

Effect of Educational Program on Severity of Premenstrual Syndrome and Coping Strategies among Female Students at Sohag University

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Abstract: Premenstrual syndrome (PMS) is sufficient enough to impair daily activity and relationships of women and this affect of coping strategies that used by them to cope with it. **Aim:** Assess severity of PMS and coping strategies among female students at Sohag University & Design, implement and evaluate the effect of educational program on severity of premenstrual syndrome and coping strategies among female students at Sohag University. **Design:** A quasi experimental design was utilized in this study. **Subjects and method:** The study was carried out in six faculties which had been selected randomly from Sohag University. The study sample included all available single female students in the selected faculties at Sohag University who had premenstrual syndrome. **Three tools were used;** demographic data sheet, premenstrual syndrome questionnaire and the premenstrual coping measure questionnaire. **Results** revealed that, the mean age of studied students was 19.9 ± 1.4 . The majority of them (81.9%) were from rural areas. At pre program implementation, it was found that, 61.2% of female students experienced low PMS & 38.8% of them experienced severe PMS. While immediately post program and at follow up, the majority of studied sample (94.2%) suffered from low PMS & 5.8% of them suffered from severe PMS. Also, the study revealed that, at pre program implementation; the highest mean scores were related to awareness and acceptance of premenstrual changes. It was 35 ± 8 and the lowest mean score was related to communicating. It was 12.8 ± 4.7 . However, immediately post program implementation and at follow up; the highest mean scores were related to awareness and acceptance of premenstrual changes only. It was (36.1 ± 4.4 and 35.8 ± 4.5) respectively. **The study concluded** that, the program has positive effect on PMS and coping strategies among the studied sample. **The study recommended** that, continuing health educational program is essential to provide appropriate counseling services to decrease the severity of PMS and improving coping strategies among students during PMS.

Key words: Premenstrual syndrome– The Premenstrual Coping Measure.

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I. Introduction

Premenstrual syndrome is characterized by the cyclical recurrence of a variable constellation of physical, psychological, and/or behavioral symptoms which appears in the luteal phase and subsides with the onset of menstrual flow (Lee et al., 2005). In this respect, Kaur & Thakur (2009) reported that, premenstrual syndrome (PMS) is manifested by any change in mood, behavior; appearance of some abnormal vague symptoms is often noticed in second half of the cycle. But if the symptoms are severe enough to disturb life cycle of a women or require medical help, called premenstrual syndrome (PMS). At least one of the following somatic & affective symptoms appears 5 days before menses or prior menstrual cycle affective symptoms are depression, anger outburst, irritability, anxiety, confusion & social withdrawals. While in somatic symptoms there are breast tenderness, abdominal bloating, and headache. These symptoms are relieved within 4 days of the onset of menses.

Coping strategies are defined as cognitive and behavioral efforts to dominate, tolerate, or reduce demands. The way that people use coping strategies are, in part, determined by their internal and external resources, which include health, beliefs, responsibilities, support, social skills, and material resources (Schmitz, et al., 2000). Coping strategies that used by women to cope with PMS include exercising, going out with friends and keeping busy, has also been found to result in better outcomes. This suggests that attention should be

paid to the factors that facilitate women's ability to cope with negative premenstrual change (Schmitz, et al., 2000).

Previous research on premenstrual coping has examined the relationship between ways of coping and premenstrual symptom severity, coping at different phases of the menstrual cycle, and the association of coping with other psychological characteristics, including depression and anxiety. There are indications from this research that students use less cognitive restructuring when they are premenstrual, and that students who cope by distancing themselves from stress experience lower premenstrual symptom severity. Distancing involves not becoming overly focused on the stressor, being detached, and accepting the situation. Structuring, which refers to coping by utilizing resources such as time and energy, by planning and setting appropriate limits, has also been associated with reports of lower severe premenstrual symptoms. It has been suggested that student's coping strategies vary across the menstrual cycle, with emotion focused coping increasing, and task avoidance, as well as social diversion-oriented coping, decreasing premenstrual syndrome (Read et al., 2014). Kaur and Thakur, 2009 reported that in their study about the effect of educational program on coping strategies among female students during PMS, the majority of students were using healthy coping strategies as, do not blame themselves for this problem, accept it in healthy way that nothing can be done, take hot or cold drinks and then do not express their anger on others. They accept it as a natural process as nothing can be done and try to cope with in a healthy way.

