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STUDY OF PREVALENCE AND MANAGEMENT OF HYPERTENSION IN OMANI POPULATION

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ABSTRACT

Various studies have demonstrated that prevalence of hypertension in Oman is higher than many other countries. In one such study it was concluded that 23-27% of population might be suffering from hypertension. The research was conducted in order to study the prevalence and management of hypertension among Omani population in Muscat region. The non-hospitalized patients aged between 18-85 years who visited the Al-Mabelah health center, Al Khoudh health center and Alseeb polyclinics in Muscat were selected for the study. Patients age, gender, type of hypertension, treatment and complications associated were collected. The questionnaires were also distributed. The data was collected over a period ranging from October 2013 until February 2014. It was observed that the majority of people suffering from hypertension were males which might be due to environmental and genetic factors. High prevalence was mainly among the older age group of 51-60 years. It was found that most of patients suffering from hypertension received education at primary educational level. A family history was an important contributory factor. Higher risk factors of having hypertension were stress and lack of exercise.

KEY WORDS: Hypertension, Elderly patients, Genetic factors.

1.0 INTRODUCTION

Hypertension (HTN) is a term used to describe high blood pressure which is a cardio vascular complication in which the systemic arterial blood pressure is elevated. It is a very common disease prevalent worldwide and in Oman. It is known as the "silent killer" since it has no initial symptoms but can lead to long-term disease and complications which require lifelong medication. Hypertension results from increased peripheral vascular smooth muscle tone, and

leads to increase in arteriolar resistance and reduces capacitance of the venous system. In most cases, the cause of the increased vascular tone is unknown. Elevated blood pressure is an extremely common disorder. Various studies have demonstrated that prevalence of hypertension in Oman is even higher than many other countries. In one such study it is concluded that the 23-27% of population might be suffering from hypertension.

90% of hypertensive patients are grouped into primary hypertension which doesn't have an identifiable cause. The remaining 5-10% of cases (Secondary hypertension) are caused by other conditions that affect the kidneys, arteries, heart or endocrine system. Hypertension has been commonly staged by the degree of blood pressure elevation into" mild", "moderate" and "severe" hypertension. The risk factors of hypertension in Oman and in other gulf countries involve age, race, life style, genetic heredity, certain pathologies and medication. Untreated hypertension is the major risk factor for heart attack, stroke, myocardial infarction, heart failure, and is a leading cause of chronic kidney failure. Blood pressure affects person's life expectancy hence it is important to take it into consideration about treating this disease. Lifestyle and dietary changes can improve blood pressure control and decrease the risk of associated complications; however drug treatment is considered necessary for patients who are not responding to lifestyle changes. There are many different medicines from different categories that have been used to treat and control high blood pressure including: ACE inhibitors (Angiotensin-converting enzyme), beta blockers, calcium channel blockers and diuretics.[1]

If this pressure rises and stays high over time, it can lead to coronary heart disease, heart failure, stroke, kidney failure, and other health problems. The variation in pressure in left ventricle and the aorta over two cardiac cycles (Heart beats) represents systolic and diastolic pressure. Abnormally high arterial blood pressure is usually indicated by an adult systolic blood pressure of 140 mm Hg and diastolic blood pressure of 90 mm Hg or greater (Normal 120/80mmHg).

Risk factors include overweight or obesity, unhealthy lifestyle habits, sodium chloride intake, alcohol intake, physical inactivity, smoking and using tobacco, older age and sex/gender. High blood pressure is more common in men. Women are more likely to develop high blood pressure after age 45-65 years. Blood pressure is particularly common among blacks, often developing at an earlier age than it does in whites. Serious complications, such as stroke, heart attack, and kidney failure, also are more common in blacks. Other factors include

family history with hypertension. High levels of stress can lead to a temporary increase in blood pressure.[2]

There is no identifiable cause of high blood pressure. Primary (essential) hypertension for most adults tends to develop gradually over many years.Secondary hypertension is caused by an underlying condition. It tends to appear suddenly and causes higher blood pressure than does primary hypertension. Various conditions and medications that can lead to secondary hypertension include kidney problems, adrenal gland tumors, thyroid problems, certain defects in blood vessels, certain medications such as birth control pills, cold remedies, decongestants, over-the-counter pain relievers and some prescription drugs.

