

Original Research Article

The efficacy of Omega-3 fatty acid for management of affective and somatic symptoms in obese women with Premenstrual syndrome in Kerbala province

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Abstract: Premenstrual syndrome (PMS) is physical and emotional symptoms that developed within one to two week of menstrual cycle. These symptoms destroyed normal women life and many drugs available to manage this syndrome but associated with more serious side effects, therefore; trying to find another management with sufficient efficacy like Omega-3 fatty acids which have many pharmacological effects. This study involved 130 obese women with diagnostic PMS which are assessed using case sheet including essential equation, then classified into two groups, receiving Omega-3 fatty acids in two different dose 1000mg and 2000 mg respectively. There were significant differences between results of before and after using Omega-3 fatty acid ($P < 0.05$). So, the 1st dose improved somatic and psychiatric symptoms in certain ratio 1:2 and 2nd dose give highly significant improvement reach to complete relief some symptoms. In conclusion, the present results suggest that Omega-3 fatty acids are considering a good management to obese women with PMS.

Keywords: Omega-3 fatty acids, PMS, obese, psychiatric.

INTRODUCTION:

Premenstrual syndrome (PMS) is conditions characteristic by a numbers of physical and emotional symptoms that appears with ten days before menstrual cycle[1]. The common physical and symptoms may be destroy the normal woman life are psychological symptoms including stress, social withdrawal, weakness, anxiety, insomnia, depression, mood change and angry outburst and physical symptoms including abdominal bloating, and cramps, breast tenderness, lower back pain, extremities swelling, and some women have cyclic acne[2]. There are many factors involved in PMS like change in sex hormone level (excess estrogen or progesterone deficiency), vitamins and mineral deficiency, essential fatty acid deficiency, smoking, and obesity[3]. The recent studies in Iraq revealed the prevalence of PMS in women attending Women Health Clinic and Gynecology & Obstetrics Clinic was 8.1%. It was also found more common among younger females 36.5% (18-25years of age)[3]. Accordingly, the most important etiology of PMS is essential fatty acid deficiency like γ -linolenic which is substrate for synthesis of prostaglandin series I (PGE_1) and this deficiency consider important key in maintain hormonal disturbance. In same time, this deficiency enhanced production of PGE_2 which is potent vasoconstrictor, thus made estrogen effect predominant and exacerbated physical and psychological symptoms of PMS[4].

Omega fatty acids are group of naturally occurring poly non-saturated fatty acid, cannot be synthesis in human body due to not have essential metabolic pathway for made the precursor fatty acid (linolenic acid) ; therefore, they should be obtained from other source like Linseed oil, canola oil, fish oil, and soybean oil[5]. Omega fatty acids have many pharmacological effects including anti-inflammatory properties[6], anti-atherosclerotic [7], anti-arrhythmic[8], hypotensive effect[9], antidepressant and neuroprotective effect[10], and anticancer[11]. Omega fatty acids have important role in maintaining the right ratio of fatty acids which can maximize the making of anti-inflammatory prostaglandins (PGE_1 and PGE_3) and suppressing inflammatory prostaglandin (PGE_2 and leukotriene B4); thus lead to improve uterus function[4]. The aim of the present study is to evaluate the efficacy of Omega-3 fatty acid in different doses for management of affective and somatic symptoms in PMS women.

PATIENTS AND METHOD:

The sample consist of 130 women aged between 18 and 38 years with regular menstrual cycles who met the diagnostic criteria of premenstrual syndrome (PMS), they were randomly selected considering obesity (waist circumference > 110 cm[12] (the first step in randomization was to define the studied population and number it, then we choose every 3rd

one), they were seen at Gynecology & Obstetrics Clinic/Karbala General Hospital and Women Health Clinic. The study was conducted in 1st August 2016 until 31th December 2016. Consents of the patients and their relatives were taken. Premenstrual syndrome (PMS) can be diagnosed if at least one of the affective and one of the somatic symptoms is reported five days prior to the onset of menses in the three prior menstrual cycles. The symptoms should be previously reported in at least two cycles and should cutout within 4 days of onset of menses and not repeat until after day 12 of the cycle. These symptoms should be reported without pharmacologic therapy, or hormones taking, drugs, or alcohol, and cause specific dysfunction in social or job related activities[13].

