness. The same ratio applies to each subscale scores. The tool is reliable with strong internal consistency as the Cronbach alpha for the total scale was 0.91, with subscales alphas ranging from 0.80 to 0.87[21].

Tool II: A modified version of Premenstrual Symptoms Screening Tool for clinicians (PMSST)[22]

It contains two main sections:

Section one:

PMS physical, psychological and behavioral symptoms screening tool. It is composed of 32 items, grouped in three subscales. The first physical symptoms subscale includes 14 items. The second psychological symptoms subscale 12 items and the last behavioral symptoms subscale 6 items. Responses to each of the total 32 items are rated on four alternatives (0) for absent, (1) for mild, (2) for moderate, or (3) for severe.

Scoring system:

Total symptoms score ranges from 0 to 96. The subject is considered to have no PMS if her total score is 24 or below, 25-48 is considered mild PMS, moderate PMS if scores range 49-72, and severe PMS if scored 73 or more. Subscales scoring: for physical symptoms screening ranges from 0 to 42, for psychological symptoms screening 0 to 36, for behavior symptoms screening 0 to 18.

Section two:

It is concerned with the negative PMS effect on daily activities. It contains four items. For each one of the four items the subject had to chose one of four alternatives: (0) absent, (1) mild, (2) moderate, or (3) severe, with a total score ranging from 0-12. A score below 3 indicates no effect on subject's daily activities, mild effect if scores ranged between 3-6, moderate if between 7-9, and severe if the total scores were10 or more.

Tool III: Socio-demographic Data and Menstrual History Structured Interview Schedule

It is composed of three parts. First part; illicits data about age, marital status, residence, presence of physical health problems, type and size of family. Second part; illicits data related to menstruation such as age of first menarche, the number of menstruation days, menstrual interval, and amount of blood flow. Third part; illicits data about life activities such as: playing sports, and eating healthy food.

Method

- Official approval to conduct this study was obtained from the Dean of the Faculty of Nursing, Damanhour University.

- Tool (III) was developed to cover socio-demographic and menstrual history of the studied students.

- Tools I and II were translated into Arabic language and tested for content validity by 5 experts in the field of gynecological and psychiatric nursing.

- A pilot study for the questionnaires was conducted on (10%) of the subject that were not included in the study in order to check and ensure

clarity and applicability of the tools. In the light of the findings of the pilot study, no changes occurred in the tools.

- Tools were tested for reliability using the Cronbach's alpha coefficient to measure the internal consistency of items. The tools proved to be reliable (r=0.77 for tool I and 0.82 for tool II).

- In order to obtain the required students for data collection, students' numbers were written on papers and caught randomly the first then the second and so on until reaching the final number required from each year.

- Researchers contacted students' instructors to determine lectures schedule, clinical work settings and work schedule in order to identify best time for students to fill out the questionnaires.

- Students were divided into small groups with the researchers during their break time to explain the purpose of the study, obtain students' consent to participate in the study, and reassure them about the anonymity and confidentiality of their responses. Study tools were then distributed and instructions about filling them were given. Infrequently, data were collected on an individual base from students who missed the group.

- The data were collected during the academic year 2017-2018, for three months, starting from the beginning of February 2018 to the end of April 2018.

Ethical considerations:

Informed oral consent was obtained from students after providing an appropriate explanation about the purpose of the study and nature of the research. The confidentiality and anonymity of individual responses, volunteer participation and right to refuse participation in the study were emphasized to the students.

Statistical Analysis

- All raw data were coded.

- Data fed to statistically software SPSS (statistical package for special science) version 20 to perform tabulation and the following statistical techniques

- Quantitative data were described using arithmetic mean and standard deviation.

- Associations between categorical variables were tested using Chi-square.

- Significance of the obtained results was judged at the 5% level.

Results

Table (1) shows the distribution of nursing students according to their socio demographic characteristics. The table reveals that, the students' age ranged from 18 to 24 years with a mean of 20.53±1.48. Almost all studied students (99.0%) were single, 28.2% of the students were urban dwellers and 82.1% of them were from nuclear families. Additionally, the mean family size was 5.08±0.24 and 8.2% of them had physical health problems namely renal disease, peptic ulcers, anemia and bronchial asthma.