Blood pressure measurements fall into four general categories

Category	Systolic Blood Pressure	Diastolic Blood Pressure
Normal	< 120	<80
Pre-hypertension	120-139	80-89
Hypertension – Stage 1	140-159	90-99
Hypertension – Stage 2	≥160	≥100

Most people with high blood pressure have no signs or symptoms, even if blood pressure readings reach dangerously high level, so it's called silent killer. In some rare cases, where a person has very high blood pressure, they can experience symptoms including severe headache, vision problems, nosebleeds, shortness of breath, dizziness and irregular heartbeat In fact, nearly one-third of people who have high blood pressure don't know it. The only way to know if the blood pressure is high is through regular checkups.[3-4]

High blood pressure (HBP) is treated with lifestyle changes and medication. Healthy lifestyle habits can help control high blood pressure. These habits include following a healthy diet, (DASH) diet, which include: fruits, vegetables, and low-fat dairy foods, plenty of potassium, which can help prevent and control high blood pressure, decrease the salt in the diet, being physically active, maintaining a healthy weight, quitting smoking, managing the stress and medications including thiazide diuretics, loop diuretics, potassium-sparing diuretics, beta

blockers and angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), calcium channel blockers, renin inhibitors (Aliskiren) etc.

Once blood pressure is under control, a daily aspirin should be taken to reduce the risk of cardiovascular disorders**.** To reduce the number of daily medication doses need, the doctor may prescribe a combination of low-dose medications rather than larger doses of one single drug. In fact, two or more blood pressure drugs often work better than one. [5-7]

Nancy Huang, et. al showed that by healthy eating, reducing dietary sodium, regular physical activity, maintaining healthy body weight and smoking cessation can lower blood pressure, regardless of drug therapy.[8]

Fotoula Babatsikou et.al provided evidence that prevalence of hypertension in the elderly in USA, Europe is between 53% and 72%**.** In addition to that High blood pressure values in the presence of several risk factors like obesity, diabetes mellitus, increased salt intake, hyperlipidemia, smoking, lack of physical activity, advanced age, sex lead to further increase of cardiovascular disease risk. Regular physical activity, healthy diet and medication are some of the preventive measures that can be adopted for reduction of high blood pressure levels.[9]

Manuel Pentane showed that systolic and diastolic blood pressure increased with advanced age. 50% increases with age of 65 and above. It provided evidence that treatment of hypertension reduced morbidity and mortality. In addition he showed that the uses of calcium channel antagonist was beneficial in hypertension in elderly population.[10] Maria Czarina study shown in elderly patient clarified that optimal management of hypertension could be achieved by therapeutic lifestyle change, such as reduced dietary sodium intake, weight loss, regular aerobic activity, and moderation of alcohol consumption. He showed also that pharmacological agent can reduce mortality in patients with cardiovascular diseases.[10-11]

Prevalence and associated risk factors of hypertension among people aged 50 years and more in Banepa Municipality, Nepal were studied by Manandhar K. It provided evidence in prevalence and associated risk factors of hypertension. It demonstrated that the prevalence of hypertension was more in male gender, people having non vegetarian eating habits, alcohol consumption and > 25 body max index. [12]

An audit of Hypertensives at University Health Center in Oman was done by Thuraya Ahmed Al shidhani et.al. In this study the authors talked about evaluation of management of hypertension in primary health care center SQU in Oman. By randomized methods around 150 patient were selected in 2007-2008. Omani female were around 53.3% and males were 46.7% in 2007 and 2008. About 55% of hypertension patients were significantly controlled. [13]

Another study on blood pressure patterns among the Omani populations was shown by A.A. Hasab. In this study the authors talked about how to determine the blood pressure among adult Omani in the age group more than or equal to 18 years. The study was done on 4732 people who had high blood pressure. Also in this study it was shown that income, blood pressure risk factor with obesity and those aged more than or Equal to 45 years were more compared to other hypertensive people.[14]

Study on control of hypertension among Type 2 diabetics was conducted by Kawther EL. In this study, authors have discussed about how to assess blood pressure control in patients with type 2 diabetes mellitus. This study was conducted in health center in Oman over a one year period. The patients were classified into 4 groups according to systolic and diastolic blood pressure control. The result of systolic to diastolic ratio in group 1 was 10:56, group 2 was 23:14, group 3 was 23:16, group 4 was 41:7. The medications used were ACE, ARB, diuretics, β-blockers, and calcium channel blockers. Only 30% of the hypertensive patients met the recommended blood pressure for diabetics.[15]

