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Influence of Lifestyle and Socio-demographic Factors on Adult Hypertensive Patients Held in King Khalid university hospital in Riyadh, Saudi Arabia

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Abstract:

Background: *Hypertension is a public health concern in Saudi Arabia. A recent study done in Saudi Arabia showed that the prevalence of hypertension among adults reach up to 30%. Limited patients' awareness about the effects of lifestyle on hypertension, lack of effective outreach to general people and lack of routine measurement of blood pressure on health care facilities being the most important factors hindering the control of hypertension. Therefore, we conducted this study to assess the lifestyle and socio-demographic factors in hypertensive patients.* ***Methods****: A Quantitative-cross sectional study was held in primary health care clinics in King Khalid University Hospital, Riyadh. A sample of 150 was taken randomly from hypertensive patients above 18 years old. The data were collected using predesigned questionnaire and an interview with illiterate patients. The measurements were taken from patients' medical records, and the analysis was done using SPSS software.* ***Results:*** *the data of 150 patients who were surveyed was analyzed. The age of 130 (86.7%) of the participants was above 45 years old. 138 (92%) of participants were either overweight or obese. The study illustrates that there is no significant association between any of the hypothesized factors (age, gender, BMI, residency, education, occupation, being smoker, exercise) and being controlled or uncontrolled with a p value more than 0.1. Majority of the patient were aware of hypertension complications with eye complication being the least one identified by only 51 (34%) of participants. More than 76 (49%) of participants had diabetes mellitus. Family history is crucial as 100 (67%) of participants had first degree relative with the disease.* ***Conclusion:*** *We conclude that the principle factors in controlling hypertension are taking medications and awareness of the complications rather than age, gender, exercise, smoking, lifestyle, socio-demographic factors.*

Keyword: *Lifestyle, Socio-demographic, influence, Hypertensive patients*

INTRODUCTION

Hypertension is extremely grievous disease, which is rapidly becoming one of the most common chronic diseases internationally as well as locally in Saudi Arabia. A highly reliable study emphasizes that the prevalence of hypertension among adults in our community reach up to 30% (1). Complications of hypertension are catastrophic as it is a leading cause for coronary heart disease, stroke, Kidney diseases and many others (2,3).Percentage of undiagnosed cases in KSA reaches up to 27%, which is an alarming sign (4). Furthermore, neglecting by many diagnosed, as treatment requires the utmost perseverance, can and will aggravate the problem (2).

There are several lifestyle and socio-demographic factors related to hypertension. Physical activity is an important factor in hypertension; its impact on lowering blood pressure can reach up to seven mmHg (5). Occupational status on the other hand is an effective factor, for instance, prevalence of hypertension among unemployment, like many females in Saudi Arabia, is high (11). A study on smoking found that it will often lead to a rise in blood pressure level by 10 mmHg and stay raised up to an hour after smoking (10). The prevalence of tobacco smoking in Saudi Arabia is 26% in males and 9% in females (9).

Research question:
Is there any association between (exercise, smoking, age, gender, occupation, educational level and Residence) and hypertension?

Rationale:
Our research is concerned with the studying of lifestyle and socio-demographic factors affecting hypertension. In Saudi Arabia, about 25% of population is affected by hypertension and the prevalence of hypertension is increasing. Limited knowledge about effects of lifestyle on hypertension, lack of effective outreach to general people and lack of routine measurement of blood pressure on health care facilities, all contribute to the dramatic increase of incidence of this disease in our community.

Hypothesis:

1. The level of blood pressure will be reduced in the group of hypertensive patients who exercise compared to those who are not.
2. The level of blood pressure will be increased in the group of hypertensive smokers rather than non-smokers
3. The level of blood pressure is more in males than in females.
4. The blood pressure is directly proportional with age.
5. The level of blood pressure is inversely proportional with the level of education.
6. Hypertension is more severe in urban than rural people.
7. The level of blood pressure is higher in patients with sedentary and sitting occupations, in comparison to physically active occupations.

Objectives:

- To find out if there is an impact of smoking in hypertensive patients
- To compare the level of blood pressure in people who are exercising to those who are not.
- To determine how impact socio-demographic factors can play in hypertension.
- To know more about Gender and Age in relation to elevated blood pressure specifically in our society.

