



**ORIGINAL ARTICLE**

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## **Survey of the relationship between lifestyle and hypertension in patients referred to health care centers of Ilam city in 2014**

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### **ABSTRACT**

*Lifestyle is referred to an individual's healthy and unhealthy behaviors that can affect their health statuses. The present study was conducted to survey the relationship between lifestyle and hypertension in patients referred to healthcare centers of Ilam city in 2014. This research study was a case-control study. The data were collected through a standard questionnaire of health-promoting lifestyle profile (HPLPII) as well as the researcher's direct visit to the healthcare centers in the city of Ilam. After the questionnaires were collected and classified, the data were entered into SPSS software and analyzed by descriptive statistics, chi-square tests, T-Tests and logistic regression. The mean and the standard deviation of the age of the main and the control groups were 57.1 (2.22) and 56.5 (2.99) years old, respectively. 10.9% of the control group and 25.5 % of the cases was smoking cigarettes or hookah. The results of the data analysis showed that the mean scores obtained by the main and the control groups on measures of physical activity, psychological growth, stress and total lifestyle are significantly different, so that the obtained score in the dimensions in patients with blood pressure was significantly lower than the score obtained among the healthy individuals. According to the results it seems that educational interventions in the field of healthy lifestyle for individuals with blood pressure risk can have an effect on controlling this disease and reducing its incidence.*

**Keywords:** *lifestyle, hypertension, physical activity, stress*

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### **INTRODUCTION**

Lifestyle is referred to an individual's healthy and unhealthy behaviors that can have an impact on their health statuses. Studies have revealed that the most important health risk factors include poor diet, inactivity and low physical activity, as well as smoking which are the main factors for an individual's lifestyle. Studies have also revealed that 80% of heart diseases and 90% of type-II diabetes could be avoided by making changes in these risk factors. Mean while, 1.3% of cancer cases can be prevented by improving nutrition and controlling weight; and 3.1% of other cases are preventable by avoiding smoking and changing lifestyles [2].

Controlling risk factors in lifestyle and health habits such as poor nutrition, lack of exercise, as well as smoking, alcohol and drug use can almost decrease nearly 50% of premature death [3].

The statistics on causes of mortality indicate that 53% of causes of death are related to lifestyle, 21% to environmental factors, 16% to genetic factors and 10% to healthcare service systems [4]. Adopting each

kind of lifestyle by an individual may predispose them to a range of diseases including blood pressure which has been proposed as a major health problem and as a silent killer which is asymptomatic. If untreated, it will have lethal effects. Among the complications of blood pressure; cardiovascular diseases including coronary heart disease, minimum heart failure, peripheral vascular diseases and chronic renal failure have been reported [5].

High blood pressure is the biggest international only-factor of diseases and death tolls. It is predicted that the number of people with hypertension will increase in the next decade. In the United States, about 77.9 million (1 out of every 3) adults have high blood pressure [6]. Therefore, there is a need to implement preventive strategies particularly in developing countries [7].

The prevalence of hypertension across the world is different. In rural regions in India, it is reported as 3.4% in men and 6.8% in women. The highest incidence in the world is reported in Poland, which is 46%. In the U.S., 58 million Americans are inflicted with hypertension disease [8]. In Iran, the prevalence of hypertension has been reported in different studies. This is 20.88% in Gonabad [9], 14% in Kermanshah [10], 32% in Tehran [11], 20% in Tabriz [12], 11% in Isfahan [13], and 15% in Yazd [14] which imposes high financial burden on the country to treat and take care of patients with this disease. Given the importance of controlling the hypertension disease, the aim of this study was examining the relationship between lifestyle and hypertension in patients referred to healthcare centers in Ilam city in 2014 to employ the findings in order to improve planning for lifestyle improvement and provide better services to patients.

