Effect of Education Intervention on Lifestyle of Patients with Hypertension among the Rural Population of Lorestan Province

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Background: Hypertension is one of the most common chronic health problems across the world, resulting in significant global responsibility in developed and developing countries. The aim of this study was to survey the effect of educational intervention on the lifestyle of patients with hypertension.

Methods: This study was a case-control intervention study on 86 patients with hypertension that were selected by simple random sampling from the rural regions of Aligoudarz County in Lorestan Province. Before the intervention, both groups completed the standard questionnaire of HPLP II; two months after the intervention, both groups completed the same questionnaire. The results were analyzed using SPSS software, t-test, and Chi-square test.

Results: The mean age and standard deviation in case and control groups were 59.95 ± 7.9 and 64.51 ± 9.2 years, respectively. The mean of the total lifestyle scores was significantly increased in the case group compared with the control group ($p < 0.05$). In addition, the average scores for the three dimensions of physical activity, nutrition, and stress management after educational intervention in the case group compared to the control group showed a significant increase ($p < 0.05$, for all).

Conclusion: Based on the relationship between lifestyle and hypertension, it seems that implementing educational programs in the fields of nutrition, physical activity, and stress management is essential to improvement in disease knowledge and behavior modification among patients with hypertension.

Key Words: Hypertension, Lifestyle, Educational intervention

INTRODUCTION

Hypertension is a chronic problem in the global health field [1] and has resulted in a significant global responsibility in developed and developing countries [2]. Research has shown that the prevalence of this disease in all countries is increasing, with an annual death rate of 1.7 million people worldwide [3]. Hypertension is a common, asymptomatic disease that is usually easy to treat; however, if left untreated, it often leads to fatal complications [4]. Although

accurate statistics on the prevalence of hypertension are not available in Iran; the prevalence of hypertension has been reported to be 11% in Isfahan, 17% in Chaharmahal Bakhtiari, 16.6% in Gilan, 17.5% in Zanjan, 6.26% in Kermanshah, and 18.9% in Arak [5].

According to statistics from the Ministry of Health and Medical Education in Iran, 20 of every 100 adults have high blood pressure; half of these patients are not aware of their conditions, and only 5 of them are currently receiving treatment. In other words, 75% of individuals with hypertension are not treated. This issue is not limited only to Iran, but is also reported in developed countries [6].

Hypertension is defined as a systolic blood pressure higher than 140 mm Hg and diastolic blood pressure above 90 mm Hg. One of the most important causes of hypertension is related to lifestyle choices [7,8]. An individual's level of knowledge and his or her understanding of the risk factors of the disease as well as the motivation to reduce them can improve health and prevent disease through lifestyle changes [9]. Lifestyle has always been a focus of health education and promotion [10]. The World Health Organization considers lifestyle as the specific patterns of behavior events that result from the interactions between personal characteristics, social relations, environmental conditions, and socioeconomic circumstances [11,12].

An individual's lifestyle plays a significant role in the development of hypertension. Studies have demonstrated that nutrition monitoring, physical activity, stress, smoking, weight control, rest, and sleep are particularly important lifestyle factors. An emphasis on the significance of lifestyle modification in blood pressure control and treatment is crucial; accordingly, the seventh report of the Joint National Committee (JNC7) on prevention, detection, evaluation, and treatment of high blood pressure considers inadequate attention to health education by health workers and a lack of health education coverage in society as the most important barriers to prevention, control, and treatment of hypertension [13].

Given that one of the basic tools in changing a patient's lifestyle is the presence of patient education programs as a part of the care system [14,15], ongoing training is regarded as an essential part of the monitoring and treatment of high blood pressure and might need to be repeated or modified in order to address changing circumstances and patient conditions [3,16]. The importance of training programs depends on their effectiveness; however, in the presence of appropriate theoretical support along with basic health needs, the effectiveness of these programs is greater [17].

