

The effects of training married men about premenstrual syndrome by pamphlets and short messages on marital satisfaction

Mohammad ali Morowatisharifabad¹, Zohreh Karimiankakolaki^{1*},
Mahshid Bokaie², Hossein Fallahzadeh³ and Sakineh Gerayllo¹

¹Department of Health Education and Promotion, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, ²Department of Midwifery, Shahid Sadoughi University of Medical Sciences, Yazd, Iran and ³Department of Biostatistics and Epidemiology, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

* Correspondence to: Z. Karimiankakolaki. E-mail: zohre_116@yahoo.com

Received on September 7, 2013; accepted on August 6, 2014

Abstract

Premenstrual syndrome (PMS), which includes physical, psychological and emotional symptoms that occur during the luteal phase of the menstrual cycle, has a negative impact on the quality of the relationship among married couples. The purpose of the study was to examine the effects of educating married men by two methods, pamphlet and short messages (SMS), on marital satisfaction of the couples. The study was experimental in nature. The sample consisted of 80 couples who had visited health centers in Yazd, Iran. The subjects were randomly assigned to the two training methods and pretested and post-tested on the outcome measures. The before to after the training increase in knowledge and practice in men and marital satisfaction of couples were statistically significant. The differences between the two training methods were not statistically significant. Pamphlets and SMS, if designed properly and based on the principles of psychology, can act as influential and almost equally effective educational tools in the context of PMS.

Introduction

Premenstrual syndrome (PMS) includes physical, psychological and emotional symptoms that occur during the luteal phase of the menstrual cycle and subside with the start of menstruation or during the

first days of bleeding [1–3]. The American College of Obstetricians and Gynecologists (ACOG) stated that mild form of the symptoms is PMS while the severe form is Premenstrual Dysphoric Disorder (PMDD) [3]. The ACOG reported that ~85% of the women of reproductive age have one or more symptoms of PMS and that the prevalence of PMDD is ~3–8%. The reported prevalence of PMS in Iranian teenage girls is 30–60% and as of the present time, there are no reliable studies regarding the prevalence of PMDD among Iranian women [4–6].

According to the ACOG, PMS symptoms include anxiety, mood instability, anger, feeling out of control, change in appetite, difficulty sleeping, difficulty concentrating, fatigue, lethargy, chest pain, joint or muscle pain, weight gain, acne, bloating and impaired adaptation [7–9]. The main cause of PMS is unclear and appears to be a complex combination of several factors from biological to environmental. Moreover, obesity, inadequate exercising, multiparity, occupation, nutrition, duration of bleeding, painful menstruation, exercise habits, lower education, stress and psychological pressures influence PMS [10, 11]. Most women believe that emotional changes due to PMS affect their relationships; specifically, 72% feel that PMS has a negative impact on the quality of the relationship with their spouses and others [12].

Marital satisfaction is defined as a positive assessment of marital relationships that affects other aspects of person's life such as the mental health.

Some factors seem to be associated with marital satisfaction, namely, compatibility of personality, educational homogamy, religious homogamy, income, education, age at marriage and length of marriage [13]. PMS, as a possible determinant of marital satisfaction, has not been adequately investigated.

In a study by Ryser *et al.* [14], the effects of PMS on the marital relationship of husband and wife in couples with women experiencing PMS were tested. The results showed that the marital relationship of PMS couples deteriorated in the luteal cycle phase [14]. Hoga *et al.* conducted a qualitative study to describe the perspectives of 20 women with PMS regarding the behavior of their spouses in face of this event and concluded that men have little information on the impact of this syndrome on women and do not know how to behave even when they want to support their partners. Marital satisfaction can be under the influence of lack of awareness in this regard. Consequently, the status of marriage, sexual issues and women's contentment of their partners increase when their husbands are aware of the impacts of PMS on their wives' soul and body [15]. Therefore, increasing husbands' information about reproductive health and additional studies on this target group may assist in recognizing the extent of the issue and the importance of timely treatment and the necessary training in an attempt to alleviate the problems [16].

Pamphlets are a low-volume educational media, which are used as reinforcement learning in training programs. Its studying does not make the reading person bored and may actually work as a behavioral skill [17]. Mangeli *et al.* [18], in a quasi-experimental study of pregnant women in Iran, showed the effectiveness of training via pamphlet on marital satisfaction [18]. Ghaemi *et al.* [19] in an experimental study of 2000 non-medical students at Estahban Azad University (Fars Province, Iran), reported its effectiveness on promoting the awareness and attitude toward AIDS [19].

