Journal of Peace, Development and Communication

PEACE AND DEVELOPMENT

Volume 06, Issue 04, September 2022
pISSN: 2663-7898, eISSN: 2663-7901
Article DOI: https://doi.org/10.36968/JPDC-V06-I04-01
Homepage: https://pdfpk.net/pdf/
Email: se.jpdc@pdfpk.net

Article:	**Causes, Implications and Symptoms of Hypertension in Punjab Province**
Author(s):	Muhammad Umar Zafar Ph.D. research scholar, Department of sociology. Government college university, Faisalabad
	Dr Zahira Batool Professor and Chairperson. Department of Sociology. Government college university, Faisalabad
	Dr Falak Sher Assistant Professors. Department of Sociology. Government college university, Faisalabad
	Dr Muhammad Shabir Ch Assistant Professors. Department of Sociology. Government college university, Faisalabad
	Dr Sadaf Mehmood Assistant Professors. Department of Sociology. Government college university, Faisalabad
Published:	26th October 2022
Publisher Information:	Journal of Peace, Development and Communication (JPDC)
To Cite this Article:	Zafar, M. U., Batool, Z., Sher, F., Ch, M. S., & Mehmood, S. (2022). Causes, Implications and Symptoms of Hypertension in Punjab Province. *Journal of Peace, Development and Communication* , *06*(04), 01–13. https://doi.org/10.36968/JPDC-V06-I04-01
Author(s) Note:	Muhammad Umar Zafar is a Ph.D. research scholar at Department of sociology. Government college university, Faisalabad
	Dr Zahira Batool is serving as aProfessor and Chairperson at Department of Sociology. Government college university, Faisalabad

Author(s) Note:	Dr Falak Sher is serving as an Assistant Professors at Department of Sociology. Government college university, Faisalabad
	Dr Muhammad Shabir Ch is serving as an Assistant Professors at Department of Sociology. Government college university, Faisalabad
	Dr Sadaf Mehmood is serving as an Assistant Professors at Department of Sociology. Government college university, Faisalabad

ABSTRACT

Hypertension is rapidly growing problem in developing and developed countries and is a serious concern and challenge for health practitioners and researchers. Hypertension is posing serious threat to individuals, families and national development. The study is planned to determine the prevalence of hypertension, causes, implications and signs and symptoms of hypertension. A cross-sectional survey was conducted in three districts of Punjab province to interview randomly selected 600 male urban respondents of age 30 to 65 years. The average of 2nd & 3rd systolic & diastolic B.P readings has been taken for the estimation of prevalence of hypertension. Smoking habits, family blood pressure history, taking extra salt (sodium), overweight, old-age, diabetes, no interest in doing exercise, taking more stress due to the unemployment, family disorganization, burden of large families, nonseriousness at the early stage of blood pressure, avoidance from visiting doctor for regular checkup and unhealthy eating habits were the main causes of hypertension. Analysis demonstrates that majority of the respondents had not the knowledge that severe headache, fatigue, shortness of breath, chest discomfort, heart palpitation, burry and double vision, nausea and vomiting, nose bleed, sleeplessness, lack of concentration/confusion are the major signs & symptoms of high blood pressure. It is suggested that the people should make aware about the healthy lifestyle and the signs & symptoms of high blood pressure and knowledge of actions required to maintain or avoid B.P.

Key words: hypertension, signs & symptoms and cross-sectional study

Introduction:

Unexpected and unbelievable rise of hypertension in countries with poor economies with limited health and research facilities is a serious threat to individuals and families. It is critical to comprehend what blood pressure (BP) is in order to comprehend hypertension or excessive blood pressure, it relates to blood passing through the heart, blood goes to the different parts of the body delivered by arteries. Every time heart beats and blood is pumped into veins. Heart-driven blood pressure results from the heart's pumping action on blood vessel walls (WHO, 2013). In the literature hypertension has different definitions (JNC, 2003) while WHO provided 2 definitions which are mostly used to measure blood pressure.

According to WHO (2013), if the blood pressure is 140mmHg (diastolic) or more then that condition is known hypertension. Another definition of hypertension has been proposed by JNC VII. Because of the categorization of BP, this term may be clearer than the WHO definition. Joint national committee defined hypertension when systolic-blood pressure (SBP) 140mmHg and diastolic blood pressure(DBP) is 90mmHg. The normal blood pressure is considered when SBP is 120 mmHg and DBP is 80 mmHg. When the range of SBP is from 120 to 139 mmHg and the range of DBP is from 80 to 89 mmHg and that condition is categories as pre-hypertension (JNC, 2003).