Given the importance of healthy lifestyles and their considerable impact on disease prevention and health maintenance, this study aimed to survey the effect of educational intervention on lifestyle modifications in patients with hypertension in the city of Aligudarz in Lorestan Province, Iran, in 2014.

MATERIALS AND METHODS

This study was quasi-experimental and was conducted from November 2013 to June 2014, in the rural regions of Ghaman Sultan (30 people), Doozan (28 people), and Soor (28 people) in the township of Aligudarz in Lorestan Province, Iran. The sample consisted of 86 hypertensive patients divided into case and control groups (43 individuals in each group) using simple random sampling. The data were collected from interviews through a standard questionnaire of HPLP II, whose content validity and reliability (α = 0.87) were confirmed in a study by Morovati et al. [18]. This questionnaire contains two parts: 1. Demographic variables assessed with 30 questions, including questions on age, sex, marital status, occupation, and education; 2. Data on lifestyle, including 52 questions with answers ranging from never, sometimes, often, and always, which measure the frequency of health-promoting behaviors in 6 components of health responsibility (9 items), spiritual growth (9 items), physical activity (8 items), nutrition (9 items), interpersonal communication (9 items), and stress management (8 items).

The inclusion criteria for the study were comprised of: 1. A diagnosis of hypertension by a physician, 2. Completion of the consent form, 3. Adequate time to attend training sessions, and 4. Age 35 years or older. Exclusion criteria were: 1. Patient death, 2. Dissatisfaction with continued presence in the study, and 3. Lack of access due to patient travel.

In order to comply with research ethics, this study was approved by the ethics committee at Ilam University of

Medical Sciences, and the research purpose was delineated for the participants before its implementation stages. At the beginning, a pre-test was administered to both case and control groups; then the case group was divided into three groups with 15 subjects each. Two months after the fourth training session of the case group, both case and control groups received the post-tests.

Data were analyzed via statistical tests including the t-test and Chi-square test as appropriate using SPSS software with a significance level of 0.05.

RESULTS

The mean and standard deviation of age in both case and control groups were 59.95 ± 7.9 and 64.51 ± 9.2 years; respectively. The independent t-test showed no significant difference in the mean age between the two groups (p = 0.47).

The mean and the standard deviation of blood pressure were 15.19 ± 1.02 in the case group and 14.47 ± 1.22 in the control one. The independent t-test revealed no sig-

nificant difference in blood pressure between the two groups before intervention (p = 0.13).

The Chi-square test showed no significant difference between the two groups in terms of sex, marital status, education, occupation, family history of hypertension, or personal history of hypertension (p > 0.05) (Table 1).

The Chi-square test showed that the consumption of salt as well as fatty and fried foods considerably and significantly decreased after intervention in the case group (p = 0.01) compared to the control group (p = 0.17). Fruit and vegetable intake after educational intervention in the case group (p = 0.05) showed a significant increase compared to the control group (p = 0.6).

The results of the independent t-test between the case and control group revealed no significant difference between the mean scores of the two groups in terms of total lifestyle, physical activity, nutrition, or stress management before the training (p > 0.05); this relationship was significant two months after the intervention (p < 0.05) (Table 2).

The paired t-test results demonstrated that the mean scores of total lifestyle, physical activity, nutrition, and

Table 1. Distributions of absolute and relative demographic variables between the case and control groups

Variable		Case Group N (%)	Control Group N (%)	Chi-square test
Sex	Male	16 (37.2)	17 (39.5)	0.8
	Female	27 (62.8)	24 (60.5)	
Education	Less than High School	23 (51.15)	24 (53.5)	0.2
	High School Graduate	0 (0)	2 (3.45)	
Occupation	Farmer	11 (26.7)	16 (37.2)	0.51
	Housewife	17 (39.5)	18 (43.5)	
Family history of disease		22 (51.2)	23 (53.5)	0.29
Personalhistory of hypertension		23 (53.5)	21 (48.8)	0.94
Marital status (Married)		33 (76.7)	33 (76.7)	0.72