Significance of the study:

Approximately 3% to 8% of women of reproductive age report much more severe premenstrual symptoms of irritability, tension, dysphoria and lability of mood, which seriously interfere with their lifestyle and relationships (Steiner, 2000). In addition to, there is no any study carried out in our culture about the effect of educational program on PMS & coping strategies among female students. Training in the use of active behavioral coping strategies, which include exercising, going out with friends and keeping busy, has also been found to result in better outcomes. This suggests that attention should be paid to the factors that facilitate women's ability to cope with negative premenstrual change (Hunter et al., 2002, Ussher, 2004 & Read et al., 2014). So, the research could be helpful in decreasing the severity of premenstrual syndrome and improving coping strategies among female students at Sohag University.

The study aimed to:-

- 1- Assess severity of PMS and coping strategies among Sohag University students during premenstrual syndrome.
- 2- Design, implement and evaluate the effect of educational program on severity of premenstrual syndrome and coping strategies among female students at Sohag University.

II. Subjects And Method

Setting: This was carried out at six faculties of Sohag University which had been selected randomly including faculty of nursing, faculty of arts, faculty of science, faculty of industrial education, faculty of physical education, and faculty of education.

Subjects: A convenient sample of 400 female students from different faculties at Sohag University during assessment phase, and 155 female students who had premenstrual syndrome, accepted to participate in the study. Also, these numbers were taken according to the total number of female students in each college.

The formulas used in our Sample Size Calculator include:-

$$SS = \frac{Z^2 * (P) * (1-P)}{C^2}$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal

(.5 used for sample size needed)

c = confidence interval, expressed as decimal

(e.g., .04 = ±4)

SS = Sample

Correction for Finite Population

$$New\ SS = \left(\frac{SS}{SS - 1}\right) \div 1 + pop$$

Where: pop = population

New SS = New Sample Size.

Criteria of selection

Inclusion criteria:

- All available female students in the above stated faculties at Sohag University who had premenstrual syndrome.
- Single.
- Age between 18- 25 years.

Exclusion criteria:

- Married students.
- Pregnant and lactated students.
- Students who receiving any hormonal therapy.
- Students who suffering from any physical or psychiatric disorder.

Research design:- A quasi experimental design was utilized in this study.

Tools for data collection

Tool one: - Demographic data sheet.

This tool has been developed by the researcher and revised by the supervisors. It included general data as (age, residence, faculty name, grade\ level, number of mobile) based on review of literature.

Tool two: - Premenstrual syndrome questionnaire (Arabic version by Gar Allah, 2006).

This questionnaire has been developed in the original French language version by **Eltorky** in (2006) and translated into Arabic version by **Gar Allah** in (2006). The purpose of the premenstrual syndrome questionnaire is to evaluate psychotic and somatic symptoms that occur before the onset of menstruation. This questionnaire consisted of 28 items which classified into 17 items evaluate the psychotic symptoms and 11 items evaluate somatic symptoms.

This questionnaire was rated on a 4 point Likert scale as the following: 1= There are no symptoms, 2= Presence of minor symptoms, 3= Presence of symptoms impedes the daily activities and 4= Presence of symptoms changed life style pattern. Each student is considering has severe psychopathological probability if total points exceeded 20 points.

Reliability of this scale was done by using Cronbach alpha. It was 0.95.

Validity of this questionnaire was carried out by jury of five experts in the fields of psychiatry, and psychiatric nursing who reviewed and suggested the required modifications to ascertain relevance and completeness.

Tool three:- The Premenstrual Coping Measure (PMCM) Read et al., 2014.

This tool measures the ways of coping strategies specific to negative premenstrual changes. It consists of 32 items classified into five subscales: Avoiding harm, which had eight items from 1-8, awareness and acceptance of premenstrual changes, which had ten items from 9-18, adjusting energy, which had five items from 19- 23, self-care, which had four items from 24- 27, and communicating, which had five items from 28-32. Each statement applied to their experience of coping with premenstrual change using a 5-point rating scale as the following: 1= doesn't apply to me, 2= seldom applies to me, 3= sometimes applies to me, 4= applies to me, and 5= almost always apply to me. Calculate scores for each strategy separately. Item number 31 requires reverse scoring.

