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RESEARCH ARTICLE

The Effect of an Educational Intervention Performed by Volunteers on Knowledge, Attitude and Modification of Dietary Habits among Women

Esmat Rezabeigi Davarani¹, Mohabbat Mohseni², Narges Khanjani³, Farahnaz Yazdanpanah⁴, Salman Daneshi^{5,*}, Kiavash Hushmandi⁶ and Mehdi Raei⁷

¹Health Services Management Research Center, Kerman University of Medical Sciences, Kerman, Iran

²Social Determinants of Health Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran

³Research Center for Environmental Health Engineering, School of Public Health, Kerman University of Medical Sciences, Kerman, Iran

⁴Health Center of Kerman City, Kerman University of Medical Sciences, Kerman, Iran

⁵Department of Public Health, School of Health, Jiroft University of Medical Sciences, Jiroft, Iran

⁶Department of Food Hygiene and Quality Control, Division of Epidemiology and Zoonoses, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran

⁷Department of Biostatistics, Health Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran

Abstract:

Background:

Unhealthy eating habits are an important cause of Non-communicable Diseases (NCDs). One of the most effective methods to prevent these diseases is the use of health education interventions. The aim of this study was to evaluate the effect of educational intervention performed by Women Health Volunteers (WHV) on knowledge, attitude, and modification of dietary habits among women in Kerman.

Methods:

This research was a quasi-experimental study performed on 400 women in Kerman. Participants were selected using multistage cluster sampling. Data were collected immediately before and 6 weeks after the intervention by a questionnaire, including demographic information and questions related to knowledge, attitude, and dietary habits. Data were analyzed using Pearson and Spearman correlation, paired t-test, and Wilcoxon-test in SPSS 24.

Results:

The average age of women was 41.91±12.87 years. Before the intervention, a positive and significant correlation was observed between knowledge and dietary habit ($r=0.249$) ($p<0.001$), knowledge and attitude ($r=0.249$) ($p<0.001$), and attitude and dietary habits ($r=0.264$) ($P<0.0001$). After the intervention, the mean scores of knowledge ($p<0.001$), attitude ($p=0.017$) and dietary habits ($p<0.001$) significantly increased.

Conclusion:

Education provided by WHV was effective in promoting knowledge, and attitude, and in modifying the dietary habits of women. Therefore, the use of local human resources can help improve public health.

Keywords: Education, Volunteers, Knowledge, Attitude, Dietary habits, Non-communicable diseases.

Article History

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1. INTRODUCTION

In recent decades, most low- and middle-income countries are rapidly moving from traditional diets towards a diet rich in saturated fat, sugars, salt, animal, and processed products, and

low in carbohydrates, fibers, fruits, and vegetables [1]. The rapid changes in lifestyle and dietary patterns have contributed to the increasing prevalence of obesity and Non-communicable diseases (NCDs) such as type 2 diabetes, hypertension, cardiovascular diseases, and some cancers [2, 3]. NCDs are responsible for 63% of all deaths globally [4], and the main cause for 76% of deaths in Iran [5]. NCDs are the major cause of mortality and disability in Iran. An unhealthy diet is one of

* Address correspondence to this author at the Department of Public Health, School of Health, Jiroft University of Medical Sciences, Jiroft, Iran; Tel: 03443310916; E-mail: salmandaneshi008@gmail.com

the most important risk factors of NCDs in Iran [6].

The results of a review study showed that the per capita consumption of calories in Iran is more than the recommended daily amount and the per capita consumption of oil is 20% and sugar 38% more than the recommended amounts in the desired food basket. Also, the consumption of vegetables and fruits is 25% less than the recommended amounts [7].

Educational programs play a key role in reducing risk factors for these diseases [8]. Several studies have shown the positive impact of nutrition education on reducing risk factors and a healthy diet [9 - 12].

Community participation is one of the key elements of health promotion [13]. The most successful community participation program in Iran has been the Health Volunteers Plan [14]. Recruiting local women health volunteers (WHV) is an excellent investment for community education, especially in developing country societies with shortages of resources [15, 16].