Each patient was assessed individually using a case sheet that including age, time of repeating cycle, duration of menses and symptoms of disease (severity of pain, breast tenderness, swelling of extremities, abdominal bloating), psychiatric symptoms assessed using questionnaires with aid of psychiatrist. Psychiatric symptoms recorded according to Diagnostic and Statistical Manual for Mental Disorders (DSM-IV-TR) including (anger outbursts, anxiety, depression, and social withdrawal) and severity of psychiatric symptoms scaled from absence to severe, if no symptoms report consider absence, mild symptoms report for any one psychiatric symptoms appear, moderate symptoms referral to two psychiatric symptoms, severe symptoms report for three or more psychiatric symptoms appear[14].

This sample of women suffered from PMS divided into two groups. Each group consist of 65 women; each patient in 1stgroup was received Omega – 3 fatty acid (T&D, Germany) capsule 500 mg twice daily for three consequence months and each patient in 2nd group was received Omega – 3 fatty acid (T&D, Germany) capsule 1000 mg twice daily for three consequence months[15]. The data collected before and after treatment.

Statistical analyses:

Statistical analyses were achieved using SPSS 19.0 for windows. Inc. The data were showed as numbers and percentage and statistically analyzed by Chi-square. P values < 0.05 were considered significant.

RESULT:

Severity of pain:

There were significant differences between results before and after using Omega-3 fatty acid ($P<0.05$). So the severity of pain in women (suffer from PMS) before using Omega-3 fatty acid is commonly between moderate to severe, while this pain become between mild to moderate after using Omega-3 fatty

acid at 500mg twice daily and mild after using Omega-3 fatty acid at 1000 mg twice daily as shows in table (1) and figure (1).

Breast tenderness:

The symptom of breast tenderness predominated in about more than half number of the total women with PMS before using of Omega-3 fatty acid as show in table (2), decline after using of Omega-3 fatty acid at dose 500mg twice daily, and approximately disappears after using of Omega-3 fatty acid at dose 1000mg twice daily as show in figure (2). There were significant differences between results before and after using Omega-3 fatty acid ($P<0.05$).

Swelling of extremities:

There were significant differences between results before and after using Omega-3 fatty acid ($P<0.05$). About the half of sample (women with PMS) has swelling of extremities before treatment as explain in table (3) and the percentage of this symptom reduce to half after using Omega-3 fatty acid 500mg twice daily in 1st group and significant improvement after using Omega-3 fatty acid 1000mg twice daily in 2nd group as show in figure (3).

Abdominal bloating:

The symptom of abdominal bloating predominated in most number of the sample (women with PMS) before using of Omega-3 fatty acid as show in figure (4), reduce to about half percent after using of Omega-3 fatty acid at dose 500mg twice daily and significant relieve this symptom approximately 70% after using of Omega-3 fatty acid at dose 1000mg twice daily as explain in table (4). There were significant differences between results before and after using Omega-3 fatty acid ($P<0.05$).

Severity of psychiatric symptoms:

There were significant improvement in symptoms after using Omega-3 fatty acid ($P<0.05$). So, the severity of psychiatric symptoms ranging from mild to severe score and the most women with PMS before using of Omega-3 fatty acid have at least two psychiatric symptoms as explain in table (5). These symptoms shifting to absence – moderate score after using of Omega-3 fatty acid at dose 500mg twice daily and the one third of women in this group have no symptoms and another third have at least one symptom. These symptoms are ranging from absence to mild after using of Omega-3 fatty acid at dose 1000mg twice daily. So, the severity of psychiatric symptoms was significant improvement and half number of women in this group without psychiatric symptoms as show in figure (5).

DISCUSSION:

Although there are many medicinal agents for treatment of premenstrual syndrome (PMS) such as pyridoxine (vitamin B6), progestogens, estrogens, fluoxetine "selective serotonin reuptake inhibitor (SSRI)", and NSAIDs, most of them produce many side effect such as gastric upset, headache, and peripheral neuropathies associated with pyridoxine, nausea and breast discomfort with progestogens, and headache, nervousness, and fatigue caused by fluoxetine. Therefore, the need for research new medicinal agents with minor side effects and have been given good results in the treatment of premenstrual syndrome is the base of the research by uses of Omega -3 fatty acid.

In the present study, Omega -3 fatty acid showed significant decrease in the severity of pain in comparison with untreated woman. Kooshki, A. *et al*, (2013) demonstrated that omega-3 fatty acid can reduce noticeable pain as ibuprofen among young women with primary dysmenorrhea[16]. Chao-Chih, w. *et al*, (2008) reveal that omega -6 fatty acid and its derivative (omega -3 fatty acid) reduce the formation of proinflammatory eicosanoids, such as PGE2 which is responsible for menstrual pain and increase the

formation of the anti-inflammatory eicosanoid, PGE1[17].