This tool was translated into Arabic version by the researcher to suit the subjects' culture. Reliability of this scale was done by using Cronbach alpha. It was 0.81.

Validity of this questionnaire carried out by jury of five experts in the fields of psychiatry, and psychiatric nursing who reviewed and suggested the required modifications to ascertain relevance and completeness.

Educational training program

The program was designed by the researcher based on the review of relevant literatures and revised by the supervisors. The following phases were carried out to develop the program.

Preparatory phase:

An official permission obtained to carry out the study from the authoritarian persons of Sohag University. A full explanation about rationale of the study was done. The aim of the study was explained to the students in order to gain their co-operation, as well as voluntary participation. Confidentiality was assured.

Pilot study:

During this phase, a pilot study was carried out on 40 subjects of students to ensure that the questions of the study tools were clear, understood and simple; Subjects included in the pilot study were excluded from the study. The pilot study had been carried out in 2 days of September 2015. There was no change in the tools; also the tools were clear, and understood by the students.

Procedure/ Data Collection

The researcher developed the program through three stages (assessment, implementation and evaluation phase).

A. Assessment phase:

Assessment for all participants (400 students) at the beginning of the study by using premenstrual syndrome questionnaire was done to determine the students who were suffering from severe premenstrual syndrome. The assessment phase was carried out at 2 months from the beginning of October 2015 to the last of November 2015. The number of students had been taken from each faculty was as the following: faculty of nursing =35 students, faculty of Arts = 200 students, faculty of science = 40 students, faculty of industrial education = 25 students, faculty of physical education = 20 students, and faculty of education = 80 students. These numbers were taken according to the total number of female students in each college.

B. Implementation phase:

After data analysis of the assessment phase the total number of students who were suffering from severe premenstrual syndrome was 155 students. The researcher connected with those participants by mobile phone to tell them about the result of data analysis and informed them about the time of the program application. An educational program about coping strategies among female students during PMS had been developed; the content was consistent with the related literature and met the students' needs and their level of understanding according to assessment phase. The program implementation phase conducted for one and half months (six weeks) from the beginning of December 2015 till 15 of January 2016. The program was conducted through six sessions for each faculty. One session was conducted for each faculty weekly. The duration of each session was 2 hours.

At the beginning of the first session, the students were oriented to the program content, purpose, and its impact on their condition. They were informed about the time of the next session. Then the researcher explained in details definition of menstruation, definition of premenstrual syndrome and shows them more pictures about signs and symptoms of premenstrual syndrome. The second session the researcher discussed with the students the factors affecting on premenstrual syndrome. The third session the researcher discussed with students coping strategies to decrease of premenstrual syndrome by using different positions of yoga exercises that gentle postures can relieve specific aches, make the monthly cycles easier. The fourth session the researcher explained to the students the benefits of meditation exercise which help them to decrease premenstrual syndrome symptoms. The fifth session the researcher instruct students about progressive muscle relaxation (PMR) exercise which involves slowly tensing and then releasing each muscle group individually, starting with the muscles in the toes and finishing with those in the head. The sixth session the researcher explained to the students visual imagination, and deep breathing exercise.

C. Evaluation phase:

Assessment of the students was done 3 times using the same study tools to investigate whether the change persisted or not, except demographic data tool (tool number 1). One assessment was done before the program implementation. The researcher interviewed the students in a studying class room to apply the study tools. The second assessment was carried out immediately post program to reassess the students after the application of the program by using premenstrual syndrome questionnaire (tool number 2) & the premenstrual coping measure (tool number 3). Finally the third evaluation was carried out 3 months later using the same previous tools.

Ethical considerations:

Research proposal was approved from ethical committee in the faculty of nursing at Assuit University, there is no risk for study subjects during application of the research, the study followed common ethical principles in clinical research, oral consent obtained from the students that are willing to participate in the study. After explaining the nature and purpose of the study, confidentiality and anonymity have been assured, study subjects have the right to refuse participating or withdrawing from the study without any rationale any time, and study subject's privacy was considered during collection of data.