Employing WHV is one of the most effective strategies for educating households because they are familiar with the culture and customs of the community, and their contributions to health service delivery are accepted by households [17, 18].

In Iran, the WHV Plan was accomplished according to the Declaration of Alma-Ata for community participation in the planning and implementation of health care [19]. The WHV program started in 1990 in the capital of Iran, Tehran, since 1993, this program has been implemented throughout the country [20]. Currently, there are more than 200 thousand health volunteers in Iran [17]. Each volunteer usually covers an average of 50 households from her neighborhood [19]. WHV are women who live in the urban regions covered by health centers who are interested in helping people to improve their health status. They are involved in the delivery of health services to the community without receiving wages [21].

The most important activities of WHV include: educating and delivering health messages and distributing educational materials, collecting demographic and statistical data of vital events, defining health-related issues and trying to solve such problems through community participation and cooperation, encouraging and persuading people to receive health care and following-up on individuals who visit health centers especially: children, pregnant women, and people with chronic diseases, and contributing to the control of infectious diseases such as HIV, malaria, and tuberculosis [17, 22].

The findings of a study in Iran show that the WHV had an appropriate attitude towards a healthy diet [23]. In another study, the attitude of WHV was acceptable regarding family education [24]. Therefore, this made them suitable for educating households.

The participation of health volunteers in education, in addition to improving their capabilities, also, the strengths and weaknesses and the effectiveness of this program are identified and the interventions can be designed to improve the WHV program.

Considering that so far, no study has been conducted on the effect of Kerman WHV on behaviors related to community health; therefore, the aim of this study was to determine the effect of education by health volunteers on the knowledge, attitude, and dietary habits of women in Kerman.

2. METHODS

The current quasi-experimental study was performed on 400 women covered by health centers who were selected by cluster sampling in Kerman in 2017. The city of Kerman was divided into 4 regions and a health center was selected from each region randomly. Then, from each health center, 10 active volunteers (A total of 40 volunteers) were selected. Each volunteer was responsible for educating 10 women. The volunteers cooperated with the selected health centers and routinely participated in various training sessions of that center. The list of active volunteers was obtained from the relevant center. The volunteers selected for training had already received the necessary training, the results of which were published in a separate study [25].

The women who participated in the study were randomly selected from the health center registry system.

The inclusion criteria were being literate, and able to participate in group discussions and respond to the questions. Informed consent was inquired from all participants before the intervention. In order to ensure confidentiality, information was encoded and kept anonymous.

Educational content, a collection of materials related to the role of nutrition in the prevention of chronic non-communicable diseases, including limiting the consumption of salt, fat and oil, simple sugars, processed meats and increasing fiber intake (whole grains, legumes, fruits and vegetables), low dairy fat and fish, an avoidance of overeating and obesity, was prepared by the researcher and provided to the volunteers. For more information, educational booklets published by the Ministry of Health were also used.

In these sessions, in order to increase general awareness about nutrition, the role of nutrition in the prevention of non-communicable diseases was taught through lectures and educational materials were distributed. Questions were answered at the end of each session.

Also, in order to create a positive attitude and correct misconceptions about nutrition and cooking, a group discussion for idea-sharing was organized and the personal experiences of the participants were recounted.

During the training sessions, an attempt was made to actively involve all participants in the discussions by facilitating appropriate communication in order to motivate them enough to learn, reconsider their thoughts, attitudes and past actions, and ultimately change their behavior.

Data were collected before the intervention using questionnaires. The educational content and material were used according to the results of the analysis, and of the fields about which participants were needed to be educated.

The educational sessions were conducted by group discussions held by health volunteers at the health centers for 8 weeks (2 hours a week) and educational materials such as tracts and pamphlets were provided. Six weeks after the last session, participants completed the questionnaire for a second time (post-test).

2.1. Instruments

Data were collected by a questionnaire consisting of demographic information (age, weight, height, level of

education, and financial status satisfaction), knowledge (13 items), attitude (14 items), and dietary habits (10 items).

