



Effectiveness of an Educational Program on Health Promoting Lifestyle of Spouses of Veterans With Post-Traumatic Stress Disorder

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Received 2017 July 28; Revised 2017 November 12; Accepted 2018 February 07.

Abstract

Background: Taking care of veterans with Post-Traumatic Stress Disorder (PTSD) is associated with negative impacts on the quality of life and lifestyle of the caregivers, especially the spouses.

Objectives: The current study aimed at evaluating the effect of a health promotion lifestyle training program on the spouses of veterans with PTSD in Gorgan city, Iran.

Patients and Methods: A total of 63 spouses of Iranian veterans with PTSD covered by the Foundation of Martyrs and Veterans Affairs in Gorgan were enrolled in this quasi-experimental study by the target-based sampling method. Subjects were assigned to 2 groups of experimental (n = 30) and control (n = 33). Eight 45- to 60-minute sessions of educational training were held for the experimental group within 8 weeks. Demographic data checklist and the Health Promoting Lifestyle Profile (HPLP) questionnaire were employed to collect data.

Results: The mean total scores of health promotion lifestyle and subscales of physical activity, stress management, health care responsibility, and spiritual development significantly increased in the experimental group after the intervention ($P < 0.05$). The total score of health promotion lifestyle in the experimental group increased from 112.93 ± 20.63 to 122.52 ± 19.36 , while the total score of health promotion lifestyle in the control group changed from 112.25 ± 26.09 to 110.27 ± 24.83 . However, changes in the subscales of nutrition and interpersonal relationships were insignificant ($P > 0.05$).

Conclusion: According to the results of the current study, educational interventions significantly improved lifestyle and health promotion behaviors in the spouses of veterans with PTSD. Hence, it is recommended to emphasize on training interventions as part of health promotion programs and improvement of lifestyle in care givers.

Keywords: Education, Health, Life Style, Post-Traumatic Stress Disorder, Promotion, Stress Disorder, Training, Veteran

1. Background

Post-Traumatic Stress Disorder (PTSD) is a syndrome developed after exposure to stressful events, such as death or threat of death, war, natural disasters, and physical or sexual abuses (1, 2). Patients with PTSD re-experience the trauma repeatedly in their nightmares and daily activities and bear emotional numbness during the episodes. The total prevalence of PTSD in the world ranges from 9% to 15% (8% males and 4% females) (2, 3) and in Iran, its prevalence is 1% to 9% of the general population (1).

War is known as the most stressful event causing PTSD, which potentially imposes irreparable damages to the patients (4). Thirty percent of people experiencing war con-

flicts develop PTSD (2). In the recent decade, about 10% to 25% of 2 million US military personnel, who participated in the war, developed PTSD symptoms within three months after returning home (4). In Iran, the prevalence of PTSD among soldiers, who were engaged in the Iran-Iraq war was 14.9% (5). Distress and mental disorders not only influence veterans but also their wives, which might be attributed to the wives' caring role and permanent presence (6). Social relationship deficits, marital incompatibilities, job dissatisfactions, feeling guilty and helpless, low self-esteem, and depression in veterans' wives are some of the consequences emphasized by different studies (7-9). In a study performed on psychological and marital distress among the wives of Vietnam veterans, Renshaw et al. (2010) stated

that wives of veterans with PTSD are more exposed to psychological and marital disorders than those of veterans without PTSD (10). The main reason for such disorders is the physical and behavioral aggression of the veterans toward their wives; these females face high levels of stress in their personal life (6, 11). Generally speaking, veterans' wives face unpleasant changes in lifestyle due to different problems in their life and when taking care of a veteran (4, 12). Generally, lifestyle involves regular daily activities, and people's health status is directly affected by such activities. A health-promoting lifestyle includes behaviors, such as healthy diet, adequate physical activity, health care responsibility, stress management, good interpersonal relationship, and spiritual development (13). Health behavior studies in 35 different countries as a project by the World Health Organization (WHO) indicated that lifestyle and behaviors have about a 60% share in human health and QOL (11). The main emphasis of the most health-promoting programs is to select a proper lifestyle, which leads to improvement and maintains health status and prevents diseases. Health promotion empowers people to obtain greater control over their behaviors (14). It should be noted that several studies concentrated on promoting lifestyle and quality of life in veterans with PTSD (7, 13, 15-17), whereas very few studies have considered people related to these veterans, especially their spouses (18-20).