In order to ensure precise measurement of the blood pressure the average of two or more accurate recorded BP measurements has been taken (JNC, 2003).

Although heredity has a large role in blood pressure variation, quantitative estimates range from 35 to 70%. The most prominent cause among the people are the individuals is inheritance or heredity in other words family history is primarily cause of hypertension of the family members.

It has been advocated that the people who have family history of hypertension are at higher risks than the people who do not have the family history of hypertension even it is also viewed the people who have family history are more likely victims of blood pressure despite their care (Beevers et al., 2007). The different studies identified the effect of age, education occupation, income, eating habits, life style, heredity, social support and carefulness in monitoring the blood pressure in the light of doctors and dietitians (Costa, Juvenal, et al. 2007).

Physiological, physical and emotional changes are primarily controlled by autonomic nerve system which plays a crucial role in maintaining a “normal” blood pressure (Beevers et al., 2007). Arteriolar construction and dilatation can occur as a result of sympathetic nervous system stimulation. Such modifications mediate short-term variations in blood pressure after stress and physical exercise (Beevers et al., 2007).

Objectives

1. To explore the socio economic and demographic circumstances of the respondents.
2. To determine the extent of hypertension among the respondents.
3. To explore the causes and symptoms of hypertension.
4. To suggest measures to control the prevalence of hypertension.

Methodology

A cross-sectional survey was conducted in three districts of Province, Punjab to interview randomly selected 600 male urban respondents of age 30 to 65 years. Blood pressure measurements have been taken three times on the right arm of the selected respondents using automatic electronic device. The average of readings of 2 and 3 have been used for analysis. For this purpose, the services of a well-trained paramedic staff have been taken. The descriptive analysis has been carried out for the verification of research objectives.

Results and discussions

Table 1. Age of the respondents

Sr No.	Age	Frequency	Percentage
1	30-39	80	13.4
2	40-49	210	35.0
3	50-59	185	30.8
4	60-65	125	20.8

Table 1 indicates 13.4% of the respondents were belonged to age group of 30 to 39 and respondents in that group can be regarded as young respondents. The 35 % of the respondents belonged to middle age group ranging from age 40 to 49. A slightly less than 31% of the respondents were from age category of 50 to 59 and the remaining percentage (20.8%) of the respondents were the senior citizens and belonged to age group 60 to 65 years. The respondents who were in the age group of 50 to 65 there are at high risk to hypertension.

Education of respondents

There is no doubt education is an important factor affecting human attitude and behavior towards every aspect of life. These aspects maybe health, maybe business, maybe family life etc. Table 2 indicates that 35 percent of the respondents had the college level of education followed by the 25 percent of the respondents who have attained high school level education. There are substantial number of the respondents who had a higher level of education i.e. university and their percentage was 15. Although Pakistan has attained a considerable level of literacy during the last two decades but still there are number of people who can be categorized them as illiterate. This study also indicates that there are 20 percent of the respondents who has primary level of education. As emerged from the table that a substantial number of the respondents (50%) of the respondents who had a higher level (college and university) education.

Table 2: Respondents Education

Level of Education	Frequency	Percent
No Education	30	5.0
Primary	120	20.0
High School	150	25.0
College	210	35.0
University	90	15.0
Total	600	100.0

Prevalence of hypertension among respondents. The prevalence of hypertension is on the rise in developing and developed world. The high blood pressure has a serious health implications and it has been regarded globally a great challenge for policy makers and health care managers. As study findings indicate that slightly less than 37.5% of the respondents reported that they had the health problem of hypertensions, while about 62.5% of the respondents have responded in "NO". It can be said that this is a serious health issue prevailing in Pakistan and it has multiple health implications. The hypertension directly or indirectly severely affect socio-economic and physiological conditions of the individuals and families. The unchecked health problem can be serve burden on national exchequer. Pakistan is already under great economic stress and strain and this growing health problem can further deteriorate the development of the country

Table 3: Are you diagnosed with hypertension?

