

# Effects of an educational program in increasing knowledge and reducing premenstrual syndrome signs, symptoms and severity among nursing college students

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## Abstract

**Objective:** The objective of the following study is to determine the effects of an Educational Program in increasing knowledge and reducing premenstrual syndrome symptoms and severity among nursing college students.

**Material and Methods:** A total of 60 students with Premenstrual Syndrome (PMS) symptoms were included in the study group (n=60), the age of the majority of them (75.8%) was between 20-24 years, pre and post education program questionnaire was developed as a tool of data collection before and after the educational program. Also premenstrual symptoms and severity follow-up sheet was designed and conducted three month after the post education program to follow the effectiveness of the educational program in reducing the severity of the symptoms.

**Results:** The study results indicate that there was significant difference between students' knowledge before and after the program, the total score mean rank before program was (34.72), while after program was (86.28)  $p < 0.01$  with significant difference between score before and after the program at 1% level of significant. It also shows a significant difference between PMS signs, symptoms and severity before and after program at 1% level of significant (total score mean and SD before program were (132.42, 13.72) respectively, and after program are (107.52, 14.47) respectively  $p < 0.01$  with larger effect size of 0.613. The follow-up result shows a reduction in PMS symptom's severity, the total severity averages of PMS sign and symptoms were 3.4 first month, 2.6 the second month and 2.2 for the third month out of 4 respectively.

**Conclusion:** The educational program had a positive effect on increasing knowledge and decreasing PMS signs and symptoms severity. Also the program has decrease the effect of PMS signs and symptoms on study group life.

**Keywords:** Premenstrual Syndrome; Knowledge; Signs; Symptoms; Severity; Educational Program.

## 1. Introduction

Premenstrual syndrome affects over 70% to 90% of women in the US and less for women in Southeast Asia because of their difference in living style and social structure. The occurrence of PMS have more than doubled over the past 50 years due to the acceptance of it as a medical condition that is caused by unhealthy diet with high unsaturated food. Premenstrual syndrome is defined as faulty function of the ovaries related to the women's menstrual cycle. It affects a women's physical and emotional state, and sometimes interferes with daily activities as a result of hormone fluctuation. The syndrome occurs one to two weeks before menstruation and then declines when the period starts. It is said the symptoms can be so severe that between 10-15% of women have to take time off work, costing businesses millions of dollars a year [1].

Now PMS is slowly being recognized as a serious, growing issue for women. Between 30%-40% of US women suffer from PMS and 10% are severely incapacitated for part of the month. These figures are probably low, since many women do not seek help for PMS [1] & [2]. An estimated 50% to 80% of women will experience mild to severe premenstrual symptoms, such as irritability,

depression, tension, bloating, mastalgia, and headache, throughout their reproductive years [3]. Population-based studies have not consistently found strong association between PMS and standard demographic risk factors such as education, income, employment, marital status, or number of children [4].

PMS has been characterized by more than 150 symptoms, ranging from mood swings to weight gain to acne. The symptoms vary from woman to woman and cycle to cycle. For some women, the symptoms may be mild or moderate, and for others, they may be so severe as to be incapacitating [5]. The symptoms are of sufficient severity to interfere with some aspects of life, and appear with a consistent and predictable relationship to menses [6]. The most common symptoms are tension and irritability, bloating, headaches. Other frequency reported complaints include fatigue and depression, crying for no reason, backaches, pimples or other skin disorders, a craving for sweets, and clumsiness [7]. It can't be cured, but a number of lifestyle modifications, medicine, and other treatment choices that can reduce the symptoms and improve the quality of life for the people with PMS [8]

## 2. Material and methods

### 2.1. Design

A quasi pre-experimental design was utilized in this study to determine the efficacy of a PMS educational program on the study group.

### 2.2. Setting

A private nursing college in Jeddah, Saudi Arabia has been selected for this study.

