Predictability of pain intensity and psychological distress by suggestibility and attitude to menstruation among female university students

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Abstract

Background: Premenstrual syndrome (PMS) is commonly seen among women of reproductive age and can be aggravated by emotional and physical symptoms. (PMS) has a wide variety of signs and symptoms tend to recur in a predictable pattern including fatigue, pain, mood swings, food cravings, tender breasts, irritability and depression. For most of women, the physical pain and psychological distress are severe enough to affect their daily lives. It has been observed that pain intensity and psychological distress can be affected by psychosocial variables such as catastrophizing, beliefs, coping skills, perceived social support, and learning about pain from important others. this investigation has aimed to assess Predictability of pain intensity and psychological distress by suggestibility and attitude to menstruation among Iranian population of women.

Methods: This cross-sectional study was performed on 130 female students of Shahed university of Tehran between 20 to 35-year-old. The data were collected through the, MAQ, Numeric pain assessment, DASS-42, SHSS/C, SRQ, and Demographic form. Significant level was set at 0.05. Statistical analysis was carried out using SPSS-24 software. The analysis method was standard regression.

Results: we had 130 female students of Shahed university of Tehran participated in investigation and their data was analyzed. Pearson correlation between total score of attitudes to menstruation and subscales of DASS-42 stress, anxiety and depression was respectively (0.778), (0.751) and (0.773). after that, correlation between pain intensity and total score of attitudes to menstruation was (0.732). moreover, results showed correlation between suggestibility score with subscales of DASS-42 stress, anxiety and depression was respectively (0.731), (0.733) and (0.8741). finally, data analysis demonstrated that correlation between suggestibility score with pain intensity was (0.735). about all of indexes, sig = 0.05.

Conclusion: results showed that attitude to menstruation and suggestibility can predict significantly all three subscales of psychological distress (depression, anxiety and stress), so do data analysis demonstrated that more negative attitude to menstruation can predict significantly pain intensity of menstruation among females. (sig=0.05)

Background:

The disorders related to menstruation are the most common psycho-gynecologic disorders (1). Premenstrual syndrome (PMS) often causes some similar difficulties among females (2). PMS is commonly seen among women of reproductive age and can be aggravated by emotional and physical symptoms (3). (PMS) has a wide variety of signs and symptoms tend to recur in a predictable pattern including fatigue, pain, mood swings, food cravings, tender breasts, irritability and depression (1),(2). The physical and emotional changes individuals experience with premenstrual syndrome may vary from just slightly noticeable to intense (3). It's estimated that almost 3 of every 4 menstruating women, have undergone some form of premenstrual syndrome (4). 20 to 32 percent of women report moderate to

severe symptoms that affect some aspects of life, moreover 3 to 8 percent of them report Premenstrual dysphoric disorder (PMDD). The severity of symptoms can vary by individual and by month (5). PMS symptoms start 5 to 11 days before menstruation and normally go away while menstruation begins (4). For most women, the physical pain and psychological distress are severe enough to affect their daily lives (5).

Researches have demonstrated that pain is most common complaint among menstruating women; it has some different difficulties for them, for example, many women often self-prescribe in order to relief pain caused by PMS (6). Generally, PMS increase perceived pain among women; it dramatically augments the risk of pain medication abuse (5),(7). PMS correlates with a significant increase among women in general population that makes them undergo direct medical costs and a large increase in indirect costs (8). It has been observed that pain intensity can be affected by psychosocial variables such as pain catastrophizing, beliefs on pain, coping skills, perceived social support, and learning about pain from important others (9),(6).

In this way, it has been reported that psychological distress is another most important symptom women suffer from before and during menstruation (10),(11). After the complaints about pain, psychological distress is the most common symptom that makes women consult with a mental health practitioner (12), (9). Years ago, it had been assumed that psychological distress is just only caused by physiological alterations while investigations have shown that premenstrual and menstruating psychological distress can be predicted by psycho-social factors and cultural instructions (8),(13),(14),(11),(1).

Therefore (PMS) has multifactorial etiology and it may be affected by hormonal, genetic, environmental, and psycho-socio-cultural factors (15),(8). Some common repetitive risk factors for premenstrual syndrome include a history of depression or mood disorders, such as postpartum depression or bipolar disorder, a family history of PMS, physical trauma, emotional trauma, domestic violence, substance abuse, a family history of depression, major depressive disorder, seasonal affective disorder, dysmenorrhea, generalized anxiety disorder, schizophrenia (5),(8),(9),(16).

Among psychological factors, suggestibility is the state where a subject is inclined (and willing to accept) the actions or suggestions of others (17),(18). Suggestibility can make individuals have selective attention and it may increase psychological distress (19). Suggestibility level has been defined as an index which can predict the intensity of psychogenic pain (20).