Statistical design:

Collected data were coded and verified prior to computerized data entry .The SPSS program version 20 was used for data entry and analysis. Descriptive statistics were calculated, e .g. frequency, percentage, means & standard deviation. Chi-square test used to compare between categorical variables. One-Way-ANOVA test was used to compare variance for more than two groups. Correlation was performed using Pearson correlation coefficient. Statistical significance was considered at P- value <0.05.

III. Results

Table 1: Demographic characteristics of the studied sample at preprogram implementation (n=400).

Demographic characteristics	No.	%
Age		
18-20 years	272	68.0
21-25 years	128	32.0
Mean+ SD	19.9+1.4	
Residence		
Rural	247	61.8
Urban	153	38.2
Faculty name		
Faculty of nursing	35	8.8
Faculty of arts	200	50.0
Faculty of science	40	10.0
Faculty of industrial education	25	6.2
Faculty of physical education	20	5.0
Faculty of education	80	20.0
Years of study		
First year	53	13.2
Second year	182	45.5
Third year	97	24.3
Fourth year	68	17.0

Table 2: Demographic characteristics of the studied female students immediately post program and at follow up (n=155).

Demographic characteristics	No.	%
Age		
18-20 years	116	74.8
21-25 years	39	25.2
Mean+ SD	19.9+1.4	
Residence		
Rural	127	81.9
Urban	28	18.1
Faculty name		
Faculty of nursing	20	12.9
Faculty of arts	73	47.1
Faculty of science	12	7.7
Faculty of industrial education	11	7.2
Faculty of physical education	5	3.2
Faculty of education	34	21.9
Years of study		
First year	25	16.1
Second year	79	51.0
Third year	30	19.4
Fourth year	21	13.5

Table 3: Frequency of premenstrual syndrome (PMS) at pre program, immediately post program, and at follow up among studied female students.

Premenstrual syndrome	Pre program (n=400)		Post program (n=155)		Follow up (n=155)		X ²	P1	P2	P3
	No.	%	No.	%	No.	%				
Low PMS	245	61.2	146	94.2	149	96.1	110.44	<0.001**	<0.001**	<0.001**
Severe PMS	155	38.8	9	5.8	6	3.9				

P1: Comparison between pre, post and follow up

P2: Comparison between pre and post

P3: Comparison between pre and follow up

** Statistically significant difference (p<0.01)

Table 4: Mean scores of premenstrual coping measures at pre program, immediately post program, and at follow up among studied female students (n=155).

Premenstrual copying measures	Mean ± SD			F	P1	P2	P3
	Pre program	Post program	Follow up				
Avoiding harm	24.6±6.4	30±4	29.7±4.1	520.315	<0.001**	<0.001**	<0.001**
Awareness and acceptance of premenstrual changes	35±8	36.1±4.4	35.8±4.5	57.211	0.223	0.092	0.236
Adjusting energy	13.5±3.9	17.8±2.1	17.8±2.1	1.504	<0.001**	<0.001**	<0.001**
Self-care	12.9±3.3	13.6±2.4	13.7±2.4	121.342	0.033*	0.031*	0.018*
Communicating	12.8±4.7	14.4±2.2	14.4±2.2	3.442	<0.001**	<0.001**	<0.001**

P1: Comparison between pre, post and follow up

P2: Comparison between pre and post

P3: Comparison between pre and follow up

* Statistically significant difference (p<0.05)

** Statistically significant difference (p<0.01)

Table 5: Correlation between premenstrual syndrome (PMS) and premenstrual copying measures among studied female students (n=155).

Premenstrual copying measures	Premenstrual syndrome					
	Pre program		Post program		Follow up	
	r	p. value	r	p. value	r	p. value
Avoiding harm	-0.06	0.472	-0.31	<0.001**	-0.21	0.010**
Awareness and acceptance of premenstrual changes	0.02	0.805	-0.21	0.010**	-0.13	0.108
Adjusting energy	0.38	<0.001**	-0.11	0.165	-0.02	0.798
Self-care	-0.09	0.259	0.19	0.016*	0.21	0.011*
Communicating	0.03	0.697	0.31	<0.001**	0.28	<0.001**

* Statistically significant correlation (p<0.05)

** Statistically significant correlation (p<0.01)

IV. Results

Table (1) shows demographic characteristics of the studied sample at preprogram implementation it revealed that, the studied sample consisted of 400 female students. The mean age of them was 19.9+1.4, 61.8 % were from rural area and 38.2 % were from urban area. About half of studied students were from faculty of arts. Regarding years of study, it was found that, 45.5% of them were at second year, 24.3 % at third year and 17.0% at fourth year of study.

