Prevalence of hypertension and its association with certain demographic characteristics of blood donors in Ilam, Iran

Mansour Amraei[1], Hassan Reza Mohammadi[2], Hamid Taghinejad[3], Zahra Ghobadian[4], Masoumeh Shoohani[5], Farajolah Maleki[6*]

1. Department of Physiology, Faculty of Medicine, Ilam University of Medical Sciences, Ilam, Iran
2. Department of Neurology, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Department of Nursing, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran
4. Student Research Committee, Ilam University of Medical Sciences, Ilam, Iran
5. Department of Nursing, Faculty of Allied Medical Sciences, Ilam University of Medical Sciences, Ilam, Iran
6. Clinical Microbiology Research Center, Faculty of Medicine, Ilam University of Medical Sciences, Ilam, Iran

[*]**Corresponding author:** Tel: +98 9128704856
Address: Clinical Microbiology Research Center, Faculty of Medicine, Ilam University of Medical Sciences, Ilam, Iran
E-mail: fmaleki88@yahoo.com
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Abstract

Introduction: Hypertension is described as one of the risk factors for cardiovascular disease. The prevalence of hypertension is growing among developing countries. In this study, the prevalence of hypertension was studied in individuals who referred to blood transfusion center of Ilam city.

Materials and methods: The present descriptive analytical study was performed based on available data. The sample files were related to 4005 cases. Blood pressure was measured by using the standard method 15 minutes after the individuals attained to blood transfusion center. Data by data were analyzed by using SPSS software and appropriate statistical tests including chi-square and ANOVA. $P<0.05$ was considered as significant.

Results: Systolic and diastolic blood pressure were significantly associated with age ($P<0.001$). There was a significant correlation between systolic blood pressure with gender ($P<0.05$), but there was no association between diastolic blood pressure with gender. Men significantly had higher systolic blood pressure than women ($P<0.05$). In addition, in both genders among aged over 40, systolic blood pressure was significantly lower, compared to aged less than 40 ($P<0.05$).

Conclusion: Overall, this study demonstrated that prevalence of hypertension is high in Ilam city and a detailed applicable plan in order to change in lifestyle among people to controlling and reducing of hypertension.

Keywords: Hypertension, Prevalence, Blood Donors

Introduction

Hypertension is known as a major risk factor for cardiovascular disease (1-3). Therefore, hypertension is considered as a main reason for admission of a large number of patients in emergency departments of hospitals (1, 4).

Cardiovascular disease has the highest rates of morbidity and mortality in

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industrialized countries and also it is increasing in developing countries (5). According to classification of the World Health Organization, there are 17 main reasons for mortality in that cardiovascular diseases are classified as seventh reason; however, cardiovascular disease mortality has the first rank in Iran (6). Screening and controlling of hypertensive patients is considered as one of the primary objectives in prevention of cardiovascular diseases (7).

In adults, the systolic blood pressure of 140 mmHg or above and diastolic blood pressure of 90 mmHg or above are considered as hypertension. According to epidemiological studies in Eastern Mediterranean and Middle East countries, the prevalence of hypertension in different studies is reported from 10 to more than 17%. Studies which carried out in Iran indicated the high prevalence of hypertension. In health survey that conducted in 24 provinces among 69 to 72 year old patients, the diastolic blood pressure of 90 mmHg or above was reported 14% among 12 to 69 year old patients as high blood pressure (8).

A study that conducted in 1998 in Ilam illustrated that, the mean systolic blood pressure and diastolic blood pressure of the subjects were 133.25 mmHg and 80.67 mmHg respectively. 20.32% of patients demonstrated systolic and 30.7% diastolic hypertension (9). Abnormal blood pressure is one of the reasons for donor deferral in blood donors (10, 11). According to guideline of National Blood Transfusion Center, blood pressure should be $90 \leq BP \leq 180$ mmHg and diastolic pressure should be $50 \leq BP \leq 100$ mmHg among blood donation volunteers, for prevention of complications in patients with high or low blood pressure (12).

Due to various complications of hypertension and its being asymptomatic in most cases, high blood pressure is one of the reasons for deferral of blood donors. Screening and identification of donors with high blood pressure reduce the complications and also reduce health care and hospital costs due to complications and late diagnosis of disease. On the one hand, surveillance and control of people with hypertension is considered as one of the primary purposes of prevention of cardiovascular diseases (13). Therefore, regarding to high prevalence of cardiovascular disease and the role of hypertension in creating these conditions, we decided to conduct a study to determine the prevalence of hypertension and its association with demographic profile of blood donors attending the blood transfusion center in Ilam.

Materials and methods

The present descriptive analytical study was based on data available. The statistical population included referents to blood donation center of Ilam from 2010-2011. 4005 patients were entered into the study by using census records. Data included the number of blood donors, demographic information (age, sex, marital status, education level and occupation), systolic and diastolic blood pressure of donors that were controlled by the physician using standard methods, 15 minutes after individuals attained to blood transfusion center

Statistical analysis

The data were analyzed by using SPSS software and appropriate statistical tests including chi-square and ANOVA. $P<0.05$ was considered as significant.