This study shows that Omega -3 fatty acid significant improvement in abdominal bloating and breast tenderness symptoms in comparison with untreated woman. Harel *et al*. (1996) mention that Omega -3 fatty acid may be reducing the somatic symptoms of PMS including bloating, headache, and breast tenderness[18]. Sohrabi, N. *et al*. (2013) demonstrated that omega-3 fatty acids may reduce the somatic symptoms of PMS including bloating, headache and breast tenderness. These effects increased by longer duration of treatment[15].

In the present study, Omega -3 fatty acid showing significant decrease in the severity of psychiatric symptoms in comparison with untreated woman. Sohrabi, N. *et al*. (2013) demonstrated that omega-3 fatty acids may reduce the psychiatric symptoms of PMS including depression, nervousness, anxiety, and lack of concentration[15]. Li, D. *et al*, (2003) mentions that omega-3 fatty acid had good result on improvement schizophrenia, depression and other psychiatric disorders[19].

Table (1): The difference of severity of pain and frequency among obese women (suffering from PMS) before and after using Omega-3 fatty acid in two different doses with aid Chi-sequire ($P<0.05$).

Use of Omega 3 fatty acid	Severity of pain				Total
	Absence	Mild	Moderate	Severe	
Before	0 (0%)	8 (12.3%)	29 (44.6%)	28 (43.1%)	130 (100%)
1 st Group	5 (7.7%)	20 (30.8%)	23 (35.4%)	17 (26.2%)	65 (100%)
2 nd Group	9 (13.8%)	35 (53.8%)	14 (21.5%)	7 (10.8%)	65 (100%)
Total	14 (5.4%)	69 (26.5%)	96 (36.9%)	81 (31.2%)	260 (100%)

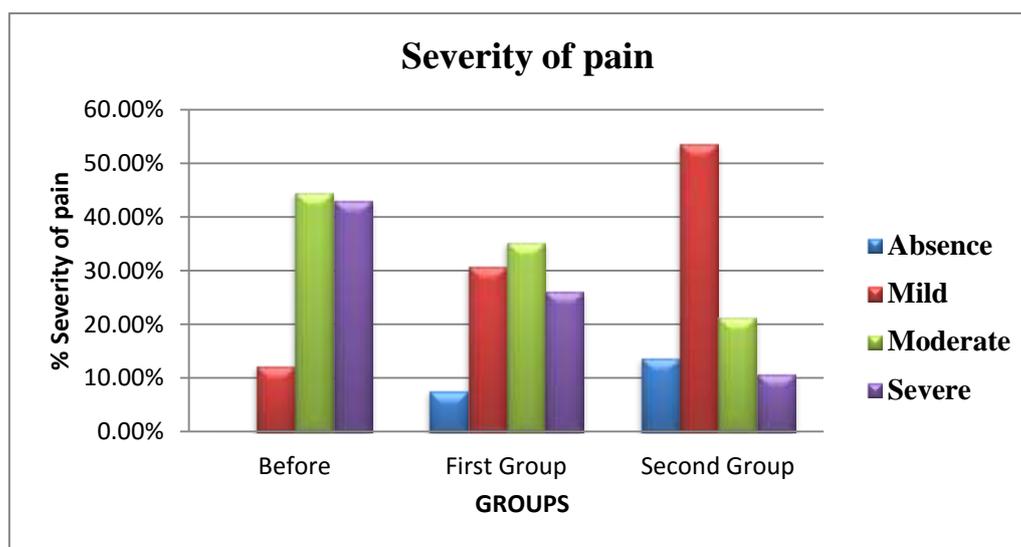


Figure (1): Relative frequency of pain severity among PMS women.

Table (2): The difference of breast tenderness and frequency among obese women (suffering from PMS) before and after using Omega-3 fatty acid in two different doses with aid Chi-sequire ($P<0.05$).