### 2.3. Population and sampling

All of the students who were having PMS signs and symptoms were included in the study group, the sample has been selected after the pilot study result that shows 106 of the student out of total of 128 students have PMS signs and symptoms, 16 of the student were not available during the period of the study 4 students were excluded because they were pregnant 26 of the student did not wish to participate in the study the remaining 60 eligible student have participated in the study.

### 2.4. Data collection

**2.4.1.** PMS diagnostic questionnaire was distributed as a pilot study to select the students who were suffering from premenstrual syndrome based on American college of obstetricians and gynecologists criteria for diagnosing premenstrual syndrome as national institute of mental health [9].

**2.4.2.** A structured questionnaire sheet (pre & post education program) was developed covering the following data, student knowledge about premenstrual syndrome, general questions which contains most common symptoms experienced by the student, the effects of the symptoms on life and self-care, measures used to relieve the symptoms and PMS S & S severity evaluation before and after the program.

**2.4.3.** Description of the educational program: The program takes 7 months, in the first month the pilot study, pre study questionnaire and educational sessions take place, after the completion of the educational program the post study questionnaire was done after three months to assess the effect of the program on the study group in increasing knowledge and reducing severity of PMS, the program was further evaluated (follow-up) after another three month to determine the effectiveness of the program in reducing PMS symptom severity.

The students were divided into 4 groups, 2 educational sessions per week were conducted for each group the total sessions are 8 sessions and the time for each session ranged from 50 - 60 minutes. The first session was about introduction to premenstrual syndrome, the general objective of this session was to acquire knowledge about concept of premenstrual syndrome. This session contained the definition and frequency of premenstrual syndrome, risk factors, signs and Symptoms of PMS and diagnostic Criteria. The second session was about PMS management; its objective is to identify the general principles of PMS management it is contain the major categories of PMS management which is self-care, non-prescription remedies, psychotherapy, and support systems, prescription medications and alternative therapies.

### 2.5. Statistical method

To assess the relationship between the dependent and independent variables of the study, some of statistical test and procedures was utilized such as; Multiple response, Chi-Squire, Paired student's t-

test, and Man-Whitney u test were used to test the significance of differences between the pretest and posttest scores of program evaluation, also descriptive statistics were used to describe the data of study.

### 2.6. Administrative and ethical considerations

Official permission was achieved from the chairperson of board of trustees of selected college and verbal consent was gained from the student for data gathering and attending the program sessions. Confidentiality was secured for their information.

### 2.7. Limitation of the study

Difficulty in gathering the study groups for the educational sessions at the same time because of the difference in their lectures timetables which add a lot of time to finish.

## 3. Results

**Table 1:** Distribution of Population According to the Age of Study Group (N = 60)

Age category	Frequency	Percent
< 20 years	14	23.3
20 to 24 years	43	71.7
25 to 29 years	3	5.0
Total	60	100.0

(Table 1) It shows that 23.3% of the study group their age was less than 20 years, 71.7% of them were range between (20 to 24) years, and 5.0% of them their ages ranged from ranged (25 to 29) years.

**Table 2:** Difference among Students' Habits before and after the Program (N = 60)

Habits	Before the educational program		After the educational program	
	Student numbers	percent	Student numbers	Percent
Drinking fresh Juice	2	3.33	23	38.33%
Taking Sweet taste foods	31	51.7	18	30%
Drinking soft drinks	21	35	15	25%
Smoking	6	10	4	6.7%
Total	60	100%	60	100%

$$\chi^2_{df=3} = 22.489, p - \text{value} < 0.01$$

(Table 2) shows difference among students' habits before program compared with after program, before the program only 3.33% used to drink fresh increase to 38.33% after the program and 51.7% were taking sweets taste foods before the program reduced to 30% after the program, and those who drinking soft drink were 35% before the program reduced to 25% after the program, also the number of those used to smoke dropdown from 10% students before program to 6.7% students after program. And Chi-square test results shows, chi-square is ( $\chi^2_{df=3} = 22.489, p - \text{value} < 0.01$ )