Knowledge was assessed by 13 questions with three answer options: (correct, wrong, and I don't know). Each correct answer was scored 1, and the wrong and "I don't know" answers were scored zero. The attitude was measured on a five-point Likert scale ranging from 'completely disagree' (scored 1) to 'completely agree' (scored 5). Dietary habits were also measured on a five-point Likert scale ranging from 1 (never) to 5 (always).

Inverse questions were assessed based on the Likert scale with a range of 5 (strongly disagree) to 1 (strongly agree) and eating habits from 5 (never) to 1 (always).

The validity and reliability of this questionnaire were confirmed in a previous study [25].

2.2. Anthropometric Measures

The height of the participants was measured by a tape meter fixed on the wall, in the standing position and without shoes. Weight was measured with a digital scale with minimum clothing, and no shoes . Body Mass Index (BMI) was calculated by dividing weight in kilograms by the square of height in meters. These analyses were performed by SPSS version 21. BMI <18.5, 18.5-24.9, 25-29.9, and 30 or more were considered as underweight, normal, overweight and, obese, respectively [26].

2.3. Statistical Analyses

Central and dispersion indices (mean, standard deviation,

percent, and frequency) were calculated. Data analysis was performed using SPSS version 24. Statistical analyses were performed using Pearson correlation, paired t-test, independent t-test, one- way ANOVA, and linear regression. The significance level was considered $p < 0.05$.

3. RESULTS

Fourteen participants decided to leave the study, and therefore the data of 386 participants were analyzed. The mean age of the participants was 41.91 ± 12.87 and the range of age participants was from 20 to 75 . Moreover, 10.10% were obese and 38.60% were overweight and the mean body mass index was 25.17 ± 4.14 . Other demographic characteristics of the study group are presented in Table 1.

Before the educational intervention, a positive and significant correlation was observed between knowledge and dietary habit ($r=0.249$) ($p < 0.001$), knowledge, and attitude ($r=0.249$) ($p < 0.001$), and attitude and dietary habits ($r=0.264$) ($P < 0.001$). This means that higher knowledge and a positive attitude led to better dietary habits.

The results of linear regression analysis between socio-demographic and other variables showed that before the educational intervention, there was a significant relationship between education and income variables and health status with dietary habits and attitude ($P = 0.00$), But there was no significant relationship with marital status ($P = 0.08$). In the dimension of knowledge, there was a significant relationship with the level of education alone ($P = 0.01$). Also, the results of linear regression analysis of socio demographic and other variables showed that after the educational intervention, there

Table 1. The distribution of demographic characteristics of the participants.

| | Variables | Numbers(percentage) |
|------------------------------------|------------------------|---------------------|
| BMI | Underweight(<18.5) | 18(4.66) |
| | Normal(18.5 to 24.9) | 180(46.63) |
| | Overweight(25 to 29.9) | 149(38.60) |
| | Obese(>30) | 39(10.10) |
| Education | Less than diploma | 130(33.67) |
| | High school diploma | 140(36.26) |
| | Academic | 116(30.05) |
| Training history | Yes | 53(13.7) |
| | No | 333(86.3) |
| Satisfaction with household income | Satisfied | 53(13.73) |
| | A little satisfied | 187(48.44) |
| | Dissatisfied | 146(37.82) |
| Marital status | Single | 30(7.8) |
| | Married | 321(83.2) |
| | Other | 35(9.1) |
| Health status assessment | Very good or good | 155(40.2) |
| | Neither good nor bad | 191(49.5) |
| | Very bad or bad | 40(10.4) |

Table 2. Comparison of Mean±SD of scores before and after the intervention.

| Variables | Minimum | Maximum | Before the Intervention | After the Intervention | p-value* |
|----------------|---------|---------|-------------------------|------------------------|----------|
| | | | (Mean±SD) | (Mean±SD) | |
| Knowledge | 0 | 13 | 9.83±2.58 | 10.93±2.25 | <0.001 |
| Attitude | 14 | 70 | 50.65±7.00 | 51.73±5.58 | 0.017 |
| Dietary habits | 10 | 50 | 32.73±4.98 | 33.97±4.45 | <0.001 |

*Paired t-test

was a significant relationship between the level of education and knowledge and attitudes and behaviors ($P < 0.05$).