Use of Omega-3 fatty acid	Breast tenderness		Total
	Yes	No	
Before	82 (63.1%)	48 (36.9%)	130 (100%)
1 st Group	25(38.5%)	40 (61.5%)	65 (100%)
2 nd Group	11 (16.9%)	54 (83.1%)	65 (100%)
Total	142 (54.6%)	118 (45.4%)	260 (100%)

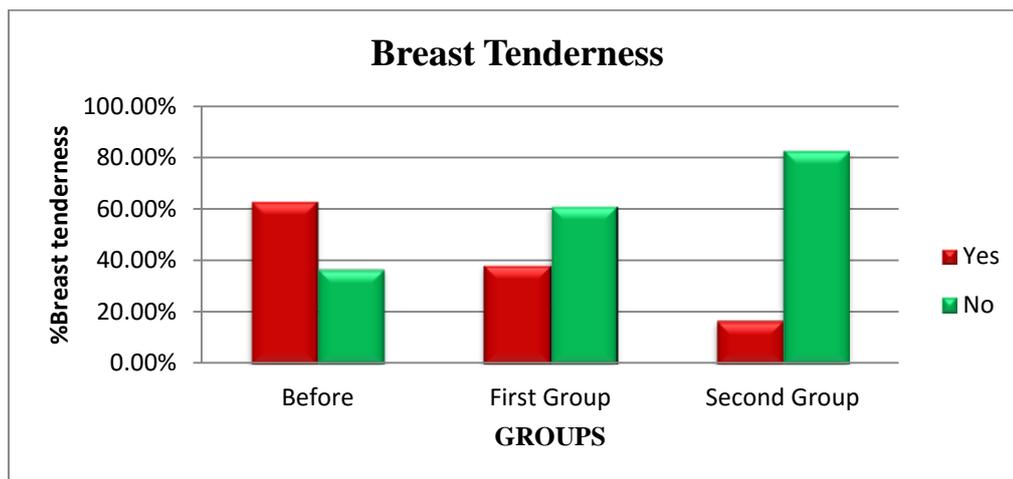


Figure (2): Relative frequency of breast tenderness among PMS women.

Table (3): The difference of swelling of extremities and frequency among obese women (suffering from PMS) before and after using Omega-3 fatty acid in two different doses with aid Chi-sequire ($P<0.05$).

Use of Omega-3 fatty acid	Swelling of extremities		Total
	Yes	No	
Before	61 (46.9%)	69 (53.1%).	130 (100%)
1st Group	16 (24.6%)	49 (75.4%)	65 (100%)
2nd Group	6 (9.2%)	59 (90.8%)	65 (100%)
Total	83 (31.9%)	117 (68.1%)	260 (100%)

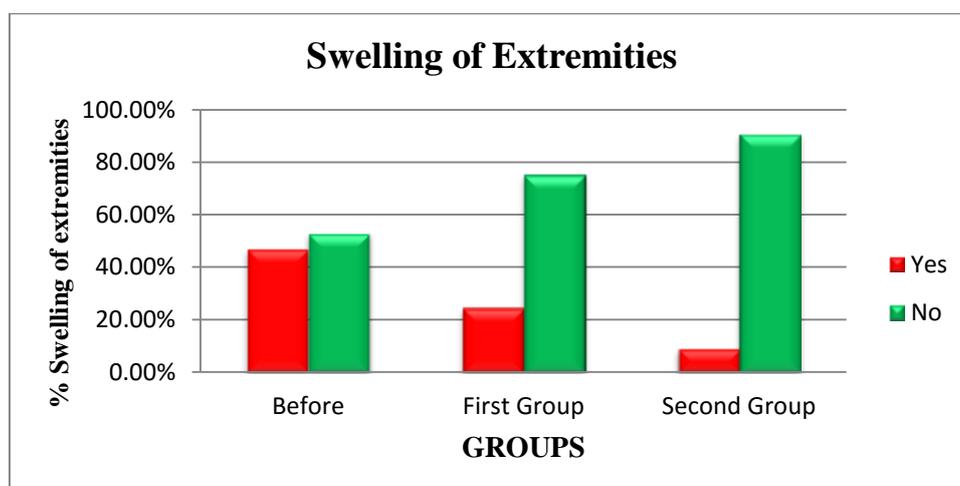


Figure (3): Relative frequency of swelling of extremities among PMS women.

Table (4): The difference of Abdominal bloating and frequency among obese women (suffering from PMS) before and after using Omega-3 fatty acid in two different doses with aid Chi-square ($P<0.05$).