Diagnosed of BP	Frequency	Percent
No	375	62.5
yes	225	37.5
Total	600	100.0

As the study is focused on hypertension and hypertension has multiple health complications like such as kidney disease, diabetes, cholesterol, stock, and coronary heart disease. It has been asked from the surveyed respondents do you have any health problems. Slightly less than 57.5% of the respondents reported that they have health problems while slightly more than 42.5% of the respondents had given in the answer "NO". It is likely what the health problem they faced likely due to their health problem of hypertension. The respondents who reported that they have health implications due to hypertensions or some other health illness, these complications are heart disease, stroke, kidney disease, cognitive impairment, eyes problems, memory problems, diabetes, sexual and metabolic syndrome, difficult in understanding and dementia. The respondents viewed that high blood pressure is a serious problem and in the early stage of hypertension the people don't bother or serious and at the later stage hypertension makes the people life totally uncomfortable and the most serious implication of hypertension is depression, anxiety and stress. This psychological health condition further deteriorates the people health. They stressed upon the people that they must take it seriously whether they expose to hypertension or not. It can be said that hypertension can be a cause root of the multiple health implication.

Table 4: Health problems faced by the respondents.

Health problems	**Frequency**	**Percent**
No	255	42.5
Yes	345	57.5
Total	600	100.0

Systolic Blood Pressure

The descriptive analysis indicates that 52.0 percent of the respondents had the systolic blood pressure up to 129 mmHg. Among these respondents 50 respondents had blood pressure less than 120 mmHg and remaining 262 had blood pressure from 120 mmHg to 129 mmHg. 15.5 percent of the respondents had blood pressure from 130mmhg to 139mmhg. They can be categorized as pre-hypertensive patients. It is generally observed that among these people who are at the stage of pre-hypertension, these people understand they had normal blood pressure. 17.2 % of the respondents had first stage level of blood pressure ranging from 140 mmHg to 159 mmHg. The respondents who were at the 2nd and 3rd stage of hypertension ranging from 160mmhg and above and their percentage was 18.3.

Table 5: Respondents level of systolic blood pressure.

Systolic	Frequency	Percent
Normal 120-129	312	52.0
Pre-Hypertension 130-139	75	12.5
1st Stage 140 – 159	103	17.2
2nd and 3rd Stage	110	18.3
Total	600	100.0

Diastolic Blood Pressure

Analysis indicates that 55.8 % of the respondent's blood pressure was up to 84mmhg. Among these respondents 45 respondents had blood pressure less than 80 mmHg. 10.7 % of the respondents had their diastolic blood pressure ranging from 85 mmHg to 89 mmHg and they can be categorized as patients of pre-hypertensive patients. Descriptive analysis further reveals that 17.5 percent of the respondents had blood pressure ranging from 90 mmHg to 99 mmHg and they are at the first stage of hyper-tension. The respondents who were at the 2nd and 3rd stage of blood pressure ranging from 100 mmHg and above and their percentage were 16.0.

Table 6: Respondents level of diastolic blood pressure.

Diastolic	Frequency	Percent
Normal up-to 84	335	55.8
Pre-Hypertension 85-89	64	10.7
1st Stage 90-99	105	17.5
2nd and 3rd Stage 100 and plus	96	16.0
Total	600	100.0

Table 7: Classification of the B.P values by PSH*

Category	**Diastolic**		**Systolic**
Isolated systolic hypertension	<90	and	≥140
Hypertension grade 3	≥110	and/or	≥180
Hypertension grade 2	100-109	and/or	160-179
Hypertension grade 1	90-99	and/or	140-159
High normal (or borderline)	85-89	and/or	130-139
Normal	80-84	and/or	120-129
Great	<80	and	<120

***** http://www.sphta.org.pt/pt/informacao_publico_conheca_ melhor_hta.asp?id=1.

Symptoms of high blood pressure:

Knowledge or awareness about the symptoms of blood pressure does affect the people decision making process. The people who are equipped with the knowledge of symptoms of blood pressure they can take right decision at the right time to control their high blood pressure. On the other hand, the people who have poor or no knowledge about the symptoms of blood pressure they likely to keep their health at greater risk.

Table 8: What are symptoms of high blood pressure?