Table (2) presents the distribution of the studied nursing students according to their menstrual history. Concerning the mean age of menarche, it was 13.08 ± 0.76; 75.3% of the students reporting that menarche began between the age twelve to less than fifteen years. Irregular menstruation was reported by 14.4% of the students. Also 76.6% of the students reported that the duration of menstruation ranged between 4-5 days and 76.6% reported that the interval between menstrual cycles was from 25 to less than 30 days. Changing pads was performed three times and more daily by 42.6% of the studied students. Moreover, around one third (33.7%) of the students reported practicing exercises during menstruation while 84.2% consumed healthy diet during menstruation.

Table (3) shows the distribution of the studied nursing students according to the screening of their premenstrual symptoms. The table indicates that more than half of students (54.0%) had mild premenstrual symptoms as revealed by their total score compared to only 2.7% who had severe premenstrual symptoms. Also, more than half (53.6%) of the students had mild physical. As for psychological symptoms 35.4% and 37.1% had mild to moderate level respectively. Regarding behavioral symptoms, 43.6% of the students had mild symptoms. Additionally, the majority of the students reported between mild and moderate effects on their activities of daily living (47.1% and 41.2% respectively).

Table (4) portrays the distribution of the nursing students according to their mindfulness level. It was noted that 56.7% of the students had moderate level of mindfulness and the rest (43.3%) had high level. Along the same line, students' score in all subscales of mindfulness ranged between more than half to more than two thirds of them having moderate degree in all subscales namely; observing, describing, acting with awareness, non-judgmental and non-reactivity (57.7%, 77.3%, 63.2%, 62,9%, and 74.2% respectively).

Table (5) illustrates the relationship between students' mindfulness and premenstrual symptoms subscales and total scores. From this table it was observed that, the only statistical significant relation was present between mindfulness and behavioral symptoms ($X^2=24.93$, P=0.000*). As noted from the table that, 66.7 % of students who had severe behavioral premenstrual symptoms had moderate levels of mindfulness, while 70.3% of students who had no behavioral premenstrual symptoms had high levels of mindfulness. However, no statistical significant relationships were found between mindfulness and total score of premenstrual symptoms as well as the rest of subscales of premenstrual symptoms. ($X^2=0.661$, P=0.882, $X^2=0.905$, P=0.824,

$X^2=2.072$, P=0.558 and $X^2=6.893$, P=0.075 respectively).

Table (6) portrays the relationship between students' premenstrual symptoms and mindfulness total and subscales scores. No statistical significant relationships were found between any of premenstrual symptoms and total of mindfulness ($X^2=0.661$, P=0.882) as well as the level of premenstrual symptoms and mindfulness subscales namely; observing subscale ($X^2=3.224$, P=0.780), describing subscale ($X^2=7.667$, P=0.264), acting with awareness subscale ($X^2=4.729$, P=0.579), non-judgmental subscale ($X^2=6.457$, P=0.374), and finally non-reactivity subscale ($X^2=2.229$, P=0.897).

Discussion

Premenstrual syndrome (PMS) is any constellation and amalgum of psychological and physical symptoms that affect the individual's interpersonal relationships, social interactions, productivity, lifestyle, school performance and emotional well-being[23]. A variety of evidence pointed out that a woman with PMS experiences higher levels of daily and traumatic life stress. Even so previous studies revealed that mindfulness training may be helpful to women suffering from premenstrual symptoms. Notwithstanding emerging of evidence in this field is predominatingly controversial and meager[24,25]. So it was important to conduct this study to identify the relationship between mindfulness and PMS.

The present study findings revealed that more than half of the participant students had mild premenstrual symptoms. Moreover, the students' percent in all subscales of premenstrual symptoms ranged between mild to moderate. Also, they reported mild to moderate effects on activities of daily living. These results could be explained by the effect of good physical health and healthy life style on the severity of premenstrual symptoms. As found in the current study that the majority of the studied

students have good physical health and they did not complain from any health problems. Furthermore, they reported that they eat healthy diet during menstruation days and around one third of them practicing exercise during menstruation.