Educational strategies were introduced as the best strategies by health experts due to the approved effectiveness, low cost, and are more comprehensive (21). Training certain behavioral patterns and changing unhealthy behaviors to healthy ones are among integral parts of comprehensive health promotion programs. Since most behaviors can be changed, personal decisions play an important role in controlling, changing, and modifying everyone's lifestyle (22). Carreno et al. (2006), in a study on the effect of education on behavior change, showed that the implementation of health promotion programs improved the lifestyle score among studied subjects (23). Furthermore, Radmehr et al. (2012) in a study on the effect of a training program on health promotion in patients with obsessive-compulsive disorder indicated that the intervention significantly improved the mean score of health-promoting lifestyle and its subscales (24). Despite the recent attention to the mental health of spouses of veterans with PTSD all around the world, very few studies have concentrated on the improvement of the mental status of the spouses. Moreover, to the best of the author's knowledge, there has been no study published on the effectiveness of an educational program on the health-promotion lifestyle of spouses of veterans with PTSD. Therefore, the present study, for the first time, determined the contribution of such programs to improvement of lifestyles of vet-

erans with PTSD in Iran.

2. Objectives

The current study aimed at evaluating the effect of educational intervention on the health-promoting lifestyle of spouses of veterans with PTSD in Gorgan, Iran.

3. Patients and Methods

3.1. Study Design

The current controlled quasi-experimental pretest-posttest study was conducted from December 2016 to May 2017 in Gorgan, North of Iran. Required permissions were obtained from the Foundation of Martyrs and Veterans Affairs and the Research Deputy of Qazvin University of Medical Sciences. In addition, the study design was approved by the Ethical Committee of Qazvin University of Medical Sciences (ID code: Ir.qums.rec.1395.174). Prior to the study, the author explained the study objectives to the participants and assured them about the confidentiality of data as well as their authority to withdraw from the study at any stage. The participants signed written informed consent. It is noteworthy to mention that after the intervention and data analysis procedure, a briefing session on the educational intervention was presented to the control group participants.

3.2. Study Participants

The study was conducted at the Foundation of Martyrs and Veterans Affairs in Gorgan city, which is an Iranian governmental foundation, from December 2016 to January 2017, on the spouses of veterans with PTSD, who met the inclusion criteria. According to the sample size and major limitations of the study, such as critical conditions of some of the veterans, difficult access, or lack of willingness to cooperate, and the inclusion and exclusion criteria, a total of 63 females were selected from the target population by the target-based sampling method. The sample was assigned to 2 groups of experimental ($n = 30$) and control ($n = 33$) with the simple random allocation method.

The inclusion criteria were voluntary participation, ability to read and write, not attending any health-promotion-oriented educational classes or workshops, experiencing at least one year of married life, lack of severe physical or mental disorder in an extent to prevent attendance to the educational sessions, lack of history of drug abuse, spouse willingness, and residence in Golestan province. The exclusion criteria were lack of interest to cooperate in the study and more than one session absence from the sessions. None of the participants withdrew from

the study during the intervention. There was no dropout in the current study due to initial awareness, explanation of the objectives and study procedures, and good interaction between the author and participants. After explaining the study objectives, all of the participants signed the written informed consent. The current study was approved with Ir.qums.rec.1395.174 code by the Ethical Committee of Qazvin University of Medical Sciences.