**Table 3:** Difference of Students' Knowledge about Premenstrual Syndrome before and after Program (N = 60)

No.	Item	Mean Rank		Z test	P- value
		Before	after		
1	A Syndrome means a group of signs and symptoms	52.16	68.84	-2.961	.003
2	Pre-menstrual syndrome means a group of symptoms and signs that occur with the menstruation.	59.54	61.46	-.313	.754
3	Pre-menstrual syndrome means a group of signs and symptoms that occur before the menstruation	48.93	72.07	-4.155	.000
4	The prevalence of the syndrome is more than 70% of women	45.30	75.70	-5.223	.000
5	Most of PMS cases ranged between the age group 18-40 years old	41.55	79.45	-6.584	.000
6	Symptoms include psychological symptoms only	47.48	73.53	-4.256	.000
7	Symptoms include emotional and physical symptoms	49.31	71.69	-3.871	.000
8	Symptoms include symptoms of psychological, physical and behavioral	46.79	74.21	-5.242	.000
9	Risk factors may include health status , stress and obesity	41.25	79.75	-6.412	.000
10	Disorders of female hormones may cause the syndrome	45.34	75.66	-5.205	.000
11	Fluid retention, low blood sugar are among the causes of the syndrome	39.24	81.76	-7.321	.000
12	Vitamin deficiency may cause symptoms of the syndrome	40.03	80.97	-6.901	.000
13	Changing of the feeding pattern helps reduce the symptoms of the syndrome	34.92	77.08	-5.685	.000
14	Taking supplemented foods with vitamins and minerals help reduce the symptoms of the syndrome	40.10	80.90	-6.887	.000
15	Treating and avoiding the stress help to reduce the symptoms of the syndrome	34.04	77.96	-5.997	.000
16	Exercise helps reduce the symptoms of the syndrome	42.50	78.50	-6.374	.000
17	The use of certain medicinal herbs can help reduce the symptoms of the syndrome	49.66	81.34	-7.242	.000
18	Some medications may be used in treating the symptoms of the syndrome	41.94	79.06	-6.480	.000
19	Acupuncture (Chinese needles) used in treating the symptoms of the syndrome	38.26	82.74	-7.544	.000
20	Psychological treatment and psychological support can help to treat the symptoms of the syndrome	39.72	81.28	-7.064	.000
21	Premenstrual syndrome can be treated surgically	37.03	83.98	-7.895	.000

(Table 3) shows that most items' Z has (p-value < 0.01) and significant difference between students' knowledge before and after program except items number 2 shows no significant difference which shows an increase of only 1.94 this a very slight deference. Moreover, all Z values of these items was negative because the items mean ranks of knowledge score after program were greater than those before program, then this means that the program has positive effects on students' knowledge about PMS.

**Table 4:** Total Difference among the Study Group about Premenstrual Syndrome Knowledge before and after Program (N = 60)

Students' Knowledge about PMS	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z test	P-value
Before Program	60	34.72	2083.00			
After Program	60	86.28	5177.00	253.00	-8.129	0.000

(Table 4) shows the results of mean rank of students' total scores knowledge before and after program, the total score mean rank before program was (34.72), while after program was (86.28). Thus, the test value is ( $Z = -8.129$ , p – value < 0.01) with significant difference between score before and after the program at 1% level of significant.

**Table 5:** Premenstrual Signs and Symptoms which Have Had A Significant Influence on Study Group During Last Three Menstrual Cycles Before and after Program (N = 60)

	PMS sign & symptoms with Significant Influence		PMS sign & symptoms without Significant Influence	
	Frequency	percent	Frequency	percent
Before	60	100%	0	0%
After	45	75%	15	25%

(Table 5) shows that all study group 100% were suffering from different signs and symptoms listed at the table before the program, while (45) students about 75% of them suffering from the same signs and symptoms after program, that means (15 students) 25% were benefit from the program to overcome the problems occurred before menstruation.