## MATERIALS AND METHODS

This research study was a case-control study. The data in this study were collected through questionnaires and by the researcher's direct visit to healthcare centers in the city of Ilam. The questionnaire is an international standard questionnaire on lifestyle entitled Health Promoting Lifestyle Profile (HPLP II) whose reliability was confirmed via Cronbach alpha 0.78 in the study by Morovati (14) and its validity was approved by health education specialists. The questionnaire consists of two parts including demographic questions and health-promoting behavior questionnaire with 52 items with 4 responses, i.e. never-sometimes-often-always. The health-promoting behavior questionnaire measures the frequency of health-promoting behaviors in 6 dimensions including health responsibility (HR) (9 items), physical activity (PA) (8 items), nutrition (N) (9 items), spirituality (S) (9 items), interpersonal relations (IR) (9 items) and stress management (SM) (8 items). The range of health promoting lifestyle profile questionnaire was between 52 to 208, and a separate score is calculated for each dimension.

The method of data collection involved the researcher's visit to the healthcare centers under study, then the hypertensive patients were identified and the data were collected on the basis of data proportional allocation method. In this method, a proportion of the general population of the sample was allotted to each center. The patients' blood pressure was recorded by health professionals' reference to healthcare centers and the questionnaires were completed.

The same number of control group was selected among those referring to the centers and they completed the questionnaires, too. A matching was conducted in the case of control group that is the controls were selected in accordance with the main group as far as possible in terms of age, sex and place of residence and they only had one difference, i.e. the absence of hypertension disease. It should be noted that, since a number of participants were illiterate, the data were collected in the form of interviews.

According to the type of study and by taking the significance level of 5% and 90% test power as well as the use of appropriate statistical formula into account, the sample size in this study was 200 for both groups and 400 in total.

Consulting with a statistician to analyze the data, firstly the total scores and then the scores for the mentioned six measures were calculated. After collecting and sorting the questionnaires, data were fed into the SPSS software and were analyzed by descriptive statistics as well as chi-square test, t-tests and logistic regression.

## RESULTS

The mean and the standard deviation (SD) age of the cases and the controls were 57.1 (2.22) and 56.5 (2.99) years old, respectively. The minimum and the maximum age of the participants in the control group was 29 and 79 years old and in case group was 29 and 91 years old, respectively.

41.1% of the control group and 38.9% of the cases were male and the rest were female. 77.6% of the control group and 80.3% of the patients were married. The number of family members for 63% of the control group was 4 or lower; it was 53.6% for the case group. The mean weight for the control group was 68.75 (SD 1.42) and for the case group, it was 71.58 kilograms (SD 1.62). The mean heights for the control

group and the case group were 1.62 and 9.9 meters and 1.59 and 8.6 meters, respectively. The body mass index (BMI) in the control group was 32.3% underweight, 53.6% with a normal BMI and 14.1% were overweight or obese, while in the case group, these figures were 20.7%, 51% and 27.9%; respectively.

In patients with hypertension, 34.6% of them were diagnosed with blood pressure and 65.4% had been diagnosed with symptoms. Headache with 77.4%, vertigo 21.2% and visual impairment with 1.4% were the most important symptoms of blood pressure among the patients under study.

Regarding smoking, 10.9% of the control group and 25.5% of the main group were smoking cigarettes or hookah. 65.1% of the control group and 81.7% of the control group did not exercise during the week and the rest did regular exercises. 47.4% of the control group had less-than-eight-hour sleep per day and 52/6% slept more than eight hours while in the case group, 63.5% slept less than eight hours and 36.5% slept more than eight hours a day. In terms of the rate of salt intake, in the control group; 17.2% tended to use low-salt foods, 74% used foods with moderate salinity, and 8.8% had a tendency to have salty foods; while in the case group, the tendency to have low-salt foods, foods with moderate salt, and salty foods were 24%, 72.1% and 3.9% respectively. In terms of oil use in food; in the control group, 15.1% tended to have low-fat foods, 53.6% moderate foods, 30.12% had a tendency to use fatty foods. These figures in the main group were 27.9%, 41.8%, and 30.2%, respectively. In terms of temperament in the control group, 46.4% knew themselves as quiet individuals, 44.3% as kind of angry and 9.4% as angry. These figures for the case group were respectively 39.9%, 44.7% and 30.2%.