Prevalence of uncontrolled hypertension in primary care settings in Al Seeb, Wilayat Oman was studied by Rashid Al Saadi, Suleiman et.al. Based on the assumption about 50% of uncontrolled hypertension data was collection in Omani adult under age 18 year old and above . Blood pressure control in diabetes was about 6.4% and 18.5% in renal disease. Better control was seen with cardiovascular disease and was 58%.[16]

Control and management of hypertension at university health center in Oman was done by Abdulaziz Al Mahrezi et.al. This study was done on people that were under 18 years of age and older at SQU health center.The prevalence was about 2.4% among 7702 medical records studied for age. It was low compared to the national average. This study showed that the control of hypertension was not optimal but was higher than those reported elsewhere.[17]

2.0 AIMS AND OBJECTIVES

Aim of the present study was to study the prevalence and management of hypertension in Omani population.

Hypothesis of the present study was that Hypertension is common among Omani population.
Objectives of the present study were to assess the prevalence of hypertension according to age, gender, educational levels etc. in patients, to determine the most common risk factors associated with hypertension and to determine the most common management protocols for hypertension.

3.0 MATERIALS AND METHODS

3.1 Subjects and setting

The non-hospitalized patients aged between 18-85 years who visited the Al-Mabelah health center, Al Khoudh health center and Alseeb polyclinics in Muscat were selected for the study. Patients age, gender, type of hypertension, treatment and complications associated were collected. The questionnaires were also distributed. The data was collected over a period ranging from October 2013 until February 2014.

3.2 Criteria for selecting data

The criteria for inclusion included non-hospitalized hypertensive patients aged between 18-85 years showing symptoms of hypertension and who came to the health centers during the period of October 2013 until February 2014.

3.3 Standard structure of patient medical records

About 150 medical records were checked for non-hospitalized hypertensive patients. They contained the following information:

- Age of the patients
- Gender of the patient
- Type of hypertension
- Family history
- Treatment
- Complication

3.4 Methodology

It was a survey based retrospective study and 150 patients participated in the study A questionnaire about "prevalence and management of hypertension in Omani population" was prepared which is as follows. The filled questionnaire was analyzed statistically and the results were tabulated.

1. **Gender:** ☐ Male ☐ Female

2. **Age:**

   ☐ Less than 18 years ☐ 19-30 years ☐ 31-40 years

   ☐ 41-50 years ☐ 51-60 years ☐ 61 and older

3. **Educational level**

   ☐ Not educated ☐ Primary ☐ Diploma ☐ Bachelor and higher

4. **Has your doctor told you that you have High Blood Pressure?**

   ☐ Yes ☐ No

5. **How often do you see your doctor for blood pressure checkups?**

   ☐ monthly ☐ every 3-4 Months ☐ every 6 months ☐ once a year

6. **Do you measure your blood pressure at home?**

   ☐ Yes ☐ No

7. **What was your last blood pressure reading?----------mmHg**

8. **Does high blood pressure affect the ability to perform your usual daily activities?**

   ☐ Yes ☐ No

9. **Which one of the following increases your risk of having hypertension?**

   ☐ Unhealthy lifestyle habits ☐ Stress

   ☐ Old age ☐ Obesity\ Overweight

   ☐ Ethnicity ☐ Others

10. Have you been taking your medications as prescribed by your doctor?

☐ Yes ☐ No

11. Any body in your family suffering from hypertension?

☐ Yes ☐ No ☐ Don't know

12. Select the type of diet/lifestyle you are following:

☐ Exercising ☐ Low Salt

☐ Weight Reduction ☐ No Special Diet

13. What type of physical activity do you currently do?

☐ Bicycling ☐ Running

☐ Swimming ☐ Walking

☐ None

14. Any other complication associated?

☐ Yes ☐ No ☐ Don't know

15. Does your pharmacist counsel you on how to use medication?

☐ Yes ☐ No ☐ Don't know

4.0 RESULTS

The results are tabulated as below.

4.1 Prevalence of Hypertension based on gender

The data was collected from the filled questionnaires. It was complied in excel sheet and analyzed. It was found that males ware suffering more than females, as shown in the Table 1 and figure 1:

Table 1: Prevalence of Hypertension based on gender

Gender	Number of patients	Percentage
Male	89	59.3%
Female	61	40.7%
Total	150	100%