Table 2 shows the mean values of knowledge, attitude and dietary habits of women which significantly increased after the intervention.

Before the intervention, there was a statistically significant difference between the level of education with the average level of knowledge ($p = 0.008$), attitude ($P < 0.0001$) and dietary habits ($P < 0.0001$) (Table 3).

There was a statistically significant difference between the mean of healthy dietary habits in people who received previous training with the group who had no training history ($p = 0.046$).

There was a statistically significant difference between the level of satisfaction with the economic situation with the mean of eating habits ($P < 0.0001$) and attitude ($p = 0.004$). This difference between awareness and satisfaction with the economic situation was not significant ($p = 0.895$).

There was a statistically significant difference between the assessment of health status with the mean of dietary habits ($P < 0.0001$) and knowledge ($p = 0.006$) and attitude ($p = 0.003$).

4. DISCUSSION

The present study was conducted with the aim of determining the impact of education provided by health volunteers on knowledge, attitude, and modification of dietary habits among women.

In this study, before the intervention, most of the participants had an appropriate level of knowledge. This can be related to training health volunteers and health care staff after integrating diabetes and blood pressure screening programs in Iran, as well as to women's access to various educational resources.

The results of this study showed that there were significant positive correlations between knowledge, attitude, and dietary habits. A systematic review showed that the majority of previous studies reported significant positive relations between nutrition knowledge and dietary intake [27].

In this study, the level of knowledge, attitude and healthy dietary habits were higher in people with higher education.

Also, people who reported receiving training had healthier dietary habits, which indicates the effect of education on the promotion of health-related behaviors. In the studies by Hendrie *et al.*, in Australia [28] and Vriendt *et al.*, in Belgium [29], people with higher education had more nutritional knowledge.

The findings of this study showed that the mean score of knowledge, attitude, and dietary habits improved after the intervention, and this can show the effectiveness of the educational intervention performed by health volunteers.

In Iran, several studies reported some evidence for the effectiveness of health volunteer programs on promoting health-related behaviors. For example, in a study conducted in the city of Yazd, knowledge, attitude, and behavior about cardiovascular health and nutrition among women significantly increased after receiving education from health volunteers [30].

A study about evaluating the WHV program in Iran showed that this program had made many great achievements including increasing public participation, particularly of women, increasing health literacy, and increasing the coverage and utilization of health services [17].

In a study, Neupane *et al.*, showed that health education provided by community health volunteers resulted in significant reductions in high blood pressure cases in individuals with hypertension [31]. In another study, health education provided by community health volunteers, made significant improvements in patients with type 2 diabetes [32].

In this study, a change in the eating habits like less consumption of salt, separating excess fats from meat and boiling food and consumption of fruits and vegetables occurred by providing training by volunteers and a significant difference was observed in the mean of these items compared to before the intervention. In a study in Chabahar, after the implementation of the training program by local volunteers, salt consumption during cooking and the use of table salt in the intervention group reduced [33].

The results of a study by Luger *et al.*, in Austria showed that volunteer training intervention resulted in a significant reduction of dietary disorders in the study group [34].

Table 3. Mean±SD of scores and frequency of dietary habits before and after the intervention.

| Dietary Habits | | (Mean±SD) | Always/most of the Time | Sometimes | Seldom/never | p-value* |
|---------------------------------------|-----------|-----------|-------------------------|-----------|--------------|----------|
| Consumption of low-fat dairy products | Pre-test | 3.71±0.97 | 230(59.6) | 112(29) | 44(11.4) | 0.678 |
| | Post-test | 3.74±0.96 | 235(60.8) | 110(28.4) | 41(10.6) | |

(Table 3) contd....

| | | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|--------|
| Removing fat from meat | Pre-test | 3.69±1.14 | 226(58.5) | 104(26.9) | 56(14.5) | 0.0001 |
| | Post-test | 3.96±0.98 | 264(68.3) | 90(23.3) | 32(8.2) | |
| Adding Salt while eating | Pre-test | 3.19±1.27 | 105(27.2) | 125(32.3) | 156(40.4) | 0.0001 |
| | Post-test | 3.45±1.08 | 59(15.2) | 113(29.2) | 214(56.2) | |
| Consumption of hydrogenated vegetable oils | Pre-test | 3.61±1.28 | 70(18.13) | 106(27.4) | 210(54.4) | 0.089 |
| | Post-test | 3.72±1.05 | 43(11.1) | 114(29.5) | 229(59.3) | |
| Paying attention to food product labels | Pre-test | 2.32±1.26 | 73(18.9) | 81(20.9) | 232(60.1) | 0.838 |
| | Post-test | 2.34±1.27 | 75(19.4) | 82(21.2) | 228(59.3) | |
| Consumption of boiled or steamed food | Pre-test | 3±1.04 | 115(29.7) | 160(41.4) | 111(28.7) | 0.001 |
| | Post-test | 3.24±1.04 | 157(40.6) | 146(37.8) | 83(21.5) | |
| Consumption of fast food | Pre-test | 3.76±0.87 | 24(6.2) | 107(27.7) | 255(66) | 0.603 |
| | Post-test | 3.80±0.84 | 21(5.4) | 103(26.6) | 262(67.8) | |
| Consumption of white meat (chicken and fish meat) | Pre-test | 3.45±0.82 | 178(46.1) | 170(44) | 38(8.9) | 0.599 |
| | Post-test | 3.48±0.80 | 183(47.4) | 169(43.7) | 34(8.8) | |
| Consumption of nuts as snacks | Pre-test | 2.91±0.93 | 89(23) | 179(46.3) | 118(30.5) | 0.569 |
| | Post-test | 2.95±0.92 | 84(21.7) | 195(50.5) | 107(27.7) | |
| Eating fruits/vegetables at least three times a day | Pre-test | 3.05±1 | 119(30.8) | 154(39.8) | 113(29.2) | 0.005 |
| | Post-test | 3.26±1.01 | 161(41.7) | 138(35.8) | 87(22.6) | |

Paired t-test *

The results of this study showed that despite the increase in the average daily consumption of nuts and white meat and the decrease in the consumption of fast food and solid vegetable oil, the difference was not significant compared to that observed before the intervention. Given that the group who were not satisfied with their economic situation had lower average healthy dietary habits and most of the people were dissatisfied with their financial situation or were somewhat satisfied, this can affect the preparation of healthy food. In the Acheampong and Haldeman study, the most common barrier to healthy eating reported by the women in the study was the cost of healthy foods [35].

However, despite the success of the health volunteers' program in some research, in a study carried out in Lenjan city, Iran did not show a significant change in any health indicators [36]. Various factors, such as inadequate training of volunteers, being unknown to the community, the lack of cooperation of some households with volunteers, weakness in monitoring and evaluation of the program, and inefficient maintenance are reasons that may have affected the success of these programs [17, 21].

5. LIMITATIONS

Due to the fact that health volunteers have a close relationship with the population covered, despite the anonymity of the questionnaires, the participants might not get their real attitudes and performance registered in the questionnaire. Also, due to time constraints, the evaluation period of the results in this study was considered 6 weeks after the educational intervention. In future researches, in order to better evaluate the training outcomes, the follow-up period can be extended.

CONCLUSION

The results of the study showed that the education provided by WHV has been effective in promoting knowledge,

attitude and the dietary habits of women. The use of local human resources due to low cost is affordable in societies with limited resources. Therefore, it is recommended that health policymakers promote and empower community participation.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethics Committee of University of Medical Sciences, Iran. Ethics code: K/94/20.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Written informed consent was obtained from each participant prior to the study.

AVAILABILITY OF DATA AND MATERIALS

The raw data and materials used to support the findings of this study are with the the corresponding author [S.D] and can be made available upon request.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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