Table (2) illustrates demographic characteristics of the studied sample immediately post program and at follow up. This table clarifies that, the number of studied females was 155, the mean age of them was 19.9+1.4, 81.9 % were from rural area, while 18.1 % were from urban area, and 47.1% of the studied female students were from faculty of arts. Regarding years of study, it was found that, 51.0 % of them were at second year, 19.4 % at third year and 16.1 % at first year of study.

Table (3) showed that, at pre program implementation, 61.2% of female students experienced low premenstrual syndrome & 38.8% of them experienced severe (PMS). While immediately post program implementation, it was found that, 94.2% suffered from low PMS & 5.8% experienced severe PMS. At follow up, it was found that, 96.1% suffered from low PMS & 3.9% experienced severe PMS. There were statistically significant differences between pre program, post program and follow up regarding severity of PMS. As well as between pre program, post program, and between pre program and follow up P. value= <0.001**. This indicates that, the program has positive effect on the severity of PMS.

Table (4) revealed that, the mean scores of the most subscales of coping strategies were lower at preprogram implementation. Avoiding harm & adjusting energy were (24.6±6.4 & 13.5±3.9) respectively. Also, self-care & communicating were (12.9±3.3 & 12.8±4.7) respectively. However, immediately post program implementation and at follow up the mean scores of previous subscales were higher which indicates that, the program has positive effect on coping strategies. The mean scores are clarified as the following: Avoiding harm were (30±4, 29.7±4.1), adjusting energy were (17.8±2.1, 17.8±2.1), self-care were (13.6±2.4, 13.7±2.4) and communication were (14.4±2.2, 14.4±2.2). There were statistically significant differences between preprogram, immediately post program and at follow up regarding all premenstrual coping measures p value was 0.001**, 0.001**, 0.001**, 0.033*, 0.031*, 0.018* respectively except awareness and acceptance of premenstrual changes.

Table (5) showed that, at pre program implementation, premenstrual syndrome was positively and significantly correlated with adjusting energy as premenstrual copying measure at $r = 0.38$, $p = <0.001^{**}$. However at immediately post program implementation, premenstrual syndrome was negatively and significantly correlated with avoiding harm as well as awareness and acceptance as premenstrual copying measures at $r = -0.31$, $p = <0.001^{**}$, $r = -0.21$, $p = 0.010^{**}$ respectively. While it was positively and significantly correlated with self-care and communicating as premenstrual copying measures at $r = 0.19$, $p = 0.016^{*}$, at $r = 0.31$, $p = <0.001^{**}$ respectively. Moreover, at follow up, premenstrual syndrome was negatively & significantly correlated with avoiding harm as premenstrual copying measure at $r = -0.21$, $p = 0.010^{**}$. While it was positively & significantly correlated with communicating and self-care ($r = 0.28$, $p = <0.001^{**}$, $r = 0.21$, $p = 0.011^{*}$) respectively.

V. Discussion:-

The following discussion will focus upon the findings related to the aim of the study; the mean age of the studied sample was 19.9±1.4 with age group from 18- 25 years old and this is according to inclusion criteria of the study sample.

This result is slightly different than **Elnagar and Mohamed, 2015** who mentioned in their study about self-care measures regarding premenstrual syndrome among female nursing students that, the mean age of the studied sample was 20.8 ±1.05 but their age group from 21- 30 years. This variation may be due to cultural differences or different criteria of the studied sample.

The present study revealed that, the majority of students were from rural area while less than one quarter of them was from urban area. In contrast, **El Sayed (2007)** found that, less than half of students were from rural area, and more than half of students were from urban area. These differences may be due that; rural population was 57.3% of total population in Egypt according to **Egypt statistical year book in September 2016**. Also, the present study is not consisted with **Ramya et al., 2014** in their study about effect of educational program on premenstrual syndrome in adolescent school girls that, slightly less than half of girls were from urban school girls and about half of them were from rural school girls.