Sr. No.	Symptoms	Yes		No	
		F	%	F	%
1	Severe headache	215	35.8	385	64.2
2	Fatigue	210	35.0	390	65.0
3	Shortness of breath (breathlessness)	275	45.8	325	54.2
4	Chest discomfort	360	60.0	240	40.0
5	Heart palpitation	320	53.3	280	46.7
6	Burry and double vision	290	48.3	310	51.7
7	Nausea and / vomiting	225	37.5	375	62.5
8	Nose bleed	265	44.2	335	55.8
9	Sleeplessness	202	33.7	398	66.3
10	lack of concentration / confusion	135	22.5	465	77.5

In order to investigate the knowledge of the respondents they were asked "what are the symptoms of high blood pressure. Descriptive analysis indicates that 35.8% of the respondents had the knowledge of severe headache as symptoms of blood pressure , 35% had the knowledge of fatigue 45.8% viewed shortness of breath (breathlessness), 60% reported chest discomfort ,53.3 % had the knowledge of heart palpitation, 48.3 % respondents viewed burry and double vision as symptom of high blood pressure,37.5%, 44.2 % , 33.7 % and 22.5% of the respondents had the knowledge of nausea/vomiting, nose bleeding , sleeplessness and lack of concentration / confusion as a symptoms of high blood pressure. The pattern of the knowledge of symptoms of high blood pressure indicates the poor level of the knowledge of the respondents about the symptoms of high blood pressure. As it is reflected from the descriptive analysis .64.2% ,65.0%, 54.2%, 40.0%, 46.7%, 51.7%, 62.5%, 55.8%, 66.3% and 77.5% of the respondents had no knowledge of severe headache, fatigue, shortness of breath (breathlessness), chest discomfort, heart palpitation, burry and double vision, nausea and vomiting, nose bleed, sleeplessness, lack of concentration / confusion.

Causes of hypertension

It was asked from the respondents about the causes of the high blood pressure, they viewed that smoking habits, family blood pressure history, taking extra salt (sodium), overweight, old

age, diabetes, no interest in doing exercise, taking more stress due to the unemployment, family disorganization, burden of large families, nonseriousness about the early stage of blood pressure, avoidance from visiting doctor for regular checkup and unhealthy eating habits. (Ferrazzo et al., 2014; Selem et al.,2013; Sociedad, PH., 2008)

1. What to do in high blood pressure?

Life style is very important to minimize or avoid high blood pressure. Life style covers aspects eating and drinking, exercise and sleeping pattern. The people who prefer to eat healthy food and doing exercise, take proper sleep are at the low risk of high blood pressure as compared to the people who have unhealthy eating don't bother about exercising and smoking such people are at high risk of blood pressure. Having knowledge about healthy life style helps in taking such decisions and actions which are beneficial to the human health.

Table 9: What to do in high blood pressure

Sr. No.	Actions	Yes		No	
		F	%	F	%
1	Lose Extra Weight	260	43.3	340	56.7
2	Exercise Regularly	235	39.2	365	60.8
3	Reducing Salt In Diet	275	45.8	325	54.2
4	Taking Good Sleep	190	31.7	410	68.3
5	Reducing Stress And Tension	125	20.8	475	79.2
6	Taking Garlic	210	35.0	390	65.0
7	Eat More Potassium	195	32.5	405	67.5
9	Eat Dark Chocolate	90	15.0	510	85.0
10	Cut Back On Caffeine	205	34.2	395	65.8
11	Not Smoking	248	41.3	352	58.7
12	Monitoring Blood Pressure	213	35.5	387	64.5

Different actions have been explored taken by the respondents to address their health or to avoid hypertension. It has been asked from the respondents do you know that losing extra weight is beneficial for maintaining blood pressure. It is surprising to note that only 43.3 % of the respondents had the knowledge that reducing weight is helpful in reducing blood pressure while on the other hand majority of the respondents (46.7%) had no knowledge about the positive impact of reducing weight on the blood pressure. Studies clearly support there is strong link between reduction in weight and reduction in blood pressure (Dickinson et al., 2006; Lee et al., 2007). Regular exercise has been also regarded as a determinant of management of blood pressure. It has been asked from the respondents that do you think that doing exercise regularly is an appropriate action to maintain blood pressure, slightly higher that 39% viewed that exercise is very suitable strategy to regulate blood pressure while on the other hand a vast majority of the respondents (60.8%) have no knowledge about beneficial role of doing exercise

regularly. A number of studies highlighted the importance of exercise to regulate the blood pressure and to keep the body functioning healthy (Alsairafi et al., 2010). Further probing reveals the perceptions that the people who do exercise such people are more likely unhealthy or sick and such perceptions make people inactive for doing exercise.