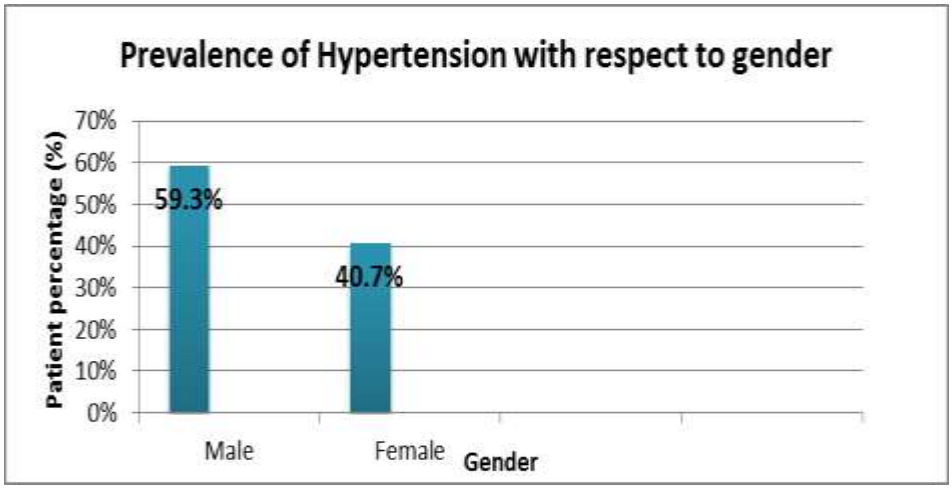

Figure1: Prevalence of Hypertension based on gender

4.2 Prevalence of hypertension according to age

It was found that most patients suffering from hypertension were in the age group of 51-60 years, as shown in the Table 2 and Figure 2:

Table 2: Prevalence of Hypertension according to age

Age	Number of patients	Percentage (%)
Less than 18	0	0%
19-30	12	8%
31-40	8	5.3%
41-50	39	26%
51-60	56	37.4%
>60	35	23.3%
Total	150	100%

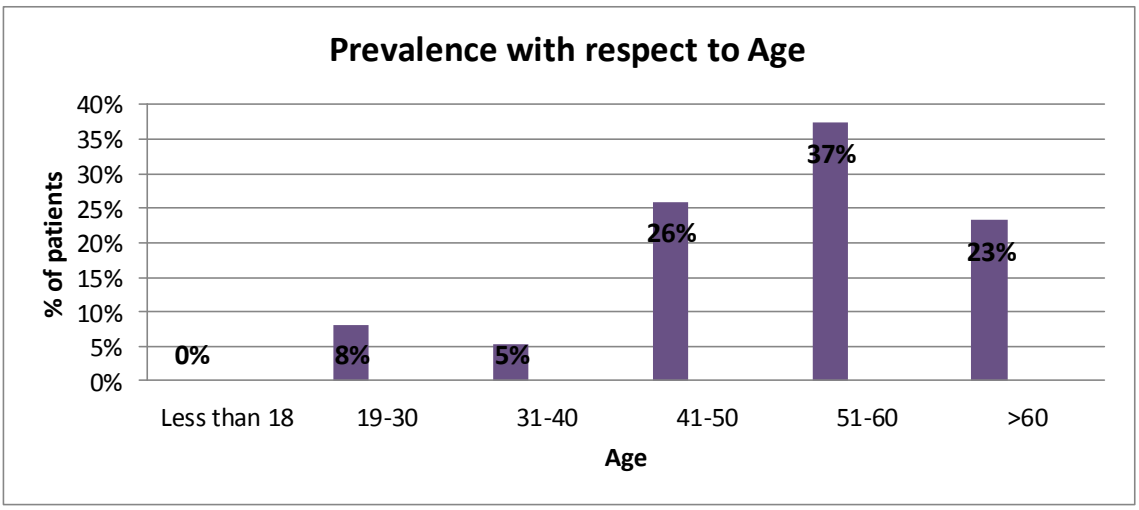

Figure 2: Prevalence of Hypertension according to age

4.3 Prevalence of hypertension according to Educational levels:

It was found that most of the patients suffering from hypertension had education at Primary level, as shown in the Table 3 and Figure 3:

Table 3: Prevalence of hypertension according to Educational levels

Educational level	Number of patients	Percentage (%)
Not educated	22	14.7%
Primary	63	42%
Diploma	37	24.7%
Bachelor and higher	28	18.7%
Total	150	100%

