

## **Relationship between Adults' Blood Pressure, Occupation and Physical Activity: A cross-sectional study among 20 to 65 years adults in Sabzevar, Iran**

*Babak Moeini*

Associate Professor of Health Education, Social Determinants of Health Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

Phone: 09125420453

[babak\\_moeini@umsha.ac.ir](mailto:babak_moeini@umsha.ac.ir)

*Mohamad Mahdi Hazavehei*

Professor of Health Education, Research Center for Health Science and Department of Public Health, School of Health, Hamadan University of Medical Sciences, Hamadan, Iran

Phone: 09133272522

[hazavehei@gmail.com](mailto:hazavehei@gmail.com)

*Abbas Moghimbeigi*

Professor of Biostatistics, Modeling of Non-communicable Disease Research Center and Department of Biostatistics. School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran

Phone: 09125683772

[moghim\\_b@yahoo.com](mailto:moghim_b@yahoo.com)

*Shahram Homayonfar*

MD. Associate professor Department of Cardiology, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran.

Phone: 09181115202

[Shahram1338@gmail.com](mailto:Shahram1338@gmail.com)

*Alireza Moslem*

Department of Anesthesiology, Sabzevar University of Medical Sciences  
Asadabadi St., Sabzevar, Razavi Khorasan, Iran

Phone: 051-44011004

[drmoslem@medsab.ac.ir](mailto:drmoslem@medsab.ac.ir)

*Seyed Jamal Mirmoosavi*

MD, MSc, PhD Student, School of Medicine, Persian Medicine Research center, Sabzevar University of Medical Sciences, Sabzevar, Iran

Phone: 09155158707

[mirmoosavij@medsab.ac.ir](mailto:mirmoosavij@medsab.ac.ir)

*Maryam Delawari Heravi*

Health Education and Promotion. Department of Public Health, Neyshabur University of Medical Sciences, Neyshabur, Iran

PhD Student of Health Education and Promotion, Department of Public Health, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran

Phone: 09159724076

Corresponding Author: [delavarim1@numsh.ac.ir](mailto:delavarim1@numsh.ac.ir), [delavari27@yahoo.com](mailto:delavari27@yahoo.com)

### **Abstract**

Due to its high prevalence and association with cardiovascular diseases, high blood pressure is a health problem in industrialized and developing countries. In industrialized countries, 25% of adults and 60% of people over 60 have high blood pressure. Researches indicated that most risk factors for high blood pressure were related to individuals' behavior and awareness, and educational programs, as one of the essential tools for changing lifestyle of the patients, have a significant impact on reducing risk-related behaviors and increasing healthy behaviors. Job stress is an important factor in occurrence of hypertension and heart disease. This study is an analytical

research conducted in Sabzevar, Khorasan Razavi, in 2015-2016. Sabzevar has a population of 320,000 people. The target group of this study includes all the people in Sabzevar who aged between 20-65 (54%). For systolic blood pressure, difference between the number of classes of the two gender was significant ( $P = 0.006$ ) with men's blood pressure was higher than that of women. In this study, subjects with systolic blood pressure of less than 13.99 were more likely to have normal body mass index. This finding is in line with the results of the research carried out by Winkelmayr. In their study. It was also reported that more than 75% of patients with high blood pressure had  $BMI > 25\%$ .

**Keywords:** High Blood Pressure (HBP); Occupation; Sabzevar; Body Mass Index (BMI).

### **1. Introduction**

Due to its high prevalence and association with cardiovascular diseases, High Blood Pressure (HBP) is a health problem in industrialized and developing countries. In industrialized countries, 25% of adults and 60% of people over 60 have HBP (Kearney et. al., 2004). About \$500 billion annually and about 4% of gross national income for non-communicable diseases are being spent in low- and middle-income countries where cardiovascular diseases, including HBP, account for roughly half of the cost (Bloom et. al., 2012).