Short messaging (texting) is a live and helpful method for training and educational discussions. Mobile phone technology has also been extensively used in health promotion and diseases

prevention [20]. In different studies, training with a short message has been effective in reducing risky behaviors. Results of a study by Uhrig *et al.* [20] confirmed the feasibility of a tailored, SMS service-based intervention designed to provide ongoing behavioral reinforcement for HIV-positive men. Da Costa *et al.* [21] in a randomized controlled trial study, concluded that short messaging helped Brazilian women living with HIV/AIDS to adhere to antiretroviral therapy for a period of at least 4 months. In a study of cigarette smokers attempting to quit, short messaging was validated as a new low cost and user-friendly method for collecting fine-grained health behavior assessments [22].

This study was designed and conducted to examine the effects of training married men on their perception of PMS. Marital satisfaction was the outcome measure of interest. The intervention consisted of pamphlets and short messages (SMS). The study took place in Yazd, Iran.

Methods

Design and subject selection

The study was experimental in nature and included pretest and post-test of the outcome measure. The intervention had two levels: (i) pamphlets and (ii) SMS. On the basis of the following parameters, (i) significance level of .05, (ii) power of .80, (iii) standard deviation of the marital satisfaction score of 5 and (iv) at least three units of the difference in mean score of marital satisfaction between the two groups, we estimated the required number of participants to be 80 couples (80 men and 80 women) or 40 couples per group. The couples were recruited from those who had referred to four health centers (out of 16) in four different regions of Yazd. One of the research team members attended in morning shifts of these centers, and eligible couples were asked to participate in the study voluntarily. To be eligible to participate in the study, the couple had to be formally married for a minimum of 6 months and the maximum of 5 years, because most marital problems occur during this time period [23]. The pregnant women and couples with the

history of family court visits were excluded from the study.

Originally, 240 couple entered the study. In pre-intervention evaluation phase the women completed the Premenstrual Symptoms Screening Tool (PSST); those who had the symptoms of PMS stayed in the study and their husbands completed a researcher-made questionnaire to measure their knowledge of PMS. Both couples completed the Index of Marital Satisfaction (IMS) and the men with the minimum marital satisfaction score (≥ 30) were invited to participate in the interventional phase of the investigation. The 80 couples who met the inclusion criteria were randomly assigned to either the pamphlets or SMS groups. We then handed the educational pamphlets to the men in pamphlet training group and obtained cell phone numbers of the men in short messaging group to send them two daily SMS about PMS for 20 days. Three months after the pretest, in post-intervention evaluation phase, husbands completed the PMS knowledge and practice questionnaire and both couples completed the IMS questionnaire.

Intervention

Health care, gynecology and reproductive health experts were consulted to develop the pamphlet and SMS about PMS. The following were included: (i) the definition of PMS; (ii) physical, psychological and emotional symptoms of PMS; (iii) recommendations for husbands to help their wives cope with PMS symptoms; (iv) life-style changes that may reduce PMS symptoms (e.g. less consumption of coffee, tea, salt, sweets and carbonated drinks); (v) importance of stress avoidance in reducing PMS symptoms; and (vi) medical services that may reduce PMS symptoms.

Typical SMS were ‘PMS includes physical, psychological and emotional symptoms that occur during last days of premenstrual cycle and subside with the start of menstruation or during the first days of bleeding’. ‘PMS symptoms include anxiety, mood instability, anger, feeling out of control, change in appetite, difficulty sleeping, difficulty concentrating, fatigue, lethargy, chest pain, joint or

muscle pain, weight gain, acne, bloating and impaired adaptation’. The pamphlet had six pages, included appropriate pictures and important information, and it took 5–7 min to read it.

Measures

Symptoms of PMS

The PSST, which was used for screening women with PMS, is a 19-item questionnaire that consists of two sections. The first section consists of 14 questions about mood, physical and behavioral symptoms. The second section contains five questions designed to measure the effects of PMS symptoms on people’s lives. The PSST is constructed by Canada’s McMaster University and Siahbazi *et al.* [24] standardized it for Iranian population. To diagnose moderate or severe PMS, three conditions must be met: (i) for items 1 to 4, at least one should be moderate or severe, (ii) for items 1 to 14, at least 4 should be moderate or severe and (iii) for the last 5 items, at least 1 should be moderate or severe.