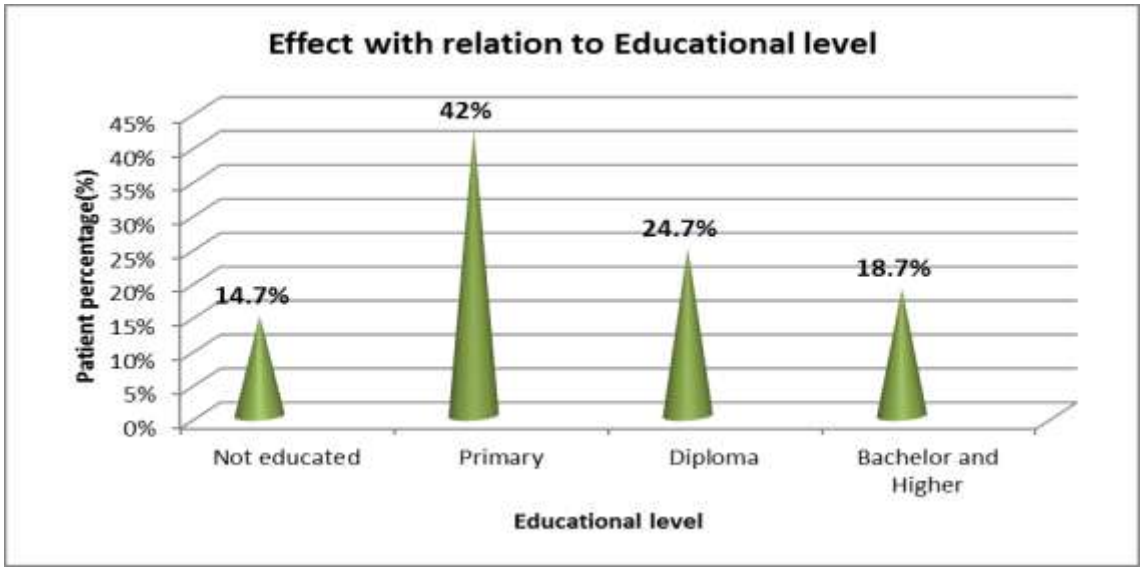

Figure 3: Prevalence of hypertension according to Educational levels

4.4 Were you told by your doctor that you have high blood pressure?

It was found that the majority of hypertensive patients knew that they had hypertension, as shown in the Table 4 and Figure 4:

Table 4: Were you told by your doctor that you have high blood pressure?

Patient answer	Number of patients	Percentage(%)
Yes	147	98%
No	3	2%
Total	150	100%

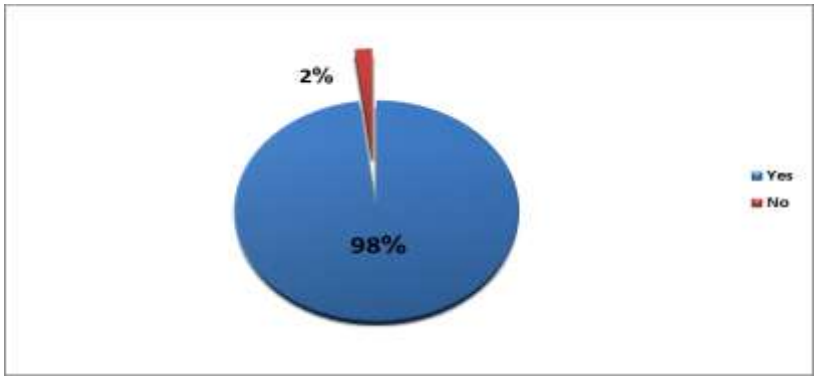

Figure 4: Were you told by your doctor that you have high blood pressure?

4.5 How often do you see your doctor for blood pressure checkup?

It was found that most of the patients suffering from hypertension visited the doctor for checkup every 3-4 months, as shown in the Table 5 and Figure 5:

Table 5: How often do you see your doctor for blood pressure checkup?

Checkup period	Number of patients	Percentage(%)
Monthly	10	6.7%
Every 3-4 months	97	64.7%
Every 6 months	37	24.6%
Once a year	6	4%
Total	150	100%

Figure 5: How often do you see your doctor for blood pressure checkup?

4.6 Do you measure blood pressure at home?

It was found that most of the hypertensive patients were taking their blood pressure reading at home as shown in the table 6 and figure 6:

Table 6: Do you measure blood pressure at home?