According to the literature, risk factors for cardiovascular diseases are as follows:

1. Substance risk factors such as age, gender, history of disease in first-degree family members
2. Intermediate risk factors such as high blood sugar, impaired blood lipids (i.e. low HDL cholesterol and LDL cholesterol), HBP, obesity, overweightness, and stress.
3. Behavioral risk factors such as inappropriate diet, lack of exercise, smoking, and alcohol.

In the Middle East, HBP has been one of the most prevalent non-communicable disease in recent years. Studies in Iran also indicated high prevalence of hypertension (Sezavar et. al., 2003). Researches showed that most risk factors for HBP are related to individuals' behavior and awareness, and educational programs, as one of the essential tools for changing lifestyle of patients, have a significant impact on reducing risk-related behaviors and increasing healthy behaviors (Bartlett, 1995). Occupational stress is an important factor in occurrence of hypertension and heart disease. It affects blood pressure both directly and indirectly. It is direct when affects blood pressure through variable physiologic factors such as HBP, high cholesterol, increased left ventricular mass, high hormonal concentration, specific catecholamine, high plasma fibrinogen concentrations, increased response, finding platelets, vasospasm of the vessels, inflammation, lack of electrical stability, and atherosclerosis. In an indirect way, it affects blood pressure through changes in life style and behavioral risk factors such as smoking, alcohol consumption, and reduced physical activity (Milani et. al., 2007).

Body function in a way to respond to life-threatening issues in which brain reacts by releasing cascades of chemicals and hormones in the body which speed up heart rate and increase respiration rate. They increase blood pressure and increase the amount of energy stored in the muscles (Hammar et. al., 1998). Occupational stress may exacerbate inflammation in coronary arteries (coronary arteries) and lead to blood clots in the arteries which is a sign of a heart attack. Stress may also make it harder to practice such as exercise, proper diet, smoking, and sleeping (Kivimäki et. al., 2008). The purpose of this study was to determine the level of blood pressure in individuals and determine the relationship between blood pressure and occupation. The research also determined HBP risk factors.

## 2. Research Methodology

This study is an analytical study conducted in Sabzevar, Khorasan Razavi, in 2015-2016. Sabzevar has a population of 320,000 people. The target group of this study includes all the people in Sabzevar who aged between 20-65 (54%). 1452 people of Sabzevar (744 men and 708 women), aged 20-65 years old, enrolled in the study. Samples were selected by random cluster sampling method. In order to assess the subjects' knowledge of complications of hypertension and its risk factors, a foreign-researcher-made questionnaires was developed. To measure the validity of the questionnaire, in addition to reviewing and reviewing articles related to hypertension. After completing the questionnaires, several faculty members of Hamadan University of Medical Sciences re-evaluated it and their constructive comments were applied.

### 2.1. Sampling

Ten out of fifteen urban health centers were randomly selected.

$$n = \frac{z_{1-\frac{\alpha}{2}}^2 (p)(1-p)}{(d)^2}$$

Health volunteers began to collect the information and anthropometric measurements to examine the current status of the population regarding blood pressure, occupation, physical activity, stress, smoking, and questionnaires, by visiting the subjects at their homes and workplaces, in person and face-to-face. This article is derived from a PhD thesis in Health Education and Health Promotion.

## 3. Results

Table 1. Frequency of the surveyed subjects divided by gender

Gender	Number	Percent
Man	744	51.2
Woman	708	48.8
Total	1452	100

Table 2. Frequency of subjects

Age	Number	Percent
17-27	258	17.9
28-38	630	43.8
39-49	373	25.9
50-60	155	10.8
Above 60	23	1.6
Total	1439	100

90% of the subjects were married.