Excessive salt intake has been globally identified as a risk factor of hypertension. Majority of the people do not have knowledge about the adverse implications of salt on rising blood pressure. It has been asked from the respondents in case of blood pressure minimizing salt is a useful action. 45.8 % viewed that minimizing salt in the food or taking low salt food is an appropriate action to avoid high blood pressure. A substantial number of studies identified the dangerous effect of taking more salt in food in relation to blood pressure. Adverse implication on blood pressure have been recognized by the researchers' health care managers and policy makers globally. The functional food such as garlic, ginger, onion etc, have been recognized as beneficial food to maintain the human health including blood pressure. Majority people even don't know the beneficial effect. If functional foods on human health. It has been asked from the respondents do you think that eating garlic can minimize the blood pressure or eating garlic is an appropriate action in the condition of blood pressure. 45 % respondents replied in Yes and explained that garlic has charismatics effect in reducing blood pressure while on the other hand 55% did not know the positive affect of garlic and regulating blood pressure. There are number of studies which have been conducted in developed countries identified the reducing effect of garlic on blood pressure (Kojuri and Rahimi 2007). It is worth mentioning in Asian culture garlic is an essentials ingredient of the food and the people eat garlic in this region from centuries without knowing that reducing effect of garlic on blood pressure. They used garlic in their food just for taste not for managing blood pressure. It is the contribution of the research on different functional food about their beneficial effect on human health.

Caffeine has been regarded as link to increasing blood pressure. It has been asked from the respondents do you think that cut back on caffeine is appropriate action to manage blood pressure. 34.2 % of the respondents viewed that cut back on caffeine is an appropriate action to address high blood pressure while on the other hand 65.8 % viewed that they have no knowledge about reducing caffeine intake can manage high blood pressure. In this study the respondents' knowledge about beneficial effect of chocolate on human health has been investigated. Findings reveal that a small number of the respondents had such knowledge while a huge majority had not the knowledge that eating dark chocolate will be helpful in managing blood pressure.

The proper sleep is very important to maintain the human health. It maintains the proper functioning of the body. Healthy functioning of the different parts of the body is very useful to maintain or to regulate the blood pressure. The respondents were asked whether it is an appropriate action to take proper and deep sleep in case of high blood pressure. The respondents 41.7% of the respondents viewed that sleep is very important action to be taken when a person feel blood pressure. On the other hand, 58.3 % of the respondents had no knowledge about the beneficial effect of sleep on reducing or maintaining blood pressure. Sociedade (2008) has identified the empirical relation of sleep on blood pressure. He has identified that proper sleep helps in maintaining and managing blood pressure. The proper sleep also helps in in minimizing stress and tension. Studies found the stress and tension is a dangerous element in increasing blood pressure. Higher level of stress severely damages the human health including

blood pressure. The respondent's knowledge was explored about the dangerous effect of stress on blood pressure. 40.8 %of the respondents had the knowledge about the adverse effect of stress and tension while 59.2% did not know the negative effect of stress and tension in damaging human health. Different studies have been identified the adverse effect of stress and tension in increasing blood pressure (Fonseca et al., 2009).

Smoking is dangerous for human health. Smoking leads to increasing blood pressure and heart rate. It has been related with malignant hypertension. Nicotine which is an important ingredients of smoking acts as an adrenergic agonist. A health medical practitioners viewed that use of nicotine in its any form can increase blood pressure by as much as five to ten millimeters of mercury (mmhg) immediately after its use. Respondents were asked not smoking or abandoning smoking is an appropriate action to regulate blood pressure. 41.3% of the respondents viewed that smoking is very dangerous to human health and linked to increasing blood pressure. Stopping of smoking is very an appropriate action to manage blood pressure. 58.7 % of respondents had no knowledge about harmful effect of smoking on human health particularly in relation to blood pressure. There are number of studies identified the negative effect of smoking in increasing blood pressures (Beevers et al., 2007; Primatesta et al., 2001). Potassium is very important mineral that control blood pressure if a person takes more potassium it's likely the sodium will be reduced through urine. Potassium likely to help to ease stress and tension in human blood vessel walls that helps to lower blood pressure. Health practitioners recommend to take such food which is rich in potassium to control blood pressure. The foods which is rich in potassium are potatoes, bananas, spinach, avocado, beans, sweet potatoes, orange, lentils, milk, water melons, beetroot, pumpkins, tomatoes, leafy green, apricots etc. the respondents were asked you know that these foods are rich in potassium. 32.5% of the respondents responded in Yes, they reported that they have the knowledge that these foods are rich in potassium and help to regulate blood pressures. On the other hand, 67.5% of the respondents had given in answer No, explaining that as we are eating such foods but we have no knowledge that these foods are rich in potassium which helps in lowering blood pressure. A substantial number of studies acknowledged the significant role of potassium in lowering blood pressure (Oliverira_Martins et al. 2011).