Patients response	Number of patients	Percentage (%)
Yes	99	66%
No	51	34%
Total	100	100%

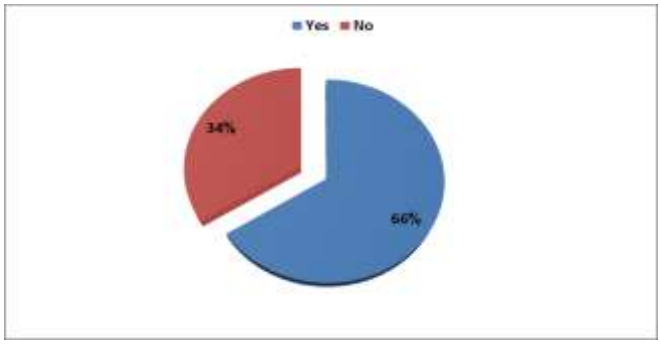

Figure 6: Do you measure blood pressure at home?

4.7 Does high blood pressure affect the ability to perform your usual daily activities?

It was found that the majority of hypertensive patient were not affected by the usual daily activities with hypertension symptoms, as shown in the Table 7 and Figure 7:

Table 7: Does high blood pressure affect the ability to perform your usual daily activities?

Patient's answer	Number of patients	Percentage(%)
Yes	56	37.3%
No	94	62.7%
Total	100	100%

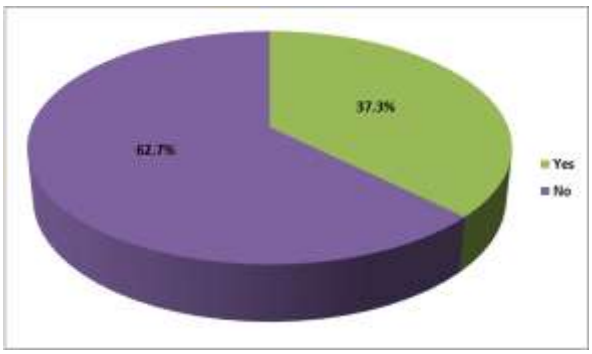

Figure 7: Does high blood pressure affect the ability to perform your usual daily activities?

4.8 Management of Hypertension according to type of diet the patient followed.

It was found that the majority of hypertensive patients followed the low salt in the diet, as shown in the Table 8 and Figure 8:

Table 8: Type of diet

Type of diet	Number of patients	Percentage (%)
Low salt	91	60.7%
Exercising	20	13.3%
Weight reduction	21	14%
No special diet	18	12%
Total	150	100%

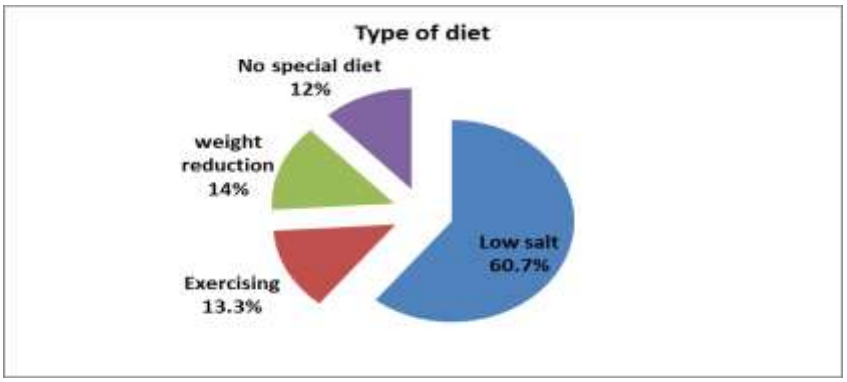

Figure 8: Type of diet

4.9 Which of the following increased the risk of having hypertension?

It was found that in majority of patients the risk factor of having hypertension was stress, as shown in the Table 9 and Figure 9:

Table 9: Risk factors

Risk Factors	Number of patients	Percentage (%)
Unhealthy lifestyle habits	37	24.7%
Stress	52	34.7%
Old age	27	18%
Obesity	23	15.3%
Ethnicity	9	6%
Others	2	1.3%
Total	150	100%