**Table 6:** Most Symptoms, Feelings, or Behavioral Change which Has Had A Significant Influence on Study Group During Last Three Menstrual Cycles before and after the Program (N = 60)

PMS signs/symptoms	Group				Total	
	Before		After		Count	Percent (%)
	Count	% within group	Count	% within group		
Abdominal pain	33	73.3	12	26.7	45	100.0
Nervous tension	29	65.9	15	34.1	44	100.0
Depression	15	65.2	8	34.8	23	100.0
Breast tenderness	16	61.5	10	38.5	26	100.0
Back pain	16	69.6	7	30.4	23	100.0
Sweet craving	9	69.2	4	30.8	13	100.0
Swelling of extremities	15	78.9	4	21.1	19	100.0
Mood swings	16	69.6	7	30.4	23	100.0
Fatigue	15	78.9	4	21.1	19	100.0
Hypersensitivity	4	80.0	1	20.0	5	100.0
Lack of energy	4	66.7	2	33.3	6	100.0
Others	33	70.2	14	29.8	47	100.0

(Table 6) shows the most symptoms, feelings and behavioral changes that have influence the study group during last three cycles before and after the program the table show that (33 out of 45 students) 73% suffered from abdominal pain before program, while (12 out of 45 students) 27% suffered of the same symptoms after the program. Also there were (29 out of 44 students) 65.9 % complained of nervous tension before program, while after program they were (15 out of 44students) 34.1% were experienced the same signs after program, also (15 out of 23 students) 65.2% were complain of depression before while (8 out of 23 students) 34.8% were complain of the same symptom after the program, and (16 out of 26 students) 61.5% were complain of breast tenderness before while (10 out of 26 students) 38.5% were complain of the same symptom after the program.

**Table 7:** The Effects of Symptoms, Feelings, Or Behavioral Change on Student’s Life before and after the Program (N = 60)

Type of Effects	Group				Total	
	Before		After		Count	Percent
	Count	% within group	Count	% within group		
un able to do daily tasks	24	70.6	10	29.4	34	100.0
Anger and short temper	22	66.7	11	33.3	33	100.0
Isolation	11	73.3	4	26.7	15	100.0
Difficult concentration	9	60.0	6	40.0	15	100.0
Lack of energy and laziness	14	73.7	5	26.3	19	100.0
Absenteeism	6	60.0	4	40.0	10	100.0
Effect of social relationship	8	72.7	3	27.3	11	100.0
Others	19	76.0	6	24.0	25	100.0

(Table 7) shows the effects of symptoms, feelings, or behavioral change on student’s life before and after the program it is shows that (24) students 70.6 % un able to do daily tasks before the program reduced to (10) students 29.4 % after the program ,and 22 student 66.7% have anger and short temper before the program reduced to 11 student 33.3 % after the program, (11) student 73.3 % are tend to isolate themselves before the program reduced to (4) students

26.7 % after the program. and (9) students 60.0% have difficult concentration before the program reduced to (4) students 40.0 % after the program, (14) students 73.7% suffer from lack of energy and laziness before the program reduced to (5) students 26.3 % after the program, while (6) students 60% were reported as absent from the college before program, reduced to (4) students 40% after the program, and (8) students 72.7 % PMS affect their social relationship before the program reduced to (3) students 27.3 % after the program.