Table 2. Comparison of meansand standard deviationsin case and control groups before and after the intervention

Dimensions		Case Group	Control	Independent t-test
Total lifestyle	Before	135 ± 19.54	137 ± 20.83	p-value = 0.73
	After	159 ± 22.57	142 ± 20.81	p-value = 0.061
Physical activity	Before	16.09 ± 4.5	16.04 ± 4.6	p-value = 0.52
	After	24.7 ± 66.5	21.4 ± 84.8	p-value = 0.01
Nutrition	Before	24.3 ± 43.6	26.51 ± 4.04	p-value = 0.91
	After	30.5 ± 2.8	29.27 ± 3.3	p-value = 0.05
Stress management	Before	19.3 ± 43.8	20.02 ± 4.1	p-value = 0.77
	After	25.7 ± 3.7	23.5 ± 3.8	p-value = 0.09

stress management were significantly increased two months after the intervention (p < 0.05) (Table 3).

DISCUSSION

Based on the findings of this study, educational intervention has an effect on lifestyle for patients with hypertension.

In this study, the mean total score for lifestyle increased by 24 points. Similar results were reported in a study by Goodfrey Katende et al. In a study by Owji et al., lifestyle and self-monitoring scores increased after the intervention; blood pressure rates also increased [19,20].

Lifestyle should be viewed as a complex combination of actions and behavior habits in individuals and groups, especially in terms of cultural and socioeconomic conditions, social communications, and personality [21].

Teaching proper nutrition can help reduce death rates as well as disability from chronic hypertension. In this respect, studies conducted in the U.S., Syria, Japan, and Iran indicate the existence of improper nutritional habits and insufficient knowledge of proper nutrition [13]. In the present study, the mean score of nutrition in the case group rose by 16.6 after training. The results of a study by Najimi et al. showed that blood pressure was reduced in the case group after three months of nutritional education [22]. A study by Liang et al. has revealed identical results [23].

Several studies, including a meta-analysis by Gasperin et al., showed that chronic stress and tension increase blood pressure [24]. In this study, the mean score of stress management in the case group increased by 36.6 after training. The results of multiple studies conducted in patients with hypertension, including studies by Tang et al. [25] and Age et al. [26], contributed to the results of the present study.

After the training, the mean score of physical activity in the case group increased by 8.76 points. Moeini et al. showed in their study that training programs help to broaden individuals' awareness of physical activity [27]. A study by Stefani et al. showed similar results [28].

According to the results of this study, salt intake in the case group decreased significantly in comparison with that of the control group. In addition, fruit and vegetable consumption in the case group were significantly increased compared with the control group. On the other hand, the consumption of fried and fatty foods in the case group showed a significant decrease compared with that of the control group. These results are consistent with the results of a study by Lesan et al. [29].

In this study, 51.2% of the subjects in the case group and 53.5% in the control group reported a family history of hypertension. These results are in line with the findings presented by Tesfaye [30]. In this study, a family history of hypertension was noted as a risk factor of high blood pressure.

In the present study, there was no significant difference between body mass index and blood pressure in either group, which is consistent with the results of a study by Shafieyan et al. [21].

CONCLUSION

The results of this study revealed a correlation between lifestyle and hypertension. Given the importance of lifestyle and its significant impact on disease prevention and health maintenance, the use of educational programs on nutrition, physical activity, and stress management is required to improve patient knowledge and modify their behaviors.

Table 3. Comparison of mean scores before and after the intervention in case and control groups

Dimensions	Scope of possible scores	Case group		Control group		Paired t-test	
		Before	After	Before	After	Case	Control
Total lifestyle	52-208	135	159	137	142	0.02	0.81
Physical activity	8-32	16.09	24.76	16.04	21.48	0.00	0.4
Nutrition	9-36	24.34	30.5	26.51	29.27	0.08	0.31
Stress management	8-32	19.34	25.7	20.02	23.5	0.00	0.7

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