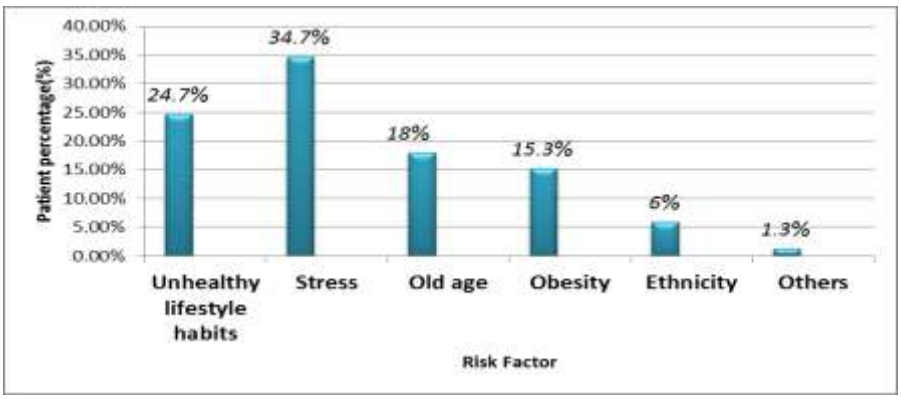

Figure 9: Risk factors

4.10 Have you been taking your medications as prescribed by your doctors?

It was found that the majority of hypertensive patients were taking their medications as prescribed by doctors, as shown in the Table 10 and Figure 10.

Table 10: Taking the medications as prescribed by doctors

Patient answer	Number of patients	Percentage (%)
Yes	148	98.7%
No	2	1.3%
Total	150	100%

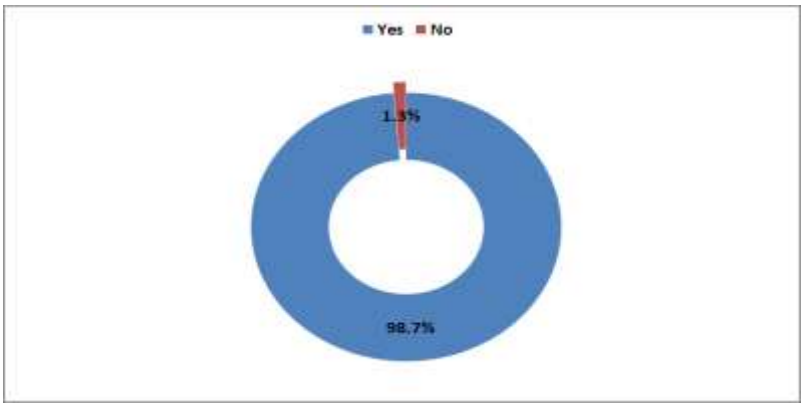

Figure 10: Taking the medications as prescribed by doctors

4.11 Any body in patient's family is suffering from hypertension?

It was found that the majority of hypertensive patients had a family history with hypertension, as shown in the Table 11 and Figure 11:

Table 11: Family history in hypertensive patient

Patients answers	Number of patients	Percentage (%)
Yes	138	92%
No	12	8%
Total	150	100%

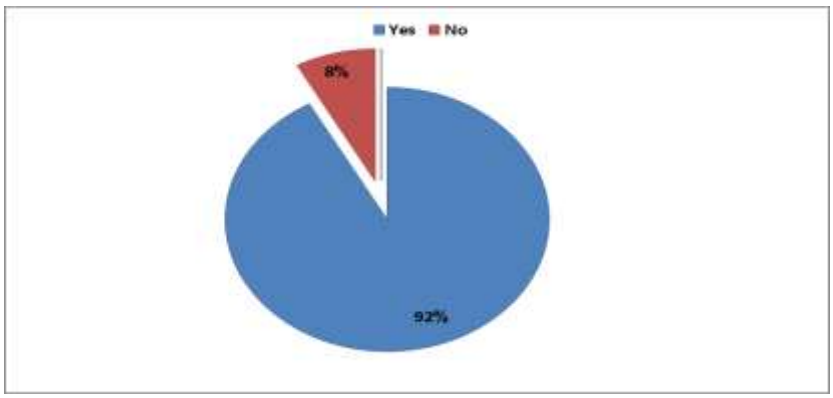

Figure 11: Family history in hypertensive patients

4.12 Which type of physical activity does the patient currently do?

It was found that the majority of hypertensive patients were not doing any exercises, as shown in the Table 12 and Figure 12:

Table 12: Types of physical activity done by hypertensive patient

Types of physical activity	Number of patients	Percentage (%)
Bicycling	12	8%
Swimming	8	5.3%
Running	5	3.3%
Walking	41	27.4%
None	84	56%
Total	150	100%