3.3. Data Collection and Educational Intervention

Data collection instruments in the current study was a demographic data checklist and Health Promotion Lifestyle Profile (HPLP). The demographic data checklist included age, number of marriages, duration of living with a veteran with PTSD, level of education, number of family members, Body Mass Index (BMI), occupational status, and economic status. To assess health-promoting behaviors, the Persian version of HPLP, developed by Walker et al., was used. Health-Promotion Lifestyle Profile includes 52 items on six different scopes associated with health-promoting lifestyle and subscales, such as physical activity, nutritional diet, stress management, spiritual development, interpersonal relationships, and health care responsibility. The participants were asked to complete the questionnaire based on a 4-point Likert-type scale ranging from 1 (never) to 4 (always). The psychometric properties of this questionnaire have been confirmed by Mohammadi Zeidi et al. (2011) (25) and Meihan et al. (2011) (26). Also, the validity and reliability of the Persian version of the HPLP has been well documented in several studies (14, 27). The average time to complete the HPLP was 35 minutes and participants completed the HPLP at Foundation of Martyrs and Veterans Affairs in Gorgan city, two months before and after the intervention. At the time of completion of the questionnaires, one of the members of the research team was assigned to explain the importance of accurate and exact answering, to assure answering of all questions.

In the first phase of this study, data were collected using the employed instruments during December 2016. Also, in the second phase, the experimental group received the training program.

Initially, the research team invited the participants to attend an educational session on the predefined date and interval. The educational program was held in eight 45- to 60-minute weekly sessions and each session was implemented in 7- to 12-member group, according to the scales of health promoting lifestyle. The primary strategy of the educational intervention was explained to the participants in a 7- to 10-minute speech and slideshow presentation using a data projector. A 25- to 30-minute focus group discussion with questions and answers was held. The contents and objectives of educational sessions are shown in Table 1.

Table 1. Contents and Objectives of Health-Promoting Educational Sessions

Session	Objective	Content
1	Introduction of the research	Lifestyle introduction and the necessity for health-promoting behaviors
2	Promoting the level of activities	Physical activities
3	Adherence to proper nutritional diet	Nutrition
4	Self-flourishing	Spiritual development
5	Learning effective interpersonal skills	Interpersonal skills
6	Empowering health care responsiveness	Health care responsibility
7	Stress management ability	Controlling stress using the progressive muscular relaxation method developed by Jacobson
8	Conclusion and acknowledgments	Reviewing the progressive muscular relaxation method, total conclusion, acknowledgments, and recommending to apply the learned skills in personal life

The final stage was held two months after the intervention to evaluate the effectiveness of the intervention, data collection, and completing HPLP. It is noteworthy to mention that the researchers kept contact with the participants within a 2-month post-intervention interval and answered their questions. After two months, the participants (both experimental and control groups) were invited via a telephone call to attend the place of sessions to complete the HPLP again.

3.4. Statistical Analysis

Data were analyzed with the IBM SPSS Statistics for Windows, version 21.0 (IBM Corp., Armonk, N.Y., USA) by descriptive statistics, including frequency, percentage of frequency, mean and standard deviation, and inferential statistics including chi-square, the Fisher's exact test, and paired and independent *t*-tests as well as one-way Analysis of Variance (ANOVA). The normality of data was confirmed using the Kolmogorov-Smirnov test. $P = 0.05$ was considered as the level of significance.

4. Results

4.1. Demographic Data

The mean age of the study participants was 46.24 ± 5.4 years. Most of the participants had education levels below diploma (73.4%), and almost all were unemployed (99.95%).

The mean duration of married life was 25.17 years. In addition, the economic status was low in most of the participants (52.75%). Demographic data of the study participants are shown in [Table 2](#).

4.2. Pretest Analysis

Results obtained from the pretest indicated no significant difference between the study groups in demographic and main study variables ($P < 0.05$). Findings of the current study showed that health care responsiveness and physical activities had the highest and lowest mean scores in the pretest, according to HPLP ([Table 3](#)).

4.3. Posttest Analysis

According to [Table 2](#), the mean scores of physical activity, stress management, health care responsiveness, and spiritual development showed a significant increase in the experimental group in the posttest ($P < 0.05$). According to [Table 4](#), the mean score of health-promoting lifestyle significantly improved in the experimental group after the intervention (110.27 ± 24.8 versus 122.52 ± 19.4 ; $P < 0.05$). In addition, the posttest results of the current study showed no significant difference in the mean score of nutritional diet and interpersonal relationship scales between the study groups ($P > 0.05$).

4.4. Comparison of the Results

The mean total score of HPLP in the experimental and control groups are shown in [Table 4](#).