In this respect, Elena et al. (2010)[26] and Kroll (2009)[27] reported that eating a healthy diet and practicing physical activity are methods of non-pharmacological interventions for reducing menstrual symptom severity that must be recommended for all women suffering from PMS. It is well known that healthy diet and physical exercise have a variety of health benefits with very low risk of adverse events.

On the same line, Steiner (2000)[28] and Thys (1998)[29] stated that several dietary elements and modifications in behavioral and lifestyle factors is suggested to relieve symptoms of PMS, including having small, frequent meals high in complex carbohydrates; and taking vitamin and mineral supplements. High-fiber diets have a benefit of reducing serum estrogen concentrations by altering the enterohepatic circulation of estrogens, leading to elimination of estrogen in feces.

Regarding the second variable in this study, current obtained results reported that more than half of the students had moderate level of mindfulness, as well as all subscales namely; observing, describing, acting with awareness, non-judgmental and non-reactivity level were moderate as reported by more than half to more than two thirds of students. Regarding relationship between students' mindfulness and premenstrual symptoms. Current results revealed no statistical significant relationship between mindfulness and total score of premenstrual symptoms as well as the rest of subscales of premenstrual symptoms. The only statistical significant relation was present between mindfulness and behavioral symptoms. This is means that students who have high level of mindfulness have no behavioral premenstrual symptoms. In other words,

mindfulness buffer against behavioral premenstrual symptoms.

Behavioral symptoms in the present study mean controlling of emotions and angry feelings plus managing relationship. This finding could be explained by the fact that mindfulness may enhance skills toward observing ideas & feelings without responding impulsively and violently to them. Moreover, mindfulness plays a role in relational adjustment in a way that mindful people may have relationships that are lower in emotional and behavioral negativity.

In addition, mindfulness provides individuals with a heightened ability to simply observe thoughts, feelings, and experiences in order to disengage automatic and often dysfunctional reactivity and then to allow them to work with more balanced relationships with themselves and with others. This linking process may be an important key of the therapeutic mechanism[30].

This explanation is consistant with numerous previous researches; for example, Brown and Ryan (2003, 2004)[31,32] showed that mindfulness was certainly related to openness, relatedness, and interpersonal intimacy. Brown and Ryan (2003)[32] as well found a relationship among mindfulness & elements of emotional intelligence that have been linked to enhanced social skills & considering others point of view. Furthermore, Reiter (2003)[33] found that mindfulness was positively correlated with intimacy attachment in couples' relation & inversely linked to anxious / ambivalent attachment to the partner.

Moreover, Winefield et al. (2015) applied mindfulness training intervention over three consecutive weeks to forty technical college students & the effects was contrasted with fifty six as control group who were attending classes as usual. Both the experimental & control group fill self-report measures of aggression and violence[34]. The finding of the study revealed that the experimental group

reported lower levels of anger expression at one month follow up than control group. Also a recent published study by Askari et al. (2018) indicated that mindfulness-based cognitive behavioral therapy was effective in reducing the score of overall symptoms of PMS in the intervention group, compared with the control group immediately and one month after the completion of the intervention[35].

Kathleen et al. (2011) examined interrelationships among premenstrual symptom severity reports, menstrual attitudes, and mindfulness qualities in a sample of 127 women. Their results revealed higher scores on measures of mindfulness and were significantly associated with lower premenstrual syndrome report. They concluded that their results align with the body of research demonstrating that mindfulness is predictive of improved symptomatology and well-being across varied conditions, as well mindfulness was associated with less severe premenstrual symptoms[36].

A positive effect of the mindfulness on the symptoms of PMS was reported also by Kues et al. (2014) study on the internet-based cognitive behavioral self-help for PMS[37]. Moreover, Lustyk et al. (2011) supported the effect of a mindfulness-based intervention on reducing the severity of symptoms among women with premenstrual symptoms. He found that mindfulness appears to be associated with lower PMS symptoms. This adds to the list of the beneficial effects of mindfulness to mental and physical health. It also suggests that mindfulness training may be a safe and effective alternative treatment for premenstrual syndrome in women especially behavioral symptoms[38].