The results of the data analysis showed that the mean scores obtained by the case and control groups in PA, S, SM and lifestyle dimensions were significantly different, so that the total score obtained in the mentioned scales among patients with high blood pressure was significantly lower than the control group. The results are illustrated in Table 1 below. In addition, the t-test results revealed that the mean score of TL and its six dimensions among smokers was significantly lower than that of non-smokers. The mean score of the TL and the dimensions of PA, SM, N, IR, and health responsibility were significantly lower than smokers. The results are presented in Table 2.

The results of the logistic regression showed that the relationship between lifestyle total score and lifestyle in the dimensions of PA, SM and S was statistically significant with hypertension ( $p < 0.05$ ). That is, as one score increases to the HPLP questionnaire, the risk of hypertension in the TL dimension (0.986), in the dimensions of PA (0.908), S (0.954) and SM (0.986) is reduced. These results are summarized in Table 3.

## DISCUSSION

Having health-promoting behaviors is one of the best ways by which people can control their health. Lifestyle should be considered as a complex combination of tasks and behavioral habits among individuals and groups particularly with regard to cultural infrastructure and socioeconomics conditions as well as social relationships and their personality.

In this study, 25.5% of the case group and 10.9% of the control group were taking cigarettes or hookah. These findings are not in line with the results provided by Mansourian *et al* [15] in the city of Gorgan in which 12% of patients and 20.5% of the control group smoked hookah and cigarettes. The results of the present study also do not confirm the findings in a study by Moghimi *et al* [16] among the elderly in the city of Yasouj where in 32.2% of the cases and 37.7% of the control group were cigarette smokers. This difference seems to be associated with the research environment in the aforementioned studies and the current study.

In the present study, 34.9% of controls and 19.3% of the cases did regular exercises during the week; these findings are somewhat in agreement with the results revealed by Najjar [5], in which the relationship between lifestyle and initial hypertension in the city of Sabzevar was determined, because 42% of the control group and the 34.2% of the experimental group exercised during the week. The results are also somewhat similar to the findings in the study by Mansourian *et al.* [15] in which 39.5% of the control group and 17.9% of the cases did exercises during the week.

In terms of using foods high in salt, 24% of the cases and 17.2% of the control group had a tendency to have salty foods. This result which was in line with Najjar *et al* [5] study was 45% and 17.4%, respectively.

In the present study, 14.1% of the control group and 27.9% of the cases were obese. In the study conducted by Mansourian *et al* [15]; 63% of the control group and 59% of the case group were obese which is much higher than the results of the present study. As well, the findings are in contrast with the results provided by Khani *et al* study [13] which was on the prevalence of hypertension in rural population of the city of Tarom. In this mentioned study, the rate of obesity among the population under study was higher than the obesity rate in the present study; however, in that study, those individuals who were obese had higher blood pressure than those with a normal BMI. Considering high-fat food

consumption, 27% of the case group and 35.8% of the controls were inclined to use high-fat foods. These results are somewhat similar to those found in the study by Moghimi *et al* [16], Obirikorang [17] and Nkeh-Chungag [18].

The measures of PA, S, SM and TL are all significantly different, so that the obtained score in the dimensions listed among the patients with blood pressure was significantly lower than the score obtained by the control group. The results are consistent with the results of the study by Wakasugi [19]. In our study, about half of the participants in both groups had announced that they had less than eight hours of sleep in one day; these results seem to be in harmony with reality due to the high average age of the participants. In Wakasugi's study [19], as well, the rate of sleep among the patients with blood pressure had fallen.

In our study, 74% of participants had foods with moderate salt and 8.8% had salty foods. In the study by Lelong [20]; high salt intake was introduced as a risk factor in the development of hypertension, too.