In this manner it has been observed that there was a negative significant relationship between the attitude towards menstruation, considering the menstruation a debilitating event and complaining about the severity and symptoms of PMS (6),(21). There had been a higher rate of complaining about severity and symptoms of PMS in individuals displaying negative attitudes towards menstruation, considering the menstruation as a debilitating event and failing to predict the changes concerning menstruation on themselves (22).

It should be mentioned that (PMS) can worsen menstruating women's quality of life and social life (20), (5). (PMS) may adversely affect physical and social activities and interfere with interpersonal relationships and work productivity, and finally influence the quality of life (4). (PMS) is an important difficulty which decreases women's self-confidence, impairs physical, social and mental health, causes the labor loss, negatively affects the daily life, social activities, family relationships, sleep quality, attendance on lessons and academic achievement and consequently decreases the quality of life. Thus, the detection of women with (PMS), determination of their frequent symptoms and the definition of relevant variables increasing these symptoms, can guide the interventions such as psychoeducation, developing positive attitudes, and increasing the coping mechanisms regarding the menstrual cycle and (PMS) to be planned in decreasing the (PMS)-induced problems.

With regard to importance of detecting effective psycho-social factors on intensity of premenstrual syndromes (perceived pain and psychological distress) this investigation has aimed to assess Predictability of pain intensity and psychological distress by suggestibility and attitude to menstruation among Iranian population of women.

Methods:

This cross-sectional study was performed on 130 female students of Shahed university of Tehran between 20 to 35-year-old who were volunteering to participate in the project and studied during January up to April 2020. Samples were selected by stratified random method. after fully justifying them and expressing the purpose of investigation, the standard questionnaires was provided to them and after there were completed, there were collected. The informed consent was obtained from the cases and they were asked to complete the self-reporting questionnaires. The data were collected through the NEO PI-R (Costa & McCrae, 1992), MAQ (Murs, 1993), Numeric pain assessment (Jensen, 1986), DASS-42 (Lovibond pF, Lovibond SH, 1995), SHSS/C (Weitzenhoffer & Hilgard, 1952), SRQ (Brown JM, Miller WA, 1999), and Demographic form. Significant level was set at 0.05. Statistical analysis was carried out using SPSS-24 software. The analysis method was standard regression.

Instruments:

DASS_42

The DASS is a 42-item self-report instrument designed to measure the three related negative emotional states of depression, anxiety and tension/stress. among Iranian population research, the depression subscale of DASS-42 showed a high correlation (0.849) with the BDI in a 0.01 level of statistical significance. The stress subscale of DASS-42 was also found to have a 0.757 correlation co-efficient with SSS, again statistically significant at a 0.01 level. The rates of Chronbach alpha for the depression, anxiety and Stress subscales of DASS-42 were found to be 0.94, 0.85 and 0.87 respectively. The Cruet-Bartlett's test also showed a chi-square rate of 0.794 with a degree of freedom equal to 861, which was again significant at a 0.01 alpha level (23).

The Numerical Pain Rating Scale (NPRS)

The Numerical Pain Rating Scale (NPRS) is a subjective measure in which individuals rate their pain on an eleven-point numerical scale. The scale is composed of 0 (no pain at all) to 10 (worst imaginable pain). It has been shown that a composite scoring system including best, worse, and current level of pain was sufficient to pick up changes in pain intensity with maximal reliability (Jensen et al 1999). NPRS demonstrated a good construct validity by significant within-group difference in mean of NPRS score- $t(63) = 7.57, P < 0.001$ and statistically significant difference of mean score- $t(98) = -4.24, P < .001$ between the stable and improved groups. It demonstrated moderate concurrent correlation with the GROC-NP; $r = 0.43, P < 0.01$. Responsiveness of the NPRS was shown at three levels with AUC = 0.68–0.82, and MIC = 1.17–1.33 (24).

The Stanford Hypnotic Susceptibility Scale

The Stanford Hypnotic Susceptibility Scale were devised in the late 1950s by Stanford University psychologists André M. Weitzenhoffer and Ernest R. Hilgard and are still used today to determine the extent to which a subject respond to hypnosis. Stanford scales scoring ranges from 0, for individuals who do not respond to any of the hypnotic suggestions, to 12, for those who pass all of them. Most people score in the middle range (between 5 and 7); 95 percent of the population receives a score of at least 1. Cronbach's alpha coefficient was used to measure the internal reliability of the scale. Cronbach's alpha coefficient for the total scale was equal to 0.79, and it was 0.45, 0.44, and 0.66 for the subscales of perceptive-cognitive abilities, sensory-motor phenomena, and cognitive distortions; respectively. These coefficients for the total scale were 0.75, and they were equal to 0.51, 0.52, and 0.35 for the subscales of perceptive-cognitive abilities, sensory-motor phenomena, and cognitive distortions, respectively (25)rs.