Knowledge and practice of PMS questionnaire

The research team elaborated a two-part questionnaire. The first part included 18 questions about the psychological symptoms of PMS, 18 questions about the physical symptoms of PMS and 15 strategies that may be used to prevent or reduce PMS symptoms. We assigned the score of one for true answer and zero for false/don’t know answers. The total score could range from 0 to 51. The second part included eight items related to how men deal with PMS and a four-point Likert-type scaling was used. The theoretical range was from 4 to 32. The internal consistency, as measured by Cronbach’s Coefficient Alpha, was 0.78. A panel of experts consisting of gynecologists, obstetricians, epidemiologists, nurses and hygienists at Shahid Sadoughi University of Medical Sciences, examined and approved the content validity of the questionnaire.

Index of marital satisfaction

The IMS [13] questionnaire is a 25-point tool, which is designed to measure the amount, severity, or importance of the marital problems. Its theoretical range is from 0 to 100 which higher scores indicate lower marital satisfaction. The IMS has a reliability coefficient of 0.96 and its concurrent validity has been established [13]. It is shown to distinguish between couples with and without marital problems. The split-half reliability is reported to be 0.98. In addition, it has good construct validity for marital satisfaction index as well as demonstrating convergent and discriminant validations. The IMS scores of <30 suggest the absence of a significant clinical problem.

Ethical approval

The study was approved by the Institutional Review Board at Shahid Sadoughi University of Medical Sciences. The study participants were informed of the importance, purposes and methods of the study. They were informed that participation in the study was voluntary and that they could refuse to participate or withdraw from the study at any time without being penalized or losing any benefits. The participants were reassured of confidentiality and signed the informed consent form.

Statistical analysis

The Statistical package for the Social Sciences was used for the purpose of data analysis. Descriptive statistics were used to summarize and organize the data. Paired samples *t*-test, was used to examine pretest to post-test differences, and *t*-test for independent samples was employed to examine group differences before and after the intervention. The level of significance was set, a priori, at 0.05.

Results

A profile of the subjects

The average age of the men and women was 29.59 ± 3.74 and 25.46 ± 3.27 , respectively. The length of marriage ranged from 6 months to

5 years, with 18.8% below 2.5 years and 81.2% above 2.5 years. The number of offspring consisted of 30% without children, 55% with one child and 15% with two children. The level of education norm for the women was high-school diploma (32.5%), bachelor's degree and above for the men (53.8%). The majority of the men (63.8%) were self-employed while the majority of the women (70.0%) were unemployed. Group differences on the basis of the aforementioned demographic variables were not statistically significant.

Group comparisons

Paired samples *t*-test showed that, pretest to post-test differences of men's knowledge and practices of PMS and marital satisfaction as well as women's marital satisfaction were statistically significant. However, independent samples *t*-test showed, group differences, both in before and after intervention, were not statistically significant. Results are summarized in Table I.

Level of education was included in the analysis, resulting in a factorial design. In the SMS group, marital satisfaction was associated with higher level of education among men and women ($P < 0.05$). In the pamphlet group, similar results were not statistically significant. The addition of the other demographic characteristics did not produce any statistically significant results.

The analysis of frequency distributions of the answers to knowledge questions showed that before the training, the most 'false' answers were related to 'suicidal tendencies' (93.7%) and 'self-harm' (87.5%), which decreased into 67.9 and 71.0%, respectively, after the training. Among the psychological symptoms of PMS, question about the symptoms of 'weakness, fatigue and impatience' before (86.3%) and after (92.5%) the training was answered mostly as 'true'. Among the physical symptoms, the most 'false' answered question before training was 'increased appetite' (83.5%); this was dropped to 80.6% after the training. The most 'true' answered question was the question about 'back pain' before (83.8%) and after (97.4%) the training. Regarding the answers to questions about

Table I. Group comparison on pretest and post-test measure of marital satisfaction, PMS knowledge and PMS practices