**Table 8:** The Self-Care Techniques Used by Study Group to Treat the Signs and Symptoms, Feelings and Behavioral Changes (N = 60)

Used Self-care Technique	Group				Total	
	Before		After		Count	Percent
	Count	% within group	Count	% within group		
Taking some medications	35	87.5	5	12.5	40	100.0
Sleeping	16	84.2	3	15.8	19	100.0
Taking hot drinks	22	73.3	8	26.7	30	100.0
Herbal drinks	14	37.8	23	62.2	37	100.0
Exercises	9	14.1	55	85.9	64	100.0
Healthy food	1	1.9	53	98.1	54	100.0
Diet Regulation	0	0.0	10	100.0	10	100.0
Avoid stress	3	17.6	14	82.4	17	100.0
Others	32	66.7	16	33.3	48	100.0

(Table 8) shows that (35) students about 85.5% before program used to take some medications for treatments, while after program (5) students 12.5% were uses medications. Also there is (16) students 84.2% used to sleep before program, after the program there only (3) students 15.8% were sleep, and before the program no students followed diet regulation, while after the program there was (10) students 100% used to follow specific diet regulations. Also before the program (32) students about 66.7% used other different self-care approaches, while after the program their number decreased to (16) students of 33.3%.

**Table 9:** Differences among Students' Evaluation [Appraisal] of Premenstrual Syndrome Signs and Symptoms Severity before and after Program (N = 60)

No	Item	Mean Rank		Z test	P value
		Before	after		
1	Abdominal bloating	63.78	57.22	-1.099	.272
2	Speak rashly	66.83	45.17	-2.428	.015
3	Anger	61.29	59.71	-.271	.786
4	Concern	56.87	46.13	-1.293	.196
5	Pain in the back or neck	65.58	55.42	-1.801	.072
6	Constipation	76.38	53.63	-2.394	.017
7	Committing follies	76.43	53.57	-2.487	.013
8	Decrease in efficiency	66.78	54.23	-2.404	.016
9	Depression and a sense of sadness	60.48	60.52	-.006	.995
10	Diarrhea	65.32	55.68	-1.639	.101
11	Difficulty concentrating	71.35	49.65	-3.796	.000
12	Difficulty sleeping	64.68	56.33	-1.492	.136
13	I am becoming disorganized	69.62	51.58	-3.165	.002
14	Dispersion	64.30	56.70	-1.279	.201
15	Fatigue or tiredness	61.88	59.13	-.484	.629
16	Feeling unattractive	72.70	48.30	-4.262	.000
17	Cravings sweets	71.93	49.07	-4.247	.000

No	Item	Mean Rank		Z test	P value
		Before	after		
18	Forgetfulness	70.48	50.52	-3.401	.001
19	General aches in the body	71.30	49.70	-3.857	.000
20	Headache	63.00	58.00	-.855	.393
21	Enmity and rivalry	68.38	52.62	-2.774	.006
22	Impatience	70.10	50.90	-3.647	.000
23	Indigestion / upset stomach	70.36	50.64	-3.547	.000
24	Irritability	59.28	61.72	-.420	.674
25	Joint pain or stiffness	76.33	44.67	-5.773	.000
26	Isolation	65.93	55.07	-1.939	.053
27	Loss of appetite	67.73	53.27	-2.468	.014
28	Loss of desire or interest in things	74.55	46.45	-5.005	.000
29	Decrease the desire to debate or movement	70.03	50.97	-3.371	.001
30	Decline in work performance	72.35	48.65	-4.868	.000
31	Nausea	70.03	50.98	-3.673	.000
32	Nervousness, feeling jittery	60.40	60.60	-.035	.972
33	Race night	73.98	47.02	-4.634	.000
34	Mood Swings	67.58	53.42	-2.390	.017
35	Feeling out of control	64.58	56.43	-1.462	.144
36	Excessive eating and drinks	57.03	63.97	-1.180	.238
37	Sense of psychological pressure	69.03	51.97	-2.929	.003
38	Over-sensitivity	73.17	47.83	-4.632	.000
39	Breast pain or tenderness	67.69	53.30	-2.450	.014
40	Sense of fear	66.63	54.37	-2.201	.028
41	Poor coordination	73.92	47.08	-5.179	.000
42	Night sweats	72.05	48.95	-4.042	.000
43	Discomfort	68.18	52.83	-2.586	.010
44	Skin Itching	75.25	45.75	-5.337	.000
45	Sleeping too much	73.37	47.63	-4.440	.000
46	Swelling of the hands or feet	72.65	48.35	-4.178	.000
47	Diseases of the nose and throat	86.68	34.33	-9.092	.000
48	Low self-contempt	84.83	36.17	-8.134	.000
49	Crying	71.59	49.41	-3.685	.000
50	Abdominal pain	72.93	48.07	-4.187	.000