The present study revealed that, half of the study students were from Faculty of Arts, slightly less than one quarter of them were from Faculty of Education and the remainders of the sample were from colleges of Science, Nursing, Industrial Education and Physical Education. This result is not consistent with **Thu et al., 2006** reported that, one third were from Business Administration students, less than quarter were from Nursing students, and one quarter of them were from Faculty of Arts, Faculty of Law, Faculties of Architecture, Biotechnology, Communication Arts, Education, Engineering, Graduate School, and Science and Technology faculty. These differences may be due to the nature of study & cultural differences, the present study data were collected from only six faculties of Sohag University. While **Thu et al., 2006** study the data had been collected from each faculty of Assumption University.

Regarding years of study, the present study reported that, less than one quarter of the students were from first year, half of them were from second year, less than one quarter of them were from third year, and the minority of them were from fourth yeas. That can be explained by the sample of the research was a convenient sample which selected from all available female students on the six faculties of Sohag University.

This result is not consistent with previous study had done about premenstrual syndrome among female University Students in Thailand at Assumption University by (**Thu et al., 2006**) who found that, about one third

of them were first year students, one quarter were second year, 11.7% were third year, one quarter were fourth year, and 4.5% were graduate students.

The present study revealed that, nearly two thirds of female students experienced low premenstrual syndrome & about one third of them experienced severe (PMS) during preprogram implementation. While immediately post program implementation and at follow up, the majority of them suffered from low PMS & minimal percentage of them experienced severe PMS. This result reflected that, the educational program has positive effect in relieving the premenstrual syndrome. This is may be due to educating students regarding the causes of PMS symptoms and teaching them different methods in reducing the severity of the symptoms. This result is in agreement with **Abdalla & Gibreel in 2016** who reported a reduction in PMS symptoms severity after application of the program. Also, they suggested that, the education program could have been the source of the reduction in PMS symptoms of the experimental group of young adolescents girls.

The present study was reported that, the highest mean score was related to awareness and acceptance of premenstrual changes during pre-program implementation, immediately post program and follow up stage as a measure to cope with premenstrual syndrome and the lowest mean score was related to communicating during pre program implementation, immediately post program and follow up stage. This is may be due to the properties of female that, they can tolerate stress and adapt better with any painful experiences. They accept (PMS) as a natural process as nothing can be done and try to cope with it in a healthy way. Also, most of the students feel embarrassed to talk about PMS or menstruation's problems with physician or any psychological counselors. This result is partially supported by **Kaur & Thakurin (2009)** reported that, some students were using healthy coping strategies as do not blame themselves for this problem, take hot or cold drinks, do not express their anger on others but most of them accept it as physiological change and time limited that nothing can be done.

The present study revealed that, a positive significant correlation between premenstrual syndrome and adjusting energy during preprogram implementation. This was may be due to the students try to cope with their symptoms before educational program by having much sweet foods, practicing few exercise, avoiding socialization, less concentration on needs of other, and using emotional verbalization.

However at immediately post program implementation, premenstrual syndrome was negatively and significantly correlated with avoiding harm as well as awareness and acceptance of premenstrual changes. Moreover, premenstrual syndrome was positively and significantly correlated with self-care and communicating. This was due to the increase intensity of premenstrual symptoms; so, the majority of students attempt to communicate with other professional to take some measures to be more comfortable. Also, the students learn more coping strategies during application of the program. As well as, at follow up it was noticed that, premenstrual syndrome was negatively & significantly correlated with avoiding harm. While, it was positively & significantly correlated with communicating.

These findings are in agreement with **Yoon et al., 2015** who observed that, there is a significant correlation between premenstrual syndrome and coping responses during this period. Also they reported that, the higher premenstrual syndrome was the more various coping responses used. However, these types of coping strategies have been labeled as maladaptive and are associated with higher levels of psychological distress, including depression and anxiety. This finding support the idea that female student' attitudes toward premenstrual syndrome affect the strategies used to promote self-care and improve health status.

VI. Conclusion:

Based on the results of the present study, it can be concluded that, more than one-third of the sample (38.8%) experienced severe premenstrual syndrome; these percentages became 5.8% at immediately post program, and 3.9% at follow up. This indicates that, the educational program has positive effect on the severity of PMS and improving coping strategies among female university students.

Recommendations:

The present study recommended that, continuing health educational program is essential to provide appropriate counseling services to decrease the severity of PMS and improving coping strategies among students during PMS.

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