Group variables	Pamphlet		SMS		Test to compare two groups	
		Average	Standard deviation	Average	Standard deviation	P-Value
Men's marital satisfaction	Before	9.73	37.95	11.70	37.25	0.772
	After	7.52	32.15	6.63	33.72	0.326
	P-value	<0.01		0.008		—
Women's marital satisfaction	Before	14.63	36.88	15.69	35.80	0.750
	After	10.47	32.13	10.29	31.78	0.880
	P-value	0.016		0.014		—
Men's knowledge	Before	6.96	28.51	6.63	30.04	0.318
	After	4.17	33.63	4.21	33.44	0.836
	P-value	<0.01		0.002		—
Men's practice	Before	4.77	22.55	5.66	23.20	0.580
	After	4.33	25.00	4.46	26.24	0.211
	P-value	0.009		<0.01		—

Table II. The frequency distributions of the answers to the questions about knowledge of psychological symptoms of PMS

	Before training			After training		
	True	False	Total	True	False	Total
Which is of the psychological symptoms of PMS?	Number %	Number %	Number %	Number %	Number %	Number %
Weakness, fatigue and impatience	69 86.3	11 13.8	80 100	74 92.5	7.5 6	80 100
Irritable and snappy and petulance	64 80	16 20	80 100	70 87.5	12.5 10	80 100
Increased life expectancy	42 53.8	36 46.2	78 100	63 80.8	19.2 15	78 100
Attacks crying/increased sensitivity to negative response	48 60.8	31 39.2	79 100	63 78.8	21.3 17	80 100
Increased sexual desire	53 66.3	27 33.8	80 100	40 63.5	36.5 23	63 100
Presence in society	52 65	28 35	80 100	56 74.7	25.3 19	75 100
Forgetfulness and reduced concentration	36 45	44 55	80 100	45 60	40 30	75 100
Insomnia	20 25.3	59 74.7	79 100	39 48.8	51.3 41	80 100
More sleeping	28 35.4	51 64.6	79 100	42 54.5	45.5 35	77 100
Away from communities	42 52.5	38 47.5	80 100	49 66.2	33.8 25	74 100
Decreased sexual desire	46 58.2	33 41.8	79 100	42 72.4	20 16	58 100
Increased power	60 75.9	19 24.1	79 100	69 88.5	11.5 9	78 100
Increased suicidal tendencies	5 6.3	74 93.7	79 100	18 32.1	67.9 38	56 100
Depression	52 65	28 35	80 100	59 77.6	22.4 17	76 100
Self-harm	10 12.5	70 87.5	80 100	18 29	71 44	62 100
Overeating/food cravings	14 17.5	66 82.5	80 100	24 32.4	67.6 50	74 100
Vitality	67 83.8	13 16.3	80 100	70 90.9	9.1 7	77 100
Uncontrollable and Turmoil	51 63.8	29 36.3	80 100	66 82.5	17.5 14	80 100

prevention or reducing methods of PMS symptoms, the most 'false' answer belonged to the question about 'weight loss' (75.9%), which was reduced to 59.2% after the training. Questions about 'expression of interest and support of the spouse' were answered mostly as 'True' (90.0%), which shifted to

the question about 'self-control, avoiding argument and reduced stress' (97.7%) after the training. Results are shown in Tables II–IV.

Regarding the answers to the practice questions, analysis of the data showed that with the exception of questions 5 (In the premenstrual period, I call my

Table III. The frequency distributions of the answers to the questions about knowledge of physical symptoms of PMS

Which are of the physical symptoms of PMS?	Before training						After training					
	True		False		Total		True		False		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Headache	42	53.2	37	46.8	79	100	60	75	20	25	80	100
Hair loss	46	58.2	33	41.8	79	100	58	72.5	22	27.5	80	100
Bruised nails	57	72.2	22	27.8	79	100	58	72.5	22	27.5	80	100
Acne	47	58.8	33	41.3	80	100	50	64.9	27	35.1	77	100
Soreness and tenderness of the breasts	50	63.3	29	36.7	79	100	55	80.9	13	19.1	68	100
Decreased appetite	32	40.5	47	59.5	79	100	28	35.9	50	64.1	78	100
Backaches	67	83.8	13	16.3	80	100	76	97.4	2	2.6	78	100
Increased appetite	13	16.5	66	83.5	79	100	14	19.4	58	80.6	72	100
Flatulence	27	34.2	52	65.8	79	100	23	42.6	31	57.4	54	100
Blurred vision	47	61	30	39	77	100	54	60.5	26	39.5	80	100
Pain of the joint and muscle	54	67.5	26	32.5	80	100	63	79.7	16	20.3	79	100
Increased weight	20	25	60	75	80	100	17	27	46	73	63	100
Upset stomach/constipation or diarrhea	28	35	52	65	80	100	36	48	39	52	75	100
Feeling cold	29	36.3	51	63.8	80	100	20	26.3	56	73.3	76	100
Dizziness	48	60	32	40	80	100	50	63.3	29	36.7	75	100
Flushes/sweating	30	38	49	62	79	100	30	39.5	46	60.5	76	100
Heart palpitations	42	53.8	36	46.2	78	100	56	70	24	30	80	100
Burning eyes	51	66.2	26	33.8	77	100	60	75	20	25	80	100