(Table 9) shows Mann-Whitney U test results for significant of difference between students in severity evaluation before and after program. Most of items were significant at 1% significant level which reveals significant effect of program on students' approaches on how to manage the PMS signs and symptoms. Nevertheless, there are some items with significant effect of program at significant level of 5%, these items were (2, 6-8, 27, 34, 39, 40, and 43). While there are some items the program does not made significant effect on the PMS symptoms severity, those items were (1, 3-5, 9-10, 12, 14-15, 20, 24, 26, 32, and 35-36).

**Table 10:** Total Difference among Students' Evaluations [Appraisal] of Premenstrual Syndrome Signs and Symptoms before and after Program (N = 60)

Students' Evaluation of PMS signs & symptoms	Mean	SD	T-test value	P value	Effect size Eta <sup>2</sup>
Before Program	132.42	13.72	9.671	0.000	0.613
After Program	107.52	14.47			

(Table 10) shows the total score mean and SD before program were (132.42, 13.72), and after program are (107.52, 14.47). Hence, the paired t-test value is ( $t = 9.671$ ,  $p - \text{value} < 0.01$ ) there is significant difference between the two means for before and after program at (0.01) level of significant, in favor of the average after program the effect size of the program on the knowledge of students' and their ability to evaluate the premenstrual syndrome signs and symptoms is 61% according to Cohen it is a larger effect.

**Table 11:** Follow Up For Students' Premenstrual Syndrome Severity during Last Three Months after the Program

Case No.	Severity Averages			Severity Direction
	First Month	Second Month	Third Month	
1	2.75	2.6	2.75	→
2	4	3	2	↓
3	4	3.5	3	↓
4	4	2.4	2	↓
5	4	3.3	3	↓
6	3.5	2.5	1.5	↓
7	2.7	2.41	.6	↓
8	3.4	2.6	1.9	↓
9	3	3	2.9	→
10	3.5	2.6	2.6	→
11	4	2.2	2.2	↓
12	4	2.5	2.5	→
13	3.25	2.3	1.75	↓
14	3	2.75	1.25	↓
15	3.25	2.5	1.5	↓
16	3.2	2.6	1.8	↓
17	3.3	2.7	1.7	↓
18	3	2.6	1.6	↓
19	2.2	2	1.6	↓
20	2.875	2.1	2.2	↓
21	2.7	2.3	1.6	↓
22	3.8	2.8	1.9	↓
23	3.5	2.5	2	↓
24	3.75	2.5	2.6	→
25	4	2.5	2.5	↓
26	3.25	3	3.5	↑
27	4	3.3	2.9	↓
28	4	3	2	↓

Case No.	Severity Averages			Severity Direction
	First Month	Second Month	Third Month	
29	3.3	4	4	↓
30	3.3	2.3	2.3	→
31	3.5	3.5	2.5	↓
32	3.3	2.6	2.5	↓
33	4	3	2	↓
34	3.7	3.3	2.9	↓
35	4	3	2	↓
36	3	2.3	3.5	↑
37	3.5	2.5	2.6	→
38	4	3	2.3	↓
39	3.6	2.7	2	↓
40	3.7	2.5	2.5	→
41	3	3	3	→
42	3.75	2.75	2.5	↓
43	3.8	3	3	→
44	3.6	2.5	2	↓
45	3	2.2	1.9	↓
46	3.2	2.4	2.5	→
47	4	2.6	2	↓
48	2.5	2	2	→
49	3.25	2.7	3.5	↑
50	3.25	2.3	2	↓
51	3.6	2.5	2.5	→
52	3	2.6	2.7	→
53	3.75	2.75	2.6	↓
54	3	2.75	2.1	↓
55	3.6	2.5	2	↓
56	3.25	2.5	2.5	→
57	3.2	2.6	1.8	↓
58	3.7	2.7	2.3	↓
59	3	2.6	1.7	↓
60	2.2	2.2	2.2	→
All	3.4	2.6	2.2	↓

Key: → = stable, ↓ decrease, ↑ increase.

