

Health volunteers' knowledge of cardiovascular disease prevention and healthy lifestyle following a community trial: Isfahan healthy heart program

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ABSTRACT

Background: Health volunteers can have a great effect by training the population about prevention of cardiovascular disease (CVD) and lifestyle modification. This study evaluated the health volunteers' knowledge following the "Isfahan Healthy Heart Program (IHHP)" that was performed between 2000 and 2006. **Materials and Methods:** In this study, 491 females were selected among health volunteers in the Isfahan and Najafabad districts as intervention areas and Arak as a reference area through 2000-2001 until 2006. They participated in training courses on CVD, its complications, methods of prevention of risk factors control as well healthy lifestyle promotion. The health volunteers' level of knowledge was assessed before and after training. **Results:** Before intervention, there was no significant difference between the scores of health volunteers in the intervention and the control regions in terms of knowledge about recognizing the symptoms, complications and prevention of CVD and relevant risk factors and healthy lifestyle. However, their knowledge scores increased significantly in the fields of CVD ($\beta = 0.13$, $P = 0.04$), hypertension ($\beta = 0.18$, $P = 0.009$), healthy nutrition ($\beta = 0.19$, $P = 0.007$), appropriate physical activity ($\beta = 0.17$, $P = 0.01$) and dealing with stress ($\beta = 0.16$, $P = 0.02$) after trainings. **Conclusion:** The 6 year interventional program of IHHP showed that training health volunteers on prevention of CVD, their risk factors and modification of lifestyle continued to be effective even in a long time.

Key words: Cardiovascular diseases, health training, health volunteers

INTRODUCTION

Non-communicable diseases comprise 43% of all diseases and are expected to be the cause of 60% of diseases and 73% of

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Access this article online

Quick Response Code:



Website:
www.jehp.net

DOI:
10.4103/2277-9531.134761

the world's total deaths up to 2020.^[1] In developing countries like Iran, the prevalence of non-communicable diseases, especially cardiovascular diseases (CVDs), is considerably growing.^[2] Most of the scientific communities recommend primary prevention, including the promotion of public knowledge about diseases and their risk factors as the most fundamental and cost-effective method for control of CVD.^[3-5] Numerous community-oriented intervention programs have been performed in Iran and other parts of the world in order to increase the knowledge and attitude of communities and subsequent performance of individuals in the prevention of CVD and their risk factors.^[4,6-8] In this regard, one effective intervention for increasing the knowledge and attitude of communities is the contribution of health volunteers in the transfer of teachings to the public.^[8]

The Isfahan Healthy Heart Program (IHHP) is a comprehensive and community-oriented intervention program that used

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This article may be cited as: Roohafza H, Khani A, Sadeghi M, Bahonar A, Sarrafzadegan N. Health volunteers' knowledge of cardiovascular disease prevention and healthy lifestyle following a community trial: Isfahan healthy heart program. J Edu Health Promot 2014;3:59.

various interventional strategies to improve health and prevent CVD.^[8-10] The program efficiently used the potentials in the society in order to achieve its goals. It is noteworthy that one of the qualifications of the health system in Iran is the presence of health volunteers. In 1990, the Ministry of Health in Iran designed and implemented the health volunteers program in large cities of the country, and all health volunteers were female. Health volunteers bridge the gap between health authorities and different levels of the society,^[11] and play an important role in the promotion of health knowledge of the society.^[12] Trainings that healthy volunteers receive can be more perdurable in order to transfer their knowledge to the society.

One of the IHHP interventional strategies was a project designed for healthy volunteers and non-governmental organizations^[12] in order to train and empower health volunteers and transfer teachings on CVD and their risk factors and healthy lifestyle promotion to people through training health volunteers. The present study was conducted to compare the health volunteers' level of knowledge about prevention of CVD and their risk factors and modification of lifestyle before and after IHHP that lasted for 6 years.

MATERIALS AND METHODS

This study was carried out based on the results of the health volunteers' project of IHHP through primary (2000-2001) and final surveys (2007). In this study, 491 people, all female, were selected among healthy volunteers in Isfahan, Najafabad, and Arak using a multistage random cluster sampling method. Details of this study have been reported before.^[8,10] In this study, Isfahan and Najafabad were chosen as the intervention regions and Arak was chosen as the control region. All the selected districts are located in central Iran. The population of the health volunteers was approximately 800 in Arak, 1200 in Isfahan and 1000 in Najafabad. About 5-10% of each cluster's health volunteers were included in the study randomly. According to the clusters of each district, 160 and 172 females from Isfahan and Najafabad and 159 females from Arak were selected. All the health volunteers participated in the primary survey. The exclusion criterion of the study was unwilling of the participants. In both stages of the study, the participants submitted a written consent. The study was accredited by the Ethics Committee of the Isfahan University of Medical Sciences.