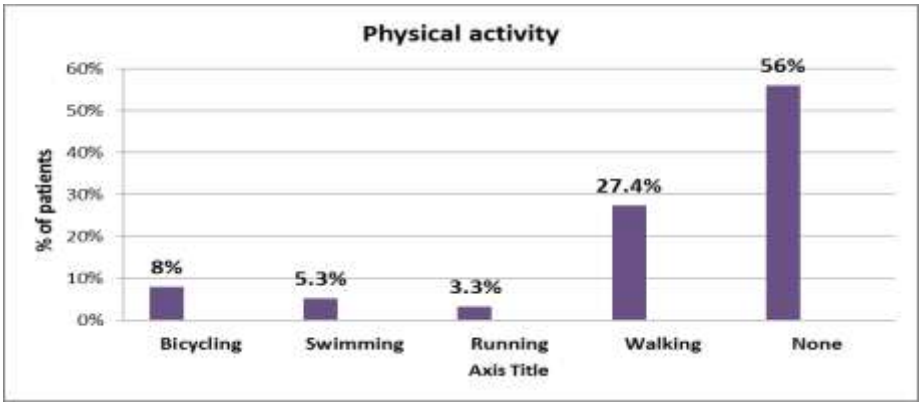

Figure12: Types of physical activities

4.13 Any other complications associated?

It was found that most of the hypertensive patients had complication associated with their hypertension, as shown in the Table 13 and Figure 13:

Table 13: Any other complications associated

Patient answer	Number of patients	Percentage(%)
Yes	98	65.3%
No	39	26%
Don't know	13	8.7%
Total	150	100%

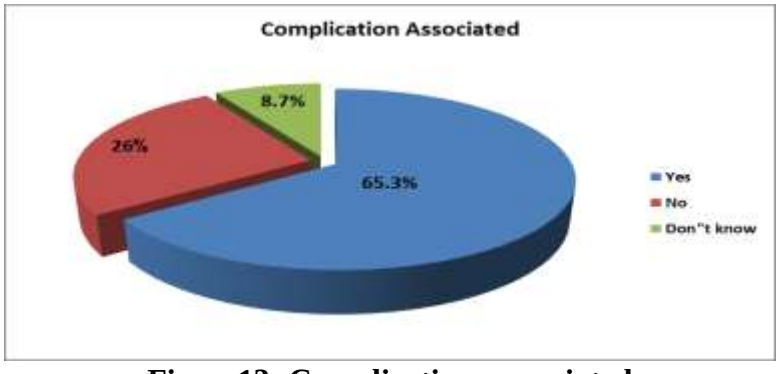

Figure13: Complications associated

4.14 Did your pharmacist counsel you how to use medications?

It was found that most of the hypertensive patients received counseling from their pharmacists, as shown in the Table 14 and Figure 14:

Table 14: Counseling by the pharmacist

Patient answer	Number of patients	Percentage (%)
Yes	145	96.7%
No	5	3.3%
Total	150	100%

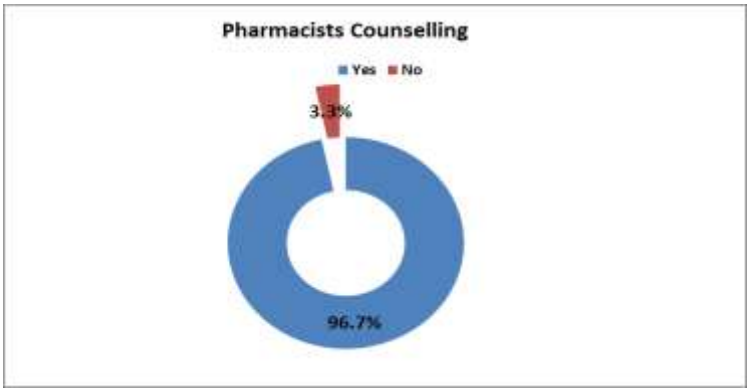

Figure 14: Counseling by the pharmacist

5.0 CONCLUSION

In conclusion, the research was conducted in order to study the prevalence and management of hypertension among Omani population in Muscat region. The results obtained have met the goals that were aimed in this research. While conducting this research, few restrictions occurred which limited our study. Lack of high rate of individuals and lack of time are some examples of limitations encountered while this research was conducted.

From our study we have found out that:

1- The majority of people suffering from hypertension were males. It might be due to environmental and genetic factors.

2- In addition, high prevalence was mainly among the older age group of 51-60 years. It was found that most of patients suffering from hypertension received education at Primary educational level. A family history was an important contributory factor. Higher risk factors of having hypertension were stress and lack of exercise, It is important to know the risk factors of the hypertension which might help the provider to optimize treatment for patients and to improve their quality of life.

6.0 RECOMMENDATIONS

Some of the recommendations from the above study include early detection of hypertension, advocate for healthy lifestyle especially in young generation by exercising regularly, balanced diet, obesity control etc., Quit smoking and alcohol, periodic health checkup for hypertension to avoid any complication associated and safe use of the medication.

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