5. Discussion

According to the results of the current study, the educational intervention affected the health-promoting lifestyle of the spouses of veterans with PTSD, and the intervention could significantly improve health promotion lifestyle of the participants in the experimental group regarding the subscales of physical activity, stress management, spiritual development, and health care responsiveness.

The significant increase in the physical activity of the experimental group after the intervention was consistent with the results of Shayesteh et al. (2011), Jafarpour et al. (2016), and Huang et al. (2016) (28-30). In a different study on pregnant females, Huang et al. (2011) reported the effectiveness of an educational intervention on physical activity (28). Moreover, Maheri et al. (2017) found that the educational intervention could significantly improve physical activity among a group of patients with type-II diabetes (31). Also, there were several studies pointing to the positive effect of educational programs on the promotion of physical wellbeing among various populations of children

Table 2. Demographic Characteristics of the Participants in the Research

	Control Group, %	Experimental Group, %
Age group, y		
< 40	6.1	6.7
40 - 50	66.7	60
> 50	27.3	33.3
Married life duration, y		
< 10	6.1	3.3
10 - 30	69.7	76.6
> 30	24.2	20
Level of education		
Under diploma	66.7	80
Diploma	21.2	13.3
Higher education	12.1	6.7
BMI, kg/m²		
< 25	24.2	33.3
25 - 35	69.7	66.7
> 35	6.1	0
Occupational status, %		
Clerk	3	2
Self-employed	12.1	10
Unemployed	81.9	84
Retired	3	4

Abbreviation: BMI, body mass index.

(32, 33). However, the present study provided evidence regarding the effectiveness of such programs on physical activity of spouses of veterans with PTSD.

Besides, results of the current study showed that the educational intervention significantly improved the mean scores of stress management in the experimental group, which were consistent with those of studies by Rahnejat et al. (2017), Rezaei Ardani et al. (2015), and Jacobsen et al. (2013) (5, 34, 35). Chaudhuri et al. (2015) evaluated the effect of progressive muscular relaxation exercises on the level of stress among postmenopausal females. They reported a significant decrease in the mean score of stress among the subjects; their results were consistent with those of the current study (36). Also, a significant increase was observed in the mean scores of the experimental group in health care responsiveness and spiritual development subscales. It seems that the outcomes of the educational program appeared both in the physical status of the subjects and also in their spiritual mode. This might indicate the comprehensive influence of such programs in terms of

Table 3. Comparison of the Health Promotion Lifestyle Profile Scales Before and Two Months After the Educational Intervention Between Experimental and Control Group

Study Group	Before Intervention (Mean ± SD)	After Intervention (Mean ± SD)	P Value (Pre-and Post Test)
Nutritional diet			
Experimental	21.10 ± 7.5	20.86 ± 3	0.849
Control	18.18 ± 3.7	17.81 ± 3.5	0.021
P value	0.054	0.001	
Physical activity			
Experimental	11.26 ± 3.8	14.53 ± 3.4	< 0.001
Control	12.39 ± 5.3	12.12 ± 5.2	0.027
P value	0.347	0.036	
Stress management			
Experimental	11.60 ± 2.3	13.70 ± 2.2	< 0.001
Control	12.27 ± 2.1	11.30 ± 2.2	0.001
P value	0.238	< 0.001	
Responsibility			
Experimental	23.60 ± 5.8	26.43 ± 5.1	< 0.001
Control	23.75 ± 6.8	23.39 ± 6.4	0.026
P value	0.923	0.045	
Spiritual development			
Experimental	22.93 ± 6.4	23.51 ± 6.3	0.002
Control	22.46 ± 6.8	22.03 ± 6.7	0.017
P value	0.783	0.373	
Interpersonal relationships			
Experimental	22.43 ± 5.6	22.53 ± 5.5	0.264
Control	23.18 ± 6.26	22.96 ± 5.9	0.214
P value	0.621	0.766	

Abbreviations: HPLP, health promoting lifestyle profile; SD, standard deviation.