Table IV. The frequency distributions of the answers to the questions about knowledge of methods to prevent or reduce the symptoms of PMS

Which strategies are effective in preventing and reducing the symptoms of PMS?	Before training						After training					
	True		False		Total		True		False		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Walking or aerobic exercise	55	69.6	24	30.4	79	100	61	76.3	19	23.8	80	100
Warm drinks and herbal	66	82.5	14	17.5	80	100	73	91.3	7	8.8	80	100
Consumption of red meat	54	68.4	25	31.6	79	100	26	32.9	53	67.1	79	100
Consumption of fresh fruits and vegetables	66	82.5	14	17.5	80	100	77	96.3	3	3.8	80	100
Inactivity and restraint of exercise	67	84.8	12	15.2	79	100	55	71.4	22	28.6	77	100
Eating seafood	43	54.4	36	45.6	79	100	54	68.4	25	31.6	79	100
Weight loss	19	24.1	60	75.9	79	100	31	40.8	45	59.2	76	100
Expression of interest, attentive and supportive spouse	72	90	8	10	80	100	77	96.3	3	3.8	80	100
Self-control, avoiding argument and reduced stress	70	87.5	10	12.5	80	100	78	98.7	1	1.3	79	100
Ignoring symptoms	63	78.8	17	21.3	80	100	61	79.2	16	20.8	77	100
Adequate rest	66	83.5	13	16.5	79	100	73	91.3	7	8.8	80	100
Only stay to improve symptoms	70	88.6	9	11.4	79	100	50	71.4	20	28.6	70	100
Eating snacks between main meals	48	61.5	30	38.5	78	100	67	85.9	11	14.1	78	100
Joining in the recreation and the things that helps to recover	71	88.8	9	11.3	80	100	73	94.8	4	5.2	77	100
Visit a doctor and treat symptoms	36	45	44	55	80	100	54	67.5	26	32.5	80	100

Table V. The means and standard deviations for the answers to the practice questions

	Before training		After training		P-value
	Mean	Standard deviation	Mean	Standard deviation	
How are your practices during the premenstrual period of your wife?					
I am more attentive to my wife.	3.08	0.80	3.60	0.68	<0.01
I try not to dispute with my wife	3.15	0.85	3.55	0.65	<0.01
I control myself not to get so angry.	3.21	0.83	3.48	0.63	0.01
I pay attention to my wife, express interest and assure her	3.14	0.63	3.44	0.71	<0.01
I call my wife every few hours and remind her to eat something between meals	2.36	1.03	2.52	1.01	0.26
I talk with my wife and say I understand what the problem is and stay next to her.	2.57	1.03	2.88	1.01	0.01
I keep home environment more intimate until she was calm.	2.85	0.94	3.38	0.66	<0.01
I accompanied her on exercise and diet	2.53	0.98	2.76	1.05	0.08

wife every few hours and remind her to eat something between meals) and 8 (During the premenstrual period of my wife, I accompanied her on exercise and diet), the before and after the training differences were statistically significant. The lowest average score before training belonged to 'In the premenstrual period, I call my wife every few hours and remind her to eat something between meals' (2.36 ± 1.03), which slightly increased reaching (2.52 ± 1.01) after the training. However, this difference was not statistically significant. Results are summarized in Table V.

Discussion and Conclusions

Taking into account that a similar study has not been conducted to show that training men may result in marital satisfaction of the couples, this study can be considered the first research of its kind that provides some evidence that training of men about premenstrual symptoms may affect marital satisfaction of the couples.