Study conducted by Ahmadv and Heydarinasab, (2012) showed that mindfulness is a strong predictor of well-being and is connected positively and significantly with it. Hence, mindfulness could be a method to decrease stress and improve well-being as well as mental health[39].

In conclusion, mindfulness may improve premenstrual symptoms especially behavioral symptoms which impact emotions and relationship. These results should be taken into consideration by health professionals. This study supports inference for psychotherapy when dealing with female with PMS especially for those who suffer from symptoms of anger & relation problems.

Conclusion

Based on the findings presented above, it can be concluded that mindfulness is significantly related to behavioral premenstrual symptoms, which indicates that female with premenstrual behavioral symptoms need to addressing effective responses and discussing way of dealing with it including mindfulness training.

Recommendations

Based on the previous findings the following are recommended:

- Staff educators may plan to increase awareness among students regarding the ways to improves mindfulness skills.

- Increase awareness about the mindfulness construct and its effect on premenstrual symptoms especially behavioral symptoms as well as relationship quality.

- Mindfulness skills training can be conducted to enhance its application in daily life.

Table (1): Distribution of nursing students according to their socio demographic characteristics

Students characteristics	Frequency (N=291)	
	No	**%**
Academic year		
First	58	19.9
Second	77	26.5
Third	51	17.5
Forth	105	36.1
Age (years)		
18-	56	19.2
20-	82	28.2
22	58	19.9
24+	95	32.7
Mean ± SD	20.53 ± 1.32	
Marital status		
Single	288	99.0
Married	3	1.0
Family residence		
Urban	82	28.2
Rural	209	71.8
Type of family		
Nuclear	239	82.1
Extended	52	17.9
Family size		
2-	35	12.0
4-	209	71.8
6+	47	16.2
Mean ± SD	5.08 ± 0.24	
Presence of physical health problems		
Yes	24	8.2
No	267	91.8

Table (2): Distribution of the nursing students according to their menstrual history

Items	Frequency (N=291)	
	No	**%**
Age of menarche (years)		
9-	56	19.2
12-	219	75.3
15+	16	5.5
Mean ± SD	13.08 ± 0.76	
Regularity of menstruation		
Regular	249	85.6
Not regular	42	14.4
Interval between menstrual cycles (days)		
20-	21	7.2
25-	223	76.6
30+	47	16.2
Mean ± SD	27.9 ± 0.83	
Duration of menstruation (days)		
2-	12	4.1
4-	223	76.6
6+	56	19.2
Mean ± SD	5.30 ± 0.54	
Frequency of sanitary pad change per day		
Once	72	24.7
Twice	95	32.6
Three times and more	124	42.6
Practicing exercises during menstruation		
Yes	98	33.7
No	193	66.3
Eating healthy diet during menstruation		
Yes	245	84.2
No	46	15.8

Table (3): Distribution of the nursing students according to the screening of their pre menstrual symptoms

Students' Premenstrual Symptoms	Level of Premenstrual Symptoms							
	No		Mild		Moderate		Severe	
	No	%	No	%	No	%	No	%
T Total PMS score	17	5.8	157	54.0	109	37.5	8	2.7
P Physical PMS	20	6.9	156	53.6	111	38.1	4	1.4
P Psychological PMS	49	16.8	103	35.4	108	37.1	31	10.7
B Behavioral PMS	64	22.0	127	43.6	85	29.2	15	5.2
E Effects on ADL	22	7.6	137	47.1	120	41.2	12	4.1

PMS = Premenstrual symptoms   *ADL= Activity of daily living*

Table (4): Distribution of the nursing students according to their mindfulness level

Students' mindfulness (Total &subscales)		Level of Mindfulness					
		Low		Moderate		High	
		No	%	No	%	No	%
T	Total Mindfulness Score	0.0	0.0	165	56.7	126	43.3
O	Observing	14	4.8	168	57.7	109	37.5
D	Describing	9	3.1	225	77.3	57	19.6
A	Acting with awareness	57	19.6	184	63.2	50	17.2
N	Non-judgmental	19	6.5	183	62.9	89	30.6
N	Non-reactivity	23	7.9	216	74.2	52	17.9