The Menstrual Attitudes Questionnaire (MAQ)

consists of 33 items developed by Murs, 1993, subscales include menstruation as a debilitating, bothersome and/or natural event, anticipation and prediction of the onset of menstruation, and denial of any effect of menstruation. Cronbach's a coefficient has been reported to range from 0.95 to 0.97(22).

Results:

Total sample who completed the questionnaires was 138 while 8 cases were excluded because of uncompleted tasks. Finally, we had 130 female students of Shahed university of Tehran participated in investigation and their data was analyzed. Mean of age of them was 26.39 (Std. Deviation = 4.294). 65 individuals (50%) of cases were married and 65 individuals (50%) were single. 24 (18.5%) individual of married persons had children. 50 individuals (38.5%) of cases were B.A student, 48 individuals (36.9%) of cases were M.A student and 32 individuals (24.6%) of cases were Ph.D. or M.D student. Birth order of 42 (32.3%) was first, 61 (46.9%) was middle and 27 (20.8%) of them was last child. Moreover 76 (58.5) of them had habituated in their own home and 54 (41.5%) of them had inhabited in dormitory.

Table 1: Variables descriptive data

variable	Mean	Std.Deviation
Pain intensity	7.05	2.36
DASS-42, Depression	16.1	9.64
DASS-42, Anxiety	15.8	9.71
DASS-42, Stress	16.03	9.45
Attitude to menstruation	100.3	41.08
Suggestibility	8.33	2.57

Results showed that Mean of pain intensity of them was 7.05 (Std. Deviation = 2.36), Mean of Dass-42 subscales Depression, Anxiety and Stress were respectively 16.1 (Std. Deviation = 9.64), 18.8 (Std. Deviation =9.71) and 16.03 (Std. Deviation =9.45). Mean of attitude to menstruation of them was 100.3 (Std. Deviation = 41.08) and finally mean of suggestibility of them was 8.33 (Std. Deviation = 2.57).

Pearson correlation between total score of attitudes to menstruation and subscales of DASS-42 stress, anxiety and depression was respectively (0.778), (0.751) and (0.773). after that, correlation between pain intensity and total score of attitudes to menstruation was (0.732). moreover, results showed correlation between suggestibility score with subscales of DASS-42 stress, anxiety and depression was respectively (0.731), (0.733) and (0.8741). finally, data analysis demonstrated that correlation between suggestibility score with pain intensity was (0.735). about all of indexes, sig = 0.05.

Table 2: Model summery for regression of psychological distress and pain intensity by attitude to menstruation

Model	R	R square	Adjusted R Square	Std.Error	R square change	F change	Sig.
DASS- 42, Stress	0.878	0.771	0.769	4.55	0.771	423.098	0.00
DASS-42, Anxiety	0.851	0.724	0.722	5.14	0.724	328.093	0.00
DASS-42, Depression	0.873	0.762	0.760	4.73	0.762	403.633	0.00
Pain intensity	0.832	0.692	0.690	1.30	0.692	283.666	0.00

Data analysis showed that standard regression of psychological distress and pain intensity by attitude to menstruation is reliable

Table 3: Coefficientsfor regression of psychological distress and pain intensity by attitude to menstruation

Model	B	Std.Error	Std. coefficients Beta	T	Sig
DASS-42, Stress	0.202	0.010	0.878	20.569	0.014
DASS-42, Anxiety	0.202	0.011	0.851	18.113	0.028
DASS-42, Depression	0.205	0.010	0.873	20.091	0.018
Pain intensity	0.048	0.003	0.832	16.842	0.042

Results showed that attitude to menstruation can predict significantly all three subscales of psychological distress (depression, anxiety and stress), so do data analysis demonstrated that more negative attitude to menstruation can predict significantly pain intensity of menstruation among females. (sig=0.05)

Table 4: Model summary for regression of psychological distress and pain intensity by suggestibility

Model	R	R square	Adjusted R Square	Std.Error	R square change	F change	Sig.
DASS- 42, Stress	0.831	0.690	0.688	2.27	0.690	285.274	0.00
DASS-42, Anxiety	0.833	0.694	0.691	5.39	0.694	287.417	0.00
DASS-42, Depression	0.841	0.708	0.706	5.22	0.708	310.293	0.00
Pain intensity	0.935	0.874	0.873	0.838	0.872	889.587	0.00

Data showed that standard regression of psychological distress and pain intensity by suggestibility is reliable

Table 5: Coefficientsfor regression of psychological distress and pain intensity by suggestibility

Model	B	Std.Error	Std. coefficients Beta	T	Sig
DASS-42, Stress	3.052	0.181	0.831	16.890	0.038
DASS-42, Anxiety	3.134	0.185	0.833	16.953	0.021
DASS-42, Depression	3.153	0.179	0.841	17.615	0.027
Pain intensity	0.856	0.029	0.935	29.826	0.034