Measurement instruments

In order to assess the health volunteers' level of knowledge in the primary survey of 2000-2001, a questionnaire was used that contained demographic information, knowledge about detecting symptoms, complications and treatment of CVD, hypertension, diabetes and a healthy lifestyle, including healthy diet, proper physical activity, tobacco control and detecting stress and ways to deal with it. The number of questions related to CVD, hypertension, diabetes, nutrition, physical activity, tobacco and stress was 5, 14, 10, 15, 3, 5 and 3, respectively. Each correct answer was assigned 1 point and

each incorrect answer was assigned a zero score. The score of each participant in each field was calculated from the total score of the questionnaire in that field out of 100. Reliability of the questionnaire was confirmed by the Medical Education Development Center affiliated to the Isfahan University of Medical Sciences.^[8,10]

Training the health volunteers was integrated within their regular courses that were held as monthly classes, books, posters and pamphlets and face-to-face training by those in charge of education in Isfahan and Najafabad. Those responsible for training included physicians and health professionals in each field of training.^[8,12]

In the final survey of the program in 2007, and after providing training programs, the health volunteers' level of knowledge was again assessed using the same questionnaire.

Statistical analysis

The collected data were entered into a computer using Epi Info and analyzed using SPSS 15 software. The scores of health volunteers' level of knowledge were reported as mean \pm standard deviation.

A univariate general linear model (GLM) was used for each item of knowledge as dependent variable and the stages of the study (primary in 2000-2001 and finally in 2007) and age as fixed factors. The GLM was calculated in order to examine the effect of time (stages) and the intervening regions (groups) and their interaction (stage \times group) on the knowledge score of the healthy volunteers. A *P* value of 0.05 or less was considered statistically significant for all analyses.

RESULTS

Health volunteer's age, marital status and level of education are shown in Table 1 for each region. As shown in the table, there is a significant difference between mean age, marital status and level of education of the volunteers in the intervening regions and those of volunteers in the control region.

Table 1: Demographic information of the health volunteers based on their living area

	Intervention (n=332)	Reference (n=159)	<i>P</i> value
Age (mean \pm SD) years	33.20 \pm 4.91	29.68 \pm 4.31	0.002
Age (years)			
<40	248 (74.6%)	140 (88.1%)	0.048
\geq 40	84 (25.4%)	19 (11.9%)	
Marital status			
Married	303 (91.3%)	109 (68.6%)	\leq 0.001
Single	29 (8.7%)	50 (31.4%)	
Level of education			
Graduated	313 (94%)	133 (83.6%)	\leq 0.001
Under graduated	20 (6%)	26 (16.4%)	

SD = Standard deviation

Before intervention, there was no significant difference between the scores of health volunteers in the intervention region and those in the control region in terms of knowledge about recognizing the symptoms, complications and treatment of CVDs, hypertension, diabetes and the ways to control the risk factors of CVDs, including proper physical activity, tobacco control and detecting stress and ways to deal with it. There was only a significant difference between knowledge score related to healthy nutrition of the health volunteers in the intervention region and that of those in the control region. Variations in health volunteers' knowledge scores of CVD and its risk factors as well as healthy lifestyle behavior increased significantly in the intervention regions and the control region from the primary survey of 2000 to the final survey of 2007. These variations are shown in Table 2.

The interaction between the groups and time was significant in the fields of knowledge about CVDs ($\beta = 0.13, P = 0.04$), hypertension ($\beta = 0.18, P = 0.009$) and the ways to control risk factors of CVDs, like healthy nutrition ($\beta = 0.19, P = 0.007$), appropriate physical activity ($\beta = 0.17, P = 0.01$) and stress and ways to deal with it ($\beta = 0.16, P = 0.02$), although no significant interaction was observed for diabetes and tobacco control in this regard.

DISCUSSION

Using the existing health structure or resources to integrate healthy lifestyle interventions was one of major IHHP strategies performed in most of its projects.^[6] This has led to avoiding extra economic or human resources needed to perform IHHP intervention activities.

Based on the results of the present study, there was a significant difference between the knowledge of health volunteers in the intervention region and those in the control region, after the intervention, regarding prevention of CVDs, hypertension and control of risk factors including healthy nutrition, proper physical activity and ways to deal with stress. This shows that the training programs provided to the health volunteers were effective even after 6 years.

In an interventional study performed in Birjand, Iran, in 2007, on the knowledge level of healthy volunteers about healthy lifestyles, healthy diet, physical activity, ways to deal with stress and life skills, the health volunteers' level of knowledge has increased after the eight 2-h sessions.^[13] Moreover, another study examined the effect of training on the knowledge, attitude and behavior of health volunteers in the field of physical activity, and found that the educational

Table 2: Interaction of knowledge about non-communicable diseases and their risk factors in health volunteers based on the region and the year of intervention