Table (5): Relationship between students' mindfulness and premenstrual symptoms subscales and total score

PMS	Mindfulness level				Total		Test of significance
	Moderate (n= 165)		High (n= 126)		(n= 291)		
	No	%	No	%	No	%	
Physical symptoms							
- No	10	50.0	10	50.0	20	6.9	X^2=0.905
- Mild	92	59.0	64	41.0	156	53.6	
- Moderate	61	55.0	50	45.0	111	38.1	P = 0.824
- Severe	2	50.0	2	50.0	4	1.4	
Psychological symptoms							
- No	24	49.0	25	51.0	49	16.8	X^2=2.072
- Mild	63	61.2	40	38.8	103	35.4	P = 0.558
- Moderate	61	56.5	47	43.5	108	37.1	
- Severe	17	54.8	14	45.2	31	10.7	
Behavioral symptoms							
- No	19	29.7	45	70.3	64	22.0	X^2= 24.93
- Mild	84	66.1	43	33.9	127	43.6	P = 0.000*
- Moderate	52	61.2	33	38.8	85	29.2	
- Severe	10	66.7	5	33.3	15	5.2	
Effects on ADL							
- No	14	63.6	8	36.4	22	7.6	X^2= 6.893
- Mild	87	63.5	50	36.5	137	47.1	P = 0.075
- Moderate	59	49.2	61	50.8	120	41.2	
- Severe	5	41.7	7	58.3	12	4.1	
Total PMSST							
- No	11	64.7	6	35.3	17	5.8	X^2=0.661
- Mild	87	55.4	70	44.6	157	53.9	P =0.882
- Moderate	62	56.9	47	43.1	109	37.6	
- Severe	5	62.5	3	37.5	8	2.7	

X^2= Chi square test   ** Statistically significant at 0.05*

Table (6): Relationship between premenstrual symptoms and mindfulness total & subscales scores

Mindfulness level	Premenstrual symptoms level								Total (n= 291)		Test of significance
	No (n= 17)		Mild (n= 157)		Moderate (n= 109)		Severe (n= 8)				
	No	%	No	%	No	%	No	%	No	%	
Observing											
- Low	0	0.0	7	50.0	7	50.0	0	0.0	14	4.8	X^2=3.224 P = 0.780
- Moderate	12	7.1	89	53.0	63	37.5	4	2.4	168	57.7	
- High	5	4.6	61	56.0	39	35.8	4	3.7	109	37.5	
Describing											
- Low	0	0.0	4	44.4	4	44.4	1	11.1	9	3.1	X2=7.667 P = 0.264
- Moderate	16	7.1	116	51.6	87	38.7	6	2.7	225	77.3	
- High	1	1.8	37	64.9	18	31.6	1	1.8	57	19.6	
Acting with awareness											
- Low	6	10.5	28	49.1	22	38.6	1	1.8	57	19.6	X2=4.729 P = 0.579
- Moderate	10	5.4	99	53.8	70	38.0	5	2.7	184	63.2	
- High	1	2.0	30	60.0	17	34.0	2	4.0	50	17.2	
Non -judgmental											
- Low	0	0.0	8	42.1	11	57.9	0	0.0	19	6.5	X2=6.457 P = 0.374
- Moderate	13	7.1	101	55.2	65	35.5	4	2.2	183	62.9	
- High	4	4.5	48	53.9	33	37.1	4	4.5	89	30.6	
Non-reactivity											
- Low	1	4.3	15	65.2	6	26.1	1	4.3	23	7.9	X2=2.229 P = 0.897
- Moderate	12	5.6	115	53.2	83	38.4	6	2.8	216	74.2	
- High	4	7.7	27	51.9	20	38.5	1	1.9	52	17.9	
Total mindfulness											
- Low	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	X2=0.661 P = 0.882
- Moderate	11	6.7	87	52.7	62	37.6	5	3.0	165	56.7	
- High	6	4.8	70	55.6	47	37.3	3	2.4	126	43.3	

X^2= Chi square test   ** Statistically significant at 0.05*

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