Results showed that suggestibility can predict significantly all three subscales of psychological distress (depression, anxiety and stress), moreover, data analysis demonstrated that more suggestibility can predict significantly pain intensity of menstruation among females. (sig=0.05)

Discussion:

At the end, investigation showed that suggestibility and attitude to menstruation can significantly predict degree of pain intensity and psychological distress among female before and during menstruation. Our results about suggestibility are consistent with study that showed therapeutic outcomes of pain alleviation depend on level of suggestibility, as the same way the more suggestibility level among female develop the more pain intensity before and during menstruation (26). Another study reported that females with higher level of suggestibility, profit pain relief directed treatment even by prescribing placebo significantly soon, while these individuals are in risk of relapse and also suffer more pain intensity before menstruation (27). One of the important causes proposed on relationship between suggestibility and pain intensity is that suggestibility at the first step can speed up classic conditioning, so at the second step conditioning keep on pain perception and deteriorates pain intensity among females (28). It should be pointed that It has been claimed in another study that data about contribution of suggestibility with pain intensity is not enough (8).

Our data about predictability of psychological distress by suggestibility was in consistent with other investigations. It has been shown that suggestibility can make individuals be vulnerable about stress and anxiety, on the other hand suggestibility develop false memories which this kind of memories make depressed mood (29). Another study has reported that individuals with higher level of suggestibility need more social supports to feel quietness, thus dependency to others make them undergo more psychological distress (30). Moreover, it has been assessed that suggestibility can disrupt coping strategies among individuals with higher level of suggestibility, so in consistent with our results it has been demonstrated that more suggestibility can predict more precepted psychological distress (31).

Data analyzed showed that our results about predictability of psychological distress by attitude to menstruation are in consistent with some related articles (32), (33), (34). One of the most common results of studies have been reported is that negative attitude can develop stereotypes and myths which most of them are distressing for individuals (32). After that it has been approved that negative attitudes cause general psychological sensitivity, so emotional sensitivity makes individuals vulnerable about becoming psychological distressed (33). Another research has been carried out about predictability of psychological distress by attitude to menstruation and it has found that females with more negative attitude to menstruation has more difficulty with seeking for help. Therefore, inhibition in talking about precepted negative feelings and using only internal attributions about feelings make individuals psychologically distressed (34). Negative attitudes are one of the most important risk factors that can lead individuals with intensive premenstrual symptoms to attempt suicide (30). It has been approved that psychological distress caused by negative attitudes to menstruation make females get learned helplessness (13).

Our investigation is in consistent with literature and it showed that pain intensity can be predicted by negative attitudes to menstruation among Iranian female population same as other nationalities ((35), (10). Pain intensity among menstruating females is different person by person, but there is a significant difference among individuals suffering intensive pain; because females with more negative attitudes to

menstruation, undergo dysfunctions and disabilities caused by menstruating pain (4). Attitudes to menstruation is so much effective on precepted menstruating pain that females with more negative attitudes to menstruation can't profit therapeutic goals of pain treatments (30). On the other word the more negative attitude to menstruation, the more intensive precepted menstruating pain and the more resistance in improvement of pain by different treatments (12).

Limitations:

One of the important limitations of the present study was not using a combination of qualitative and quantitative methods. The other limitation was solely using self-report instruments to measure the variables such as pain intensity rather than using clinical observations or biological indicators.

Suggestions:

It is recommended that in order to measure the variables, biological instruments be used to measure biological indicators. With regard to the multifactorial etiology of premenstrual symptoms, the use of a combined method in future investigations is recommended.

Conclusion:

Our study showed that suggestibility and attitude to menstruation can significantly predict degree of pain intensity and psychological distress among female before and during menstruation.

Abbreviations

premenstrual syndrome = PMS

premenstrual dysphoric disorder = PMDD

Depression, Anxiety and Stress scale = DASS

Menstrual Attitudes Questionnaire = MAQ

Numerical Pain Rating Scale = NPRS

Declarations

Ethics approval and consent to participate:

All of phases of study before conducting have been approved by ethical committee of Shahed University furthermore, all of participants have fulfilled conscious consent sheet at the first step of study.

Consent for publication:

Not applicable

Availability of data and material:

Information on where data supporting the results reported in the article can be found applicable.

Competing interests:

The authors declare that they have no competing interests.

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All sources of funding for the research have been accepted by corresponding author.

Authors' contributions:

Nader Abazari has performed practical tasks of study and writing the manuscript. Dr Leila Heydarinasab has designed the structure of study moreover accepted corresponding author. Dr Hamid Yaghubi supported theoretical advices and in the end Dr Hojjatollah Farahani did data analysis by SPSS software.

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