(Table 11) shows the severity averages for the three months later after the post educational program questionnaire as shown the total severity averages of PMS sign and symptoms for the consequence three months were 3.4, 2.6 and 2.2.



**Table 12:** Total Percentages of the Premenstrual Syndrome S&S Severity Direction among the Study Group in the Last Three Months of Program

Severity Direction for PMS S&S	Frequency	Percentages
Increase	3	5%
Decrease	41	68.3%
Stable	16	26.7%

(Table 12) shows that the percentage of PMS severity direction among the study group as shown 68.3% of the study group have decrease in PMS S&S severity, and 26.7% their severity were stable, unfortunately 5% their severity increased.

#### 4. Discussion

The current study was conducted on a group of college students their age ranged from 20-29 years, most them were 20-24 years. This current aimed to study the effects of an educational program in increasing knowledge and reducing premenstrual syndrome symptoms severity among nursing college students

To study the effects of program on study group habits before and after program the study result shows increase in drinking fresh juice and decrease in taking sweet-taste foods, soft drinks, and smoking show a positive effect of the educational program in improving the study group habits after the program and this slight reduction may be explained by generally changing the individual habits and life style are more difficult and needs more time. To test the significance of difference among study group habits before and after program Chi-square test was conducted and the results show chi-square was ( $\chi^2_{df=3} = 22.489, p - \text{value} < 0.01$ ) which shows a significant difference among study group' habits before and after program this indicates that the study group benefited from the programs in following healthy habits.

The current research findings shows that there was significant difference between students' knowledge before and after the program most items' Z has ( $p - \text{value} < 0.01$ ) and significant difference between students' knowledge before and after program which revealed that there was a significant increase in the study group knowledge after the program, a similar findings was observed in research study which reported that the experimental group had significantly increased knowledge scores in post-test of premenstrual syndrome knowledge questionnaire compared with pre-test scores [10]. Also, all Z values of these items was negative because the items mean ranks of knowledge score after program were greater than those before program, then this means that the program has positive effects on students' knowledge about PMS. This current study total score of knowledge after program was greater than before total scores and the Mann-Whitney U value was ( $Z = -8.129, p - \text{value} < 0.01$ ) with significant difference between score before and after the program at 1% level of significant and the negative z-value shows that the program was significantly increased the students' knowledge about PMS.

Concerning the most symptoms, feelings, or behavioral change which has had a significant influence on students' life during the last three menstrual cycles before the program and last three menstrual cycles after Program The results show that all the study group 100% were suffering from different signs and symptoms of PMS before the program, while (45) from the study group 75% of them suffering from the same signs and symptoms after the program, that means only (15) students 25% were benefited from the program.

This research finding shows a reduction in most common symptoms after the program which are, abdominal pain was 73.3% before the program reduced to 26.7% after, nervous tension was 65.9% before the program reduced to 34.1% after and breast tenderness was 61.5% before reduced to 38.5% after the program, hypersensitivity was 80% reduced to 20% this reduction could be explained due to the self-care measures that used to treat the PMS symptoms.