	Before intervention 2000-2001	After intervention 2007	Group	Stage	Group×stage
Knowledge about recognizing the symptoms, complications and treatment of cardiovascular diseases					
Int*	60.5±1.9	86.8±1.9	$\beta=0.05,$	$\beta=0.16,$	$\beta=0.13,$
Ref	49.5±1.8	50.2±2.1	$P=0.06$	$P=0.03$	$P=0.04$
Knowledge about recognizing the symptoms, complications and treatment of hypertension					
Int	59.8±1.8	87.3±1.3	$P=0.27,$	$\beta=0.16,$	$\beta=0.18,$
Ref	40.2±1.4	42.7±2.9	$\beta=0.04$	$P=0.02$	$P=0.009$
Knowledge about recognizing the symptoms, complications and treatment of diabetes					
Int	50.6±1.5	74.1±1.5	$\beta=0.03,$	$\beta=0.26,$	$\beta=0.03,$
Ref	47.5±1.7	73.9±3.0	$P=0.17$	$P=0.000$	$P=0.56$
Knowledge about healthy nutrition					
Int	59.2±1.4	84.8±1.5	$\beta=0.08,$	$\beta=0.17,$	$\beta=0.19,$
Ref	56.8±1.6	62.7±3.8	$P=0.000$	$P=0.03$	$P=0.007$
Knowledge about appropriate physical activity					
Int	70.5±2.0	84.6±2.1	$P=0.22,$	$\beta=0.18,$	$\beta=0.17,$
Ref	66.8±2.3	78.3±5.6	$\beta=0.04$	$P=0.04$	$P=0.01$
Knowledge about tobacco hazards and ways of tobacco control					
Int	60.2±1.7	90.8±1.8	$P=0.11,$	$\beta=0.29,$	$P=0.77,$
Ref	55.9±2.0	84.8±3.8	$\beta=0.04$	$P=0.000$	$\beta=0.02$
Knowledge about stress and ways to deal with it					
Int	59.8±1.6	87.1±2.1	$P=0.15,$	$\beta=0.18,$	$P=0.02,$
Ref	40.2±1.2	52.9±2.2	$\beta=0.05$	$P=0.000$	$\beta=0.16$

*Int = Intervention, Ref = Reference

intervention increased the knowledge of health volunteers and promoted their behavior.^[14] A study performed in Chile on health volunteers' knowledge about healthy nutrition for the purpose of preventing non-communicable diseases showed that the health volunteers needed continuing education in the field of healthy nutrition, and it was observed in the follow-up that recent trainings increased the knowledge of the health volunteers and promoted their performance. Furthermore, the above study found that the health volunteers without academic education required training more than those with academic education.^[15] The results of the present study were similar to the results of the above studies as the continuous educational intervention was effective in promotion of health volunteers' knowledge about preventing CVD risk factors and modifying lifestyle even after 6 years.

Considering the World Health Organization's strategies based on solving health problems by people themselves, the Ministry of Health (MOH) in Iran has executed the health volunteers' project in large cities of Iran with the collaboration of UNICEF. The purpose of this project was to make people contribute to provide and promote their health. The health volunteers in this project were women transferring health messages to their family members and neighborhoods.^[16,17] Despite the fact that the MOH is responsible for the provision of health care of the community, studies have proven that the contribution of each member of the society is needed to achieve a stable social development. Provision and promotion of healthcare require public contribution. Health volunteers are pioneers of this contribution, taking steps voluntarily to provide and promote health care of the community.^[16] In an interventional study performed in Isfahan for 1 year about stress and ways to deal with it, with healthy volunteers, enhanced stress detection and ways to deal with it in the studied families. Therefore, transfer of information to families by health volunteers is of special effect.^[18] Another study in Muang, Thailand, examined the efficiency of training by health volunteers who went to diabetic patients' homes every 2 weeks for 3 months. The results of the above study showed that the mean score of the health volunteers' knowledge about diabetes increased significantly after participating in the study. There was also an increase in the mean score of the diabetic patients' knowledge about diabetes and self-care behaviors.^[19] However, the results were observed after a short term of training, while our study benefits from a long time of training, and showed positive results over a longer time, while there was no financial burden added to the existing health system.

Limitations of the study

Assessment of the level of knowledge is necessary, although it is not the only reliable of the efficiency of training. We will report changes in the practice and behaviors of health volunteers separately.

CONCLUSION

Regarding the results of this study, the educational intervention increased the health volunteers' knowledge

about CVDs, their risk factors and lifestyle behaviors in the long run. In this respect, holding training courses on the prevention of other non-communicable diseases and their risk factors for healthy volunteers seems necessary in order to improve their level of knowledge and provide more community-oriented services.

ACKNOWLEDGMENTS

This study is part of the "Isfahan Healthy Heart Program," which was supported by grant no. 31309304 with collaboration of the Health Deputy of Ministry of Health, Isfahan Cardiovascular Research Center (ICRC), the provincial health center, and Planning and Budget Organization. The authors would like to extend their thanks to the ICRC staff for their assistance.

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Source of Support: This study has been supported by project no. 81124, Isfahan Cardiovascular Research Institute, **Conflict of Interest:** None declared