The results of the present study showed that the mean scores of the case and control groups in terms of the dimensions of PA, S, SM and total lifestyle (TL) differed significantly, so that the total score in the mentioned dimensions among patients with blood pressure was significantly lower than the score by healthy individuals. In a study by Najjar *et al*. [5], as well, the patients with blood pressure had significant differences with the control group in terms of N, SM, sleep, smoking and BMI which was in consistency with our results. It is therefore necessary to have enough trainings and interventions for the patients with blood pressure and other community members in order to adopt healthy lifestyles and behaviors and appropriate behavioral habits. These interventions should be initiated at a younger age because showing a behavior and becoming accustomed to it starts from childhood.

In our study, the mean total score and the aspects of PA, SM, N, IR and HR among the smokers was significantly lower than the score obtained by non-smokers. These results are in agreement with the studies by Wakasugi [19], Saberi *et al* [21], Gharipour [22] and Hu [23].

The logistic regression in the current study demonstrated that the relationship between lifestyle total score and lifestyle in the dimensions of PA, S and SM and hypertension is statistically significant. In a research study by Kemppaine *et al* [24] in Japan and Behrouz *et al* [25], the participants in all aspects of N, HR, and IR had significant differences; but in the dimensions of N, SM and S, they had no significant differences. These results are not coordinated with the findings of the present study. This difference appears to be due to differences in the study population, that is the study by Kemppainen *et al* was conducted in rural areas of northern Japan.

Table1: Compression of total lifestyle and the dimensions mean score in case and control group

|    | Case group |       | Control group |       | P value |
|----|------------|-------|---------------|-------|---------|
|    | mean       | SD    | mean          | SD    |         |
| TL | 124.04     | 18.65 | 128.8         | 18.50 | 0.013   |
| HR | 16.8       | 4.27  | 16.89         | 4.66  | 0.84    |
| PA | 11.05      | 7.79  | 13.47         | 5.29  | 0.000   |
| N  | 26.35      | 3.47  | 26.65         | 3.74  | 0,78    |
| S  | 25.53      | 4.52  | 25.58         | 5.0   | 0,030   |
| IR | 22.55      | 4.19  | 22.80         | 4.20  | 0,56    |
| SM | 19.07      | 4.80  | 21.59         | 4.69  | 0,000   |

Table2: Compression of total lifestyle and the dimensions mean score in Smokers and non Smokers

|    | Smokers |       | Non smokers |      | P value |
|----|---------|-------|-------------|------|---------|
|    | mean    | SD    | mean        | SD   |         |
| TL | 112.04  | 16.59 | 129.5       | 17.7 | 0.000   |
| HR | 14.29   | 4.14  | 17.43       | 4.33 | 0.000   |
| PA | 10.31   | 3.12  | 12.65       | 5.44 | 0.000   |
| N  | 24.90   | 3.06  | 26.74       | 3.63 | 0.21    |
| S  | 23.25   | 4.20  | 25.66       | 4.71 | 0.000   |
| IR | 19.86   | 3.89  | 23.31       | 4.33 | 0.000   |
| SM | 17.02   | 4.40  | 20.02       | 4.72 | 0.000   |

Table 3: the relationship between total lifestyle and the dimensions with chance of hypertension in logistic regression

|    | Case group | Control group | P value | Odd ratio | Confident interval |
|----|------------|---------------|---------|-----------|--------------------|
| TL | 124.6      | 127.8         | 0.013   | 1.986     | 0.976- 0.997       |
| PA | 11.05      | 13.47         | 0.000   | 1.108     | 0.870- 0.947       |
| S  | 25.53      | 26.58         | 0.032   | 1.21      | 0.914- 0.936       |
| SM | 19.07      | 21.59         | 0.000   | 1.486     | 0.858- 0.936       |

## CONCLUSIONS

According to the results it seems that educational interventions in the field of healthy lifestyle for individuals with blood pressure risk can have an effect on controlling this disease and reducing its incidence.

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