Table 4. Comparison of the Mean Scores of Health Promotion Lifestyle Profile Before and Two Months After the Educational Intervention Between Experimental and Control Groups

Variable	Control Group (Mean ± SD)	Experimental Group (Mean ± SD)	P Value Pre-Post
HPLP score			
Before intervention	11.25 ± 26.1	112.93 ± 20.6	0.909
After intervention	110.27 ± 24.8	122.52 ± 19.4	0.034
P value between group	0.001	< 0.001	-

Abbreviations: HPLP, health-promoting lifestyle profile; SD, standard deviation.

both physical and emotional aspects of spouses of veterans with PTSD.

Despite of the aforementioned significant improvement in some subscales in the experimental group, results of the current study indicated that the educational intervention could not significantly improve the mean scores of interpersonal relationships and nutritional diet in the

experimental group. However, results of a study by Arazi et al. (2017) on the effect of health-promoting intervention on the lifestyle of adolescents with major thalassemia, indicated improvement and modification of nutritional behaviors after the intervention (27). Also, Maheri et al. (2017) indicated that educational intervention could improve the nutritional aspects of type-II diabetic patients, which is not

in agreement with the results of this study (31). Ineffectiveness of the applied intervention on interpersonal relationships and nutritional diet in the current study could be attributed to the short duration of education and numerous educational items; hence, it is recommended to apply such interventions continuously over a wide interval to improve interpersonal relationships and nutritional diet. Since these variables are complicated, it is better to train and assess individuals in different programs. Besides, the content of the program might be revised in order to include more options focusing on the improvement of interpersonal relationships and nutritional status among the subjects. Nevertheless, complementary treatments might be required to enhance these factors in the subjects receiving educational treatment.

Considering the results obtained from the present study, it is suggested to evaluate the impact of an applied intervention on other psychological disorders to obtain a better understanding of its generalizability and effectiveness. Obtaining required permissions from the Martyrs and Veterans Affairs that has specific criteria and the limited number of samples that participated in the research were the limitations of this study. It is noteworthy to mention that the present study had a major limitation, which was the lack of similar studies on a similar group of subjects. This limitation prevented the authors from drawing logical comparisons with the results of the previous studies. Therefore, future studies are recommended to evaluate the effectiveness of such programs on health promotion lifestyle of spouses of veterans with PTSD in other parts of the world. However, the results of this study may be valuable as they, for the first time as per the literature review, indicating the value of educational programs in order to enhance health-promoting lifestyle among spouses of veterans with PTSD.

5.1. Conclusion

Results of the current study indicated the effectiveness of the applied educational intervention on relative improvement of health-promoting behaviors in the spouses of veterans with PTSD; therefore, it is recommended to apply educational interventions to improve lifestyle and health-promoting behaviors in the spouses of veterans with PTSD. However, the need for further studies in this regard is tangible and according to the great importance of veterans' wellbeing and the highlighted role of families in the promotion of physical and mental health of veterans, it is necessary to design an educational intervention for each patient separately based on the HPLP subscales and apply it comprehensively and continuously. Study of the veterans' families and obtaining required permissions from the

Martyrs and Veterans Affairs, which has strict criteria and the limited number of samples that participated in the research were the limitations of this study.

Acknowledgments

The current manuscript was part of an MSc thesis in psychiatric nursing at Qazvin University of Medical Sciences. The authors acknowledge the spouses of veterans, who cooperated with the study, as well as the Foundation of Martyrs and Veterans Affairs, Gorgan office, and the Research Deputy of Qazvin University of Medical Sciences, Qazvin, Iran.

Footnotes

Authors' Contribution: Study design: Adeleh Sadeghloo, Mohammad Reza Sheikhi, Easa Mohammadi Zeidi, Mahmoud Alipour Heidari, and Mohammad Ebrahim Sarchloo. Data collection and writing of the manuscript: Adeleh Sadeghloo. Data analysis: Adeleh Sadeghloo and Mahmoud Alipour Heidari. Supervised the study: Eissa Mohammadi Zeidi and Mohammad Ebrahim Sarchloo. All authors read and approved the final manuscript.

Conflict of Interest: The authors declare no conflicts of interest.

Funding/Support: The Qazvin University of Medical Sciences financially supported the study.

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