Results

The mean age of the subjects was 34.21±10.22 years. The youngest and the oldest donor were 18 and 79 years old, respectively. Average age of males was 33.88±10.09 years and for females were 36.66±10.81 years. Average weight of samples was 79.83±12.12 kg. Average weight of males and females were 80.59±11.96 kg and 74.63±11.99 kg, respectively.

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The mean systolic blood pressure of samples was 120.1±1.33 mmHg and mean diastolic blood pressure was 80.7±0.55 mmHg. The mean systolic blood pressure among women was 118.3±1.44 mmHg; diastolic blood pressure was 77.5±0.66 mmHg. Mean systolic blood pressure in men was 120.3±1.32 mm Hg and diastolic blood pressure was 80.7±0.55 mmHg, indicated that diastolic and systolic blood pressure among men is higher than women (Table1).

Table 1.The mean and standard deviation of systolic and diastolic blood pressure.

Sex	The mean systolic blood pressure(mmHg)	The mean diastolic blood pressure(mmHg)
Men	120.3 ±1.32	80.7 ± 0.55
Women	118.3 ±1.44	77.5 ± 0.66
Total of samples	119.3 ±1.33	79.1 ±0.56

The majority of patients (69.3%) had normal systolic blood pressure less than 130 mmHg and diastolic blood pressure in the majority of patients (93.8%) was normal and it was less than 85 mmHg.
907 patients (31%) had a systolic blood pressure more than normal range that included mild to moderate blood pressure and in 183 (6.22%) diastolic blood pressure was more than normal range that included mild to moderate blood pressure. systolic blood pressure and diastolic blood pressure were significantly associated with age (P<0.01). There was also a significant association between systolic blood with gender (P<0.05) but there was no association between diastolic blood pressure and gender. Diastolic blood pressure was significantly higher among men than women (P<0.05) and in those aged over 40, in both sex groups, it was significantly lower, compared to group less than 40 years old (P<0.05).

Discussion

Generally, the prevalence of hypertension in present study was 31%, with a mean systolic blood pressure 120.1±1.33 mmHg and mean diastolic blood pressure 70.8±0.56 mmHg, which is similar to previous study conducted by Delpisheh and Sayehmiri that performed on 342 of employees in Ilam, the results of their study indicated that , 32.20% of cases had systolic hypertension and 30.7% had diastolic hypertension; and average of systolic hypertension and diastolic hypertension were 133.25 mmHg and 80.67 mmHg respectively (9). The results of study that conducted in the United States on persons aged 25-74 showed, the high prevalence of hypertension was 33.2% in Chicago (14).
This rate was 35.4% in Damirchi and Mehrabani ' study among taxi drivers in Tehran (15). Results of the present study in this field are similar to studies which were mentioned, while other studies showed less incidence of hypertension, so Sadeghi et al. in a cross-sectional study on people over 19 years in Isfahan found that 15.6% of men had hypertension (16).
While the study by Yousefnejad et al. on 1854 blood donors in Sanandaj revealed 7.5% of mild hypertension in blood donors (17). Farshidi et al ' study on 2,087 persons over 18 years showed that mean blood pressure among men was 84 and among women was 8 mmHg (18). The results of study that was performed by Amirkhizi et al. showed 14.3% of women were diagnosed with hypertension (19). The epidemiologic study by Navaii et al. on Tehran villages indicated that the prevalence of systolic hypertension was 11.1% and diastolic hypertension was 22.2% (20). Investigation of hypertension prevalence and its relationship with anthropometric characteristics among adolescent girls carried out in Rafsanjan by Salem indicated that the prevalence of systolic and diastolic blood pressure among girls was 10.2% and 9.2% respectively (21). The results of study

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which conducted on ordinary people in Urmia showed that the prevalence of hypertension was 19.4%, which was higher in women than men (22). The results of study which conducted in England on 1,100 workers and in West Africa on over 45 year old people showed that the prevalence of hypertension was 14% (23, 24).

Also, the study conducted in Italy on 1976 blood donors from 18 to 65 years old the results indicated that the prevalence of underlying hypertension in men as 22.3% and 15.7% among women (25).

In present study there was a significant correlation between systolic blood pressure with gender, so systolic blood pressure was higher among men than women that is similar to studies conducted by Sadeghi et al. (16), Sayehmiri (9) and Farshid (18). But it is inconsistent with study which performed by Yousefnejad et al. (17), and Mehri et al. (22). In addition, there was no significant association between diastolic blood pressure with gender, which is similar to Yousefnejad ' study (17). Systolic blood pressure and diastolic blood pressure was significantly associated with age which is similar to Sayehmiri ' study (9). There was a significant association between age and systolic blood pressure in study was performed by Yousefnejad and hypertension was higher among people over 45 years old (17).

The results of several studies demonstrated that the differences and similarities could be due to differences in sample size, age range, gender differences and cultural diversity. According to results of some of these studies, factors such as increasing of age, weight gain, smoking and anthropometric characteristics caused the blood pressure increase, while in present study the differences in age and gender were investigated. According to our results, hypertension rate in Ilam is high and detailed and applicable plan seems to be necessary in order to change in lifestyle to controlling and reducing of hypertension.

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