Comparison of the effects of two educational methods

The results of the study showed (i) statistically significant pretest to post-test increases in marital

satisfaction in both groups and (ii) no statistically significant differences between the two training methods. The review of the literature showed no studies comparing the effectiveness of pamphlet and SMS in influencing marital satisfaction. However, there are studies which examined the effects of education on marital satisfaction. For example, the results of a research by Hoga *et al.* indicated that a planned guidance on PMS is necessary to avoid problems and its consequences in individual, familial and social life of the women and couples' relationships [15]. We found similar results, which suggest that if men are adequately knowledgeable about PMS, they are better prepared to deal with the related problems which may lead to positively affecting marital satisfaction. Most women are critical of men for not understanding the psychological and physical conditions that they experience during the premenstrual period, which in turn results in restlessness, emotional stress and conflict that lead to quarrel and disruption in marital relationship [15]. Although everyday stressful life events can negatively influence the quality of the marriage, we found that if adequate training in the forms of either pamphlets or SMS is provided, men may be better prepared to react to the problems associated with PMS, resulting in more favorable environment for marital satisfaction. Studies by

Mansouri-nia *et al.* [25] and Vizheh *et al.* [26] also showed the usefulness of training in improving marital satisfaction. Thus, it is concluded that correct training has the potential to positively affect marital satisfaction among the couples.

There are some studies that examined the effects of pamphlet and SMS separately. For example, Mangli *et al.* [18] reported that educational pamphlets are effective in improving satisfaction among pregnant women. Joo *et al.* [27] found that SMS is an appropriate method for modifying weight-control behavior in an attempt to alleviate obesity. Uhrig *et al.* [20] showed that if SMS is designed properly, it is effective in reducing risky behaviors among HIV-positive men. Da Costa *et al.* [21] reported the significant effect of SMS on continuation of anti-virus treatment among women infected with AIDS.

Jalali *et al.* [28] reported that SMS and booklets are effective in creating negative attitudes toward narcotic drugs and that SMS may be more influential. Lv *et al.* [29] found that SMS is more effective in improving perceived control of asthma than is the traditional training program. Ghaemi *et al.* [19] concluded that lecture is more effective in improving knowledge and attitude toward AIDS than pamphlet.

A synthesis of our results and other research findings [17–22, 27–30] suggests that different educational methods are fitted for different age groups and different subjects. The results of our study showed that pamphlets and SMS, if designed properly and based on the principles of psychology, can act as influential and almost equally effective educational tools in the context of PMS.

The influence of demographic variables

The results of the study suggest that the level of education may play a role in benefitting from SMS, because highly educated men and women with highly educated husbands benefit from SMS training more than did the men with lower level of education and women whose husbands were not highly educated. It may be argued that probably, highly educated people's ability in integrating short and separate messages that they

receive over time is more than low-educated people, so they benefit SMS more.

Knowledge and practice questions

Our study results showed that men's awareness of PMS about symptoms that was high before the training (e.g. weakness, fatigue and impatience; back pain) continued to be high after the training. In a study by Hoga *et al.* [15], irritability and sensitivity; in a study by Silva *et al.* [31], irritability and fatigue; and in a study by Tabassum *et al.* [32] anxiety, fatigue, depression and back pain, were prevalent among women affected by PMS. These are the most obvious symptoms of PMS and the participating men in our study were aware of them before and after the training. On the other hand, we found that men's awareness of psychological symptoms of suicide and self-harm, and physical symptom of increased appetite increased after the training.

Concerning the questions of strategies for improving the symptoms of PMS, the lowest men's awareness was about the effect of weight loss that increased after the training. Their awareness regarding the importance of expressing interest and support for the wife and avoiding argument was high before and after the training. Bhatta *et al.* [33] showed that men's awareness of the conditions and signs of the delivery time and after childbirth is related to support of their wives in this period. Therefore, the correct training and increased awareness of men about PMS symptoms may be instrumental in making them more supportive of their wives and expressing additional interest and attention.

The practice of men making phone calls and reminding their wives to take a snack between meals were done the least at the pretest and the pretest to post-test increase was not statistically significant. Additionally, the practice of men accompanying their wives in diet and exercise plans was not significantly affected from before to after the training. The evaluation of the results made us wonder if some men find some of the practices unacceptable or intangible; thus, prevent them from performing them. Many men are not aware of the impact of PMS

symptoms on their wives' life and in particular the effect of it on their behavior with their husbands [15]. Thus, they may take it easy because of no proper understanding of the issue.