Management of blood pressure is vitally important to maintain the blood pressure. Everyone knows high blood pressure is a dangerous killer. Studies indicate that majority of the people do not care about their blood pressure, they do not care and monitor their blood pressure and that attitudes seriously threat to their lives. Mostly studies reveal that most of the people who are at the risk of high blood pressure they don't monitor regularly their blood pressure that's why blood pressure is a bigger cause of the death in developing and developed world. In order to see the seriousness of the respondents it was asked do you think that monitoring blood pressure is an appropriate action. 35.5% of the respondents agreed with the view point that monitoring of blood pressure is an important factor to save the lives and minimize the complications of high blood pressure. On the other hand, 54.5% persons did not bother to monitor their blood pressure with a view that if the blood pressure is monitored that can create stressful and fearful situation to the people. Number of studies highlighted the carelessness of the people in monitoring their blood pressure leads to serious threat to their lives.

Conclusion and recommendation

The descriptive analysis reveals that 37.5% of the respondents were diagnosed as the patients of hypertension. Smoking habits, family blood pressure history, taking extra salt (sodium), overweight, old age, diabetes, no interest in doing exercise, taking more stress due to the unemployment, family disorganization, burden of large families, nonseriousness about the early stage of blood pressure, avoidance from visiting doctor for regular checkup and unhealthy eating habits were the causes of hypertension. Majority of respondents had no knowledge of the signs and symptoms of hypertension, what to do to address the hypertension. It is suggested that people should make aware about the consequences of unhealthy life style and benefits of the healthy life style.

References

Britov, A. N., & Bystrova, M. M. et al., (2003). New guidelines of the Joint National Committee (JNC) on prevention, diagnosis and management of hypertension. From JNC VI to JNC VII. Kardiologiia, 43(11), 93-97.

Beevers, D.G. and Lip, G.Y.H. (2007) Pathophysiology of Hypertension. In: Beevers, D.G., Lip, G.Y.H. and O'Brien, E., Eds., ABC of Hypertension, 5th Edition, Malden, Mass, BMJ Books/Blackwell, Oxford

Chobanian, A. V. (2003). National heart, lung, and blood institute; national high blood pressure education program coordinating committee. seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. Hypertension, 42, 1206-1252.

Costa, J. S. D. D., Barcellos, F. C., Sclowitz, M. L., Sclowitz, I. K. T., Castanheira, M., Olinto, M. T. A., ... & Fuchs, S. C. (2007). Hypertension prevalence and its associated risk factors in adults: a population-based study in Pelotas. Arquivos brasileiros de cardiologia, 88, 59-65.

Oliveira-Martins, S. D., Oliveira, T., Gomes, J. J., Caramona, M., & Cabrita, J. (2011). Factores associados à hipertensão arterial nos utentes de farmácias em Portugal. Revista de Saúde Pública, 45, 136-144.

Ferrazzo, K. L., Meinke, G. S., MADRI E SILVA, U. R. M., & Antoniazzi, R. P. (2014). Pré-hipertensão, hipertensão arterial e fatores associados em pacientes odontológicos: estudo transversal na cidade de Santa Maria-RS, Brasil. Revista de Odontologia da UNESP, 43, 305-313.

Al SAİRAFİ, M., Alshamali, K., & Anwar, A. R. (2010). Effect of physical activity on controlling blood pressure among hypertensive patients from Mishref area of Kuwait. European Journal of General Medicine, 7(4), 377-384.

Kojuri, J., & Rahimi, R. (2007). Effect of" no added salt diet" on blood pressure control and 24 hour urinary sodium excretion in mild to moderate hypertension. BMC cardiovascular disorders, 7(1), 1-4.

Primatesta (2001). Hypertension. Association between smoking and blood pressure: evidence from the health survey for England, 37(2), 187-93.

Selem, S. S. A. D. C., Castro, M. A., César, C. L. G., Marchioni, D. M. L., & Fisberg, R. M. (2013). Validade da hipertensão autorreferida associa-se inversamente com escolaridade em brasileiros. Arquivos Brasileiros de Cardiologia, 100, 52-59.

World Health Organization. (2013). A global brief on hypertension: silent killer, global public health crisis: World Health Day 2013 (No. WHO/DCO/WHD/2013.2). World Health Organization.