This research finding revealed that the study group were affected by PMS symptoms, feelings, or behavioral changes in most life domains including 70.6 % un able to do daily tasks, 66.7 % anger

and short temper, 73.3% isolation, 73.7% lack of energy and laziness, 60.0% absenteeism and 72.7% affected social relationship this negative effects may be because the majority of the study group were suffering from severe PMS S&S, this finding was supported by a research finding that the more symptoms of greater severity that women have, the greater the burden in all life domains [11] it also correlated with another finding that premenstrual syndrome had a moderate but significant negative impact ( $p < 0.001$ ) on the quality of life of affected girls, particularly school performance, social interactions, lifestyle, and emotional well-being [12]. This finding was also supported with a research finding that the severity of premenstrual symptoms was found to have a significant negative impact on activities of daily life [13].

Another positive effect of the program is that all of the study group used the self-care measures effectively to manage PMS S&S and the methods that the study group have chosen to manage their symptoms were 100% used diet regulation, 98.1% used healthy food, 85.9% use exercises and 82.4% used avoidance of stress, this highly use of self-care measures gave a positive support for the reduction in the PMS S&S severity, consequently with the a reduction in impact of the PMS S&S on the study group life this finding was supported by a similar research findings that observe self-care measures relating to lifestyle modifications, most particularly nutrition and exercise can be helpful in preventing and/or alleviating the number and severity of symptoms [14].

In relation to PMS S&S severity before the program the majority of the study group were suffering from severe PMS signs and symptoms, the severity ranged from 93.3-53.3% which shows that general weighted mean for all items is (2.67). This finding's was correlated with the research finding that 69% had moderate to severe physical symptoms [15]. This study finding regarding the PMS symptoms severity after the program the results show a reduction in PMS symptoms severity and the general weighted mean for all items after the program was (2.15) compared with 2.67 before the program. This finding was supported the researches findings which suggesting that the education program could have been the source of the reduction in PMS symptoms of the experimental group of young adolescents girls [10]. This study finding indicated that, there was a significant difference between the study group PMS symptoms severity before and after the program for most of items at 1% significant level which reveals significant effect of the program on PMS symptoms severity and there were some items with significant level of 5%. While there are some items the program did not made significant effect on the PMS symptoms severity the justification for that because only self-care measures were used to manage the PMS S&S and some severe symptoms may need medical treatment or psychological counseling.

In relation to the different means of study group total scores of PMS S&S severity before and after program the result revealed that there was a significant difference between the two means before and after program at 1% level of significant (total score mean and SD before program were (132.42, 13.72), and after program are (107.52, 14.47) respectively, the T-test value was ( $t = 9.671, p - \text{value} < 0.01$ ), this revealed that there where a decrease in PMS S&S severity among the study group. This finding was supported by a research finding that indicate a decrease in PMS symptom severity among the variable in experimental group with total PMS score of ( $Z = -2.57, p < 0.001$ ) [10].

Regarding the results of the study group follow-up three months later after the post educational program questionnaire, the results shows a reduction in PMS symptom's severity, the total severity averages of PMS signs and symptoms were 3.4 out of 4 for the first month, 2.6 out of 4 for the second month and 2.2 out of 4 for the third month (the average score was 4) this reduction in severity averages indicate that the program have appositve effect on PMS S&S severity three months after the post study questionnaire. In relation to the severity direction the study result shows that (55%) of the study group's PMS S&S severity decreased, (40%) were stable and unfortunately 5% of the study group PMS S&S severity increased. These findings indicate that continuous intervention, evaluation and follow-up are needed in this regard, and further researches are needed to be conducted.

## 5. Conclusion

From the study results we can conclude that the educational program had a positive effect on increasing knowledge and decreasing PMS signs and symptoms severity. Also the program has decrease the effect of PMS S&S on study group life, so according to this conclusion I would like to recommend the followings:

## 6. Recommendations

- It important to combine premenstrual education courses with schools and college level.
- Health care providers in any institutions should screen for premenstrual syndrome sufferers and offer treatment if necessary.
- Community health programmers should include reproductive health education programs.
- Community wide health education program about PMS that aimed at understanding sign and symptoms of PMS and emphasize on self-care measures and life style modifications are needed.

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