Limitations

The lack of access to standard texts to send the desired messages was a study's limitation. The study could have benefitted from a comparison non-intervention control group. Although random assignment of the subjects to treatment groups controlled most threats to internal validity of the experimentation, random selection was not possible and the external validity was limited to the study participants.

Conclusions

The results showed that the marital satisfaction of the couples increased after the training, and that the men's awareness and practice, which were low before training, increased after the completion of the intervention. Men's awareness about psychological symptoms of PMS such as Suicidal and self-harm tendencies, physical symptoms such as increased appetite, also weight loss as a strategy to improve symptoms and reminding wives to eat snacks between meals were some of the variables which were affected by the experimentation.

Both the pamphlet and SMS were effective teaching methods, perhaps because all educational programs that meet the need of the target group must be considered effective. However, modern-training techniques are always in competition with traditional methods and it may be useful to use both. Given that, higher basic knowledge of people is helpful for the training to be effective; grouping people by the level of education and culture, and then formulating an appropriate training program is advised. The replication of the study with other populations is recommended. Moreover providing educational programs before the marriage for young couples is suggested.

Acknowledgements

The article is based on a master's degree thesis at the Shahid Sadoughi University of Medical Sciences. The authors would like to express their thanks and appreciation to the respected President of Health Faculty of the University, personnel of Yazd Health Centers and the couples who participated in the study.

Funding

This work was funded by School of Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

Conflict of interest statement

None declared.

References

1. Dueñas JL, Lete I, Bermejo R *et al.* Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in a representative cohort of Spanish women of fertile age. *Eur J Obst Gynecol Reprod Biol* 2011; **156**: 72–7.
2. Kleinstäuber M, Witthöft M, Hiller W. Cognitive-behavioral and pharmacological interventions for premenstrual syndrome or premenstrual dysphoric disorder: a meta-analysis. *J Clin Psychol Med Sett* 2012; **19**: 308–19.
3. Lete I, Dueñas JL, Serrano I *et al.* Attitudes of Spanish women toward premenstrual symptoms, premenstrual syndrome and premenstrual dysphoric disorder: results of a nationwide survey. *Eur J Obst Gynecol Reprod Biol* 2011; **159**: 115–8.
4. Lukes AS, McBride RJ, Herring AH *et al.* Improved Premenstrual Syndrome Symptoms after NovaSure Endometrial Ablation. *J Minim Invasive Gynecol* 2011; **18**: 607–11.
5. Sassoon SA, Colrain IM, Baker FC. Personality disorders in women with severe premenstrual syndrome. *Archiv Women Mental Health* 2011; **14**: 257–64.
6. Taghizadeh Z, Shirmohammadi M, Feizi A, Arbabi M. The effect of cognitive behavioural psycho-education on premenstrual syndrome and related symptoms. *J Psychiatr Ment Health Nurs* 2012; **20**: 705–13.
7. Firoozi R, Shirmohammadi M. The Relationship between Severity of Premenstrual Syndrome and Psychiatric Symptoms. *Iran J Psychiatry* 2012; **7**: 36–40.
8. Kadian S, O'Brien S. Classification of premenstrual disorders as proposed by the International Society for Premenstrual Disorders. *Menopause Int.* 2012; **18**: 43–7.