Use of Omega-3 fatty acid	Abdominal bloating		Total
	Yes	No	
Before	120 (92.3%)	10 (7.7%)	130 (100%)
1 st Group	33 (50.8%)	32 (49.2%)	65 (100%)
2 nd Group	20 (30.8%)	45 (69.2%)	65 (100%)
Total	173(66.5%)	87(33.5%)	260 (130%)

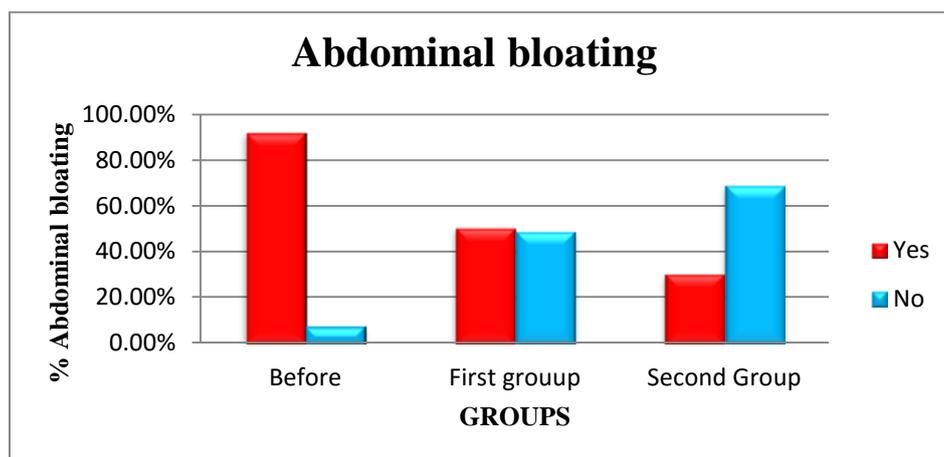


Figure (4): Relative frequency of Abdominal bloating among PMS women.

Table (5): The difference of severity of psychiatric symptoms and frequency among obese women (suffering from PMS) before and after using Omega-3 fatty acid in two different doses with aid Chi-square ($P<0.05$).

Use of Omega 3 fatty acid	Severity of psychiatric symptoms				Total
	Absence	Mild	Moderate	Severe	
Before	0 (0%)	34 (26.2%)	81 (62.3%)	15 (11.5%)	130(100%)
1 st Group	21 (32.3%)	22 (33.8%)	16 (24.6%)	6 (9.2%)	65 (100%)
2 nd Group	32 (49.2%)	29 (44.6%)	2 (3.1%)	2 (3.1%)	65 (100%)
Total	53 (20.4%)	85 (32.7%)	99 (38.1%)	23 (8.8%)	260(100%)

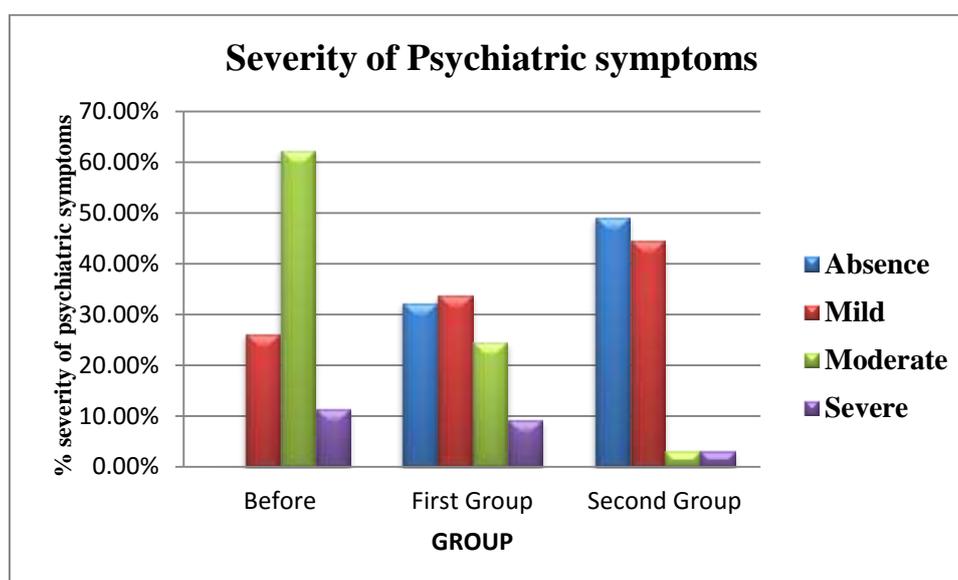


Figure (5): Relative frequency of Severity of Psychiatric symptoms among PMS women.

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