Table 3. Blood pressure status of the study subjects divided by gender

Variable			Male		Female		Total		Test statistic P-Value*
			Frequency	%	Frequency	%	Frequency	%	
<b>Systolic Blood Pressure</b>	Normal	<120	468	62.9	471	66.5	939	64.7	12.44 0/006
	Pre-hypertension	120-139	242	32.5	185	26.1	427	29.4	
	Hypertension (stage 1)	140-159	33	4.4	46	6.5	79	5.4	
	Hypertension (stage 2)	≥160	1	0.1	6	0.8	7	0.5	
<b>Diastolic Blood Pressure</b>	Normal	<80	471	63.6	465	65.7	936	64.5	0.7 0/701
	Pre-hypertension	80-89	196	26.3	175	24.7	371	26.5	
	Hypertension (stage 1)	90-109	56	7.5	53	7.5	109	7.5	
	Hypertension (stage 2)	≥110	21	2.8	51	2.1	36	2.5	

\*: Chi-square test statistics

Chi-square test was used for both variables. For the systolic blood pressure variable, difference between the genders was significant ( $P = 0.006$ ) with men's blood pressure higher than that of women.

Table 4. Number and frequency of various occupational groups

Job	Number	Percent
Government's employee	257	%17
Free trade jobs	295	%20
worker	297	%20
Housework	448	%30
Retired	36	%2
Student	77	%5
Unemployed	42	%2

Table 5. BMI status of in various occupational groups

BMI	15-18/49	18/5-24/99	25-29/99	Over 30
JOB				
Government's employee	8	86	102	61
Free trade jobs	15	141	101	38
Housework	38	167	149	94
Retired	3	16	9	8
Student	16	52	7	2
Unemployed	5	22	11	4
Total	101	615	471	265

#### 4. Discussion

In this study, subjects with systolic blood pressure less than 13.99 were more likely to have normal BMI. This finding is in line with the results of the research carried out by Winkelmayr.. It was also reported that more than 75% of the patients with HBP had BMI > 25% (Winkelmayr et.

al., 2005). According to the findings of this study. These findings were consistent with the study of Heidari and Kajjar. In their study, 77.5% of the subjects with HBP were overweight and obese. They reported that with increasing age, systolic blood pressure increased which could be due to weight gain and obesity that happens over time (Najar et. al., 2005). A survey by the Harvard University, "Women's Health Survey" (WHS), which studied 17,000 women's medical problems as a disease-prevention study, showed that women who were under high-pressure jobs, compared with their colleagues who have less stressful jobs, are 40% more at risk for heart disease (including heart attack and the need for surgery to remove coronary artery bypass grafts) (Lee et. al., 2003). Researchers used the definition of "job pressure" that combines job-related requirements and individual control over one's occupation. Job requirements are related to the measure, acceleration, and work hardness. Control means the ability of an individual to make decisions about a job or to be creative in doing the job (Chandola et. al., 2008). In a study by Gold et al. on 660 personnel employed in 8 hospitals covered by Mashhad University of Medical Sciences, it was found that the mean score of emotional fatigue and personality deterioration among personnel was moderate and average. The score for personal adequacy and achievement was low. Severity emotional exhaustion in 38.6% of personnel was low, in 30.2% was moderate, and in 31.2% of them was high. The severity of personality deterioration in 58% of personnel was low, in 24.5% was moderate, and in 17.4% was high. Because people spend about one-third of their time in work environments, mental stress and physical damage to their health have a huge impact (Talaie et. al., 2008; Yamada et. al., 2002).

In the present study, there was no meaningful relationship between the level of education and the level of physical activity. These findings were consistent with the findings of the study of Karylipour Ghoraghani et al. That they did not get any meaningful relationship between educational level and physical activity (Gharlipour et. al., 2011).

The percentage of systolic hypertension in stages 1 and 2 was higher in women than in men. In women, 7.3% and in men 4.5%. The percentage of overweight systolic blood in men is higher than in women. In men, 32.5% and in women are 26.1%, that is, the blood pressure of men is higher for women, which is also consistent with the study of Duc Anh Ha et al. In 2011 (Ha et. al., 2013; Yousefi et. al., 2018).

In this study, physical activity was low in most of the people, which is consistent with the findings of the study of Hazavehei et al., They achieved low physical activity. In their study, 45.4% of subjects did not had any daily physical activity (Hazavehei et. al., 2015).

## **5. Conclusion**

Most of the subjects had low physical activity And were overweight and obese. Obesity was seen more often in people whose jobs were government employees. Most people over the age of 50 had behavioral risk factors that caused high blood pressure.

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