9. Rudy Bowen M, Bowen A, Baetz M. Mood Instability in Women With Premenstrual Syndrome. *J Obstet Gynaecol Can* 2011; **33**: 927–34.
10. Bakhshani N, Hasanzadeh Z, Raghbi M. Prevalence of premenstrual symptoms and premenstrual dysphoric disorder among adolescents students of Zahedan. *Zahedan J Res Med Sci* 2011; **13**: 29–34; [Persian].
11. Panay N. Management of premenstrual syndrome: evidence-based guidelines. *Obst Gynaecol Reprod Med* 2011; **21**: 221–8.
12. Singh H, Walia R, Gorea R, Maheshwari A. Premenstrual syndrome (PMS): the malady and the law. 2004; **26**: 129–31.
13. Ofove C, Ofili A, Ojetu O, Okosun F. Marital satisfaction, job satisfaction and psychological health of secondary school teachers in Nigeria. *Health* 2013; **5**: 663–8.
14. Ryser R, Feinauer L. Premenstrual syndrome and the marital relationship. *Am J Fam Ther* 1992; **20**: 179–90.
15. Hoga LAK, Vulcano MA, Miranda CM, Manganiello A. Male behavior in front of women with Premenstrual Syndrome: narratives of women. *Acta Paul Enferm* 2010; **23**: 372–8.
16. Singh KK, Bloom SS, Tsui AO. Husbands' reproductive health knowledge, attitudes, and behavior in Uttar Pradesh, India. *Stud Fam Plan* 1998; **29**: 388–99.
17. Emami AH MR, Dehpour M. Effect of an educational pamphlet on General practitioners prescribing skill: a Randomized controlled Trial. *HAKIM* 2011; **4**: 66–72. [Persian].
18. Mangeli M, Ramezani T, Mangeli S. The effect of educating about common changes in pregnancy period and the way to cope with them on marital satisfaction of pregnant women. *Iran J Med Educ* 2009; **8**: 305–13; [Persian].
19. Ghaemi SZ, Rostambeigi P, Roshandel A. Assessment and comparison of the effects of lecture and pamphlet health education methods in the fields of AIDS on knowledge and attitude of university students. *Int Res J Appl Basic Sci* 2013; **4**: 341–7.
20. Uhrig JD, Lewis MA, Bann CM *et al.* Addressing HIV knowledge, risk reduction, social support, and patient involvement using SMS: results of a proof-of-concept study. *J Health Commun* 2012; **17**: 128–45.
21. Da Costa TM, Barbosa BJP, Sigulem D, De Fátima Marin H, Pisa IT. Results of a randomized controlled trial to assess the effects of a mobile SMS-based intervention on treatment adherence in HIV/AIDS-infected Brazilian women and impressions and satisfaction with respect to incoming messages. *Int J Med Inform* 2012; **81**: 257–69.
22. Berkman ET, Dickenson J, Falk EB, Lieberman MD. Using SMS text messaging to assess moderators of smoking reduction: validating a new tool for ecological measurement of health behaviors. *Health Psychol* 2011; **30**: 186.
23. Honarian M, Yunosi S. Study of the causes of divorce in the family courts of Tehran. *Clinical Psychol Stud Quart* 2011; **1**: 125–52; [Persian].
24. Siahbazi S, Hariri F, Montazeri A, Moghadam Banaem L. Standardization of premenstrual symptoms screening questionnaire PSST: translation and psychometric Iranian species. *J Payesh* 2011; **10**: 421–7; [Persian].
25. Mansouri-Nia A, Etemadi O, Fatehizade M, Hassanpour A. The survey of pre-marriage instruction effects on couple's satisfaction level in Isfahan. *New Findings Psychol* 2010; **6**: 65–78.
26. Vizheh M, Pakgohar M, Babaei G, Ramezanzadeh F. Effect of counseling on quality of marital relationship of infertile couples: a randomized, controlled trial (RCT) study. *Arch Gynecol Obstet* 2013; **287**: 583–9.
27. Joo N-S, Kim B-T. Mobile phone short message service messaging for behaviour modification in a community-based weight control programme in Korea. *J Telemed Telecare* 2007; **13**: 416–20.
28. Jalali D. Prevention effectiveness and efficiency of short message service on students' attitudes toward drug use trends. *Inform Commun Technol Educ Sci* 2010; **1**: 93–111; [Persian].
29. Lv Y, Zhao H, Liang Z *et al.* A mobile phone short message service improves perceived control of asthma: a randomized controlled trial. *Telemed J E Health* 2012; **18**: 420–6.
30. Cole-Lewis HKT. Text messaging as a tool for behavior change in disease prevention and management. *Epidemiol Rev* 2010; **32**: 56–69.
31. Silva CML, Gigante DP, Carret MLV, Fassa AG. Population study of premenstrual syndrome. *Rev Saúde Pública* 2006; **40**: 47–56.
32. Tabassum S, Afridi B, Aman Z *et al.* Premenstrual syndrome: frequency and severity in young college girls. *J Pak Med Assoc* 2005; **55**: 546.
33. Bhatta B. An exploratory study of prevailing knowledge, attitude and practice of husband in regards to factors affecting in supporting activities during pregnancy, delivery and post-partum periods. *J Nobel Med Coll* 2012; **1**: 45–52.