METHODOLOGY

- **Study design**: Quantitative Cross Sectional
- **Study setting**: King Khalid University Hospital (Outpatients Clinics – Male, Female primary clinical cares)
- **Sample size**: Sample size is **150**, estimated using The equation: $n=Z^2pq/d^2$ where (n) is the desired sample size, (Z) is the standard normal deviate set at 1.96 which correspond to 95% confidence level, (p) is the proportion of hypertension which is 26%(1), (q) is 1-p and (d) is the degree of precision set at 7%.

- **Sampling technique**: Patients were selected by systematic random sampling taking every third patient on Monday morning and Wednesday afternoon. Days and sessions were selected randomly.
- **Data collection methods**: Questionnaire, illiterate patients were interviewed
- **Sections of the questionnaire**: Exercise-Smoking-Diet.
- **Variables mentioned in the questionnaire** : Exercise-Smoking-Diet - Age – Height – Weight – Blood Pressure
- **Biochemical measurements**: None
- **Physical measurements** : all measurements were taken from patients' medical record
- **Pilot study**: 10% of the sample size i.e. 15 patient were randomly chosen for involvement in pilot study.
- **Data analysis plan**: SPSS statistics software.
- **Inclusion:** Male and Female who are aged above 18 years.
- **Exclusion:** Physically and mentally disabled hypertensive patients.

Ethical Consideration:

The informed consent was distinct and obvious to the participants and implied the goal of the study; also they had the rights to disengage when they want to without any penalties toward the study team.

RESULTS

Table 1: A total of 150 participants were reviewed. The sample consisted of 56.7% male and 43.7% female with the majority being above middle age. 36% are housewives and 16% occupying field jobs. 62% of the participants are of intermediate education and above. In addition, the majorities were living in urban area.

Table 1: socio-demographic characteristics of the participants (n=150)

Variables	Frequency	Percentage
Patient Gender:		
Male	85	56.7
Female	65	43.3
Age Grouping:		
15 to 29	6	4.0
30 to 44	14	9.3
45 to 59	69	46.0
60 to 74	51	34.0
75 and above	10	6.7
Education Level:		
Illiterate	35	23.3
Primary	21	14.0
Intermediate	22	14.7
High school	30	20.0
University	41	27.3
Missing	1	0.7
Residency:		
Rural	13	8.7
Urban	137	91.3
Occupation:		
Office Job	35	23.3
Field Job	24	16.0
Housewives	54	36.0

Unemployed	37	24.7

Chart 1: Shows that the percentage of hypertensive patient with controlled Blood pressure reach 49%.

Chart 1: controlled blood pressure versus uncontrolled blood pressure of participants

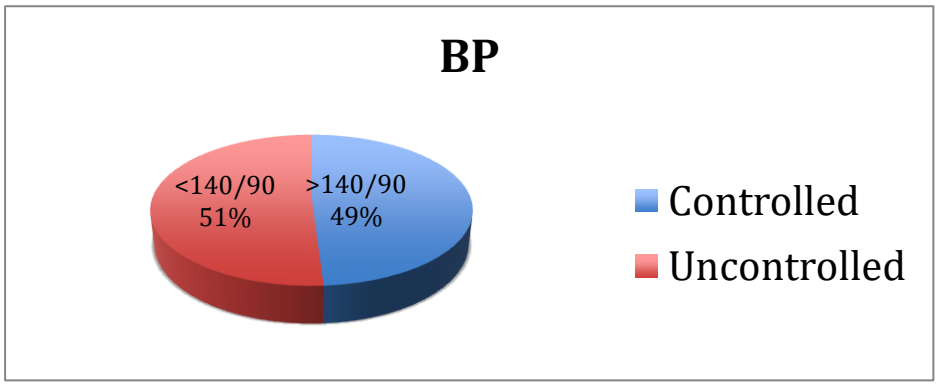


Table 2: Shows no significant (p >0.654) between gender and controlled and uncontrolled hypertensive patient.

Table 2: Gender versus controlled and uncontrolled blood pressure of participant

Gender	Controlled	Uncontrolled	P-value	Chi-square
Male	43	42	.654	.201[a]
	50.6%	49.4%		
Female	30	34		
	46.9%	53.1%		

Table 3: Demonstrate that 92% of the participants were either overweight or obese. Those with BMI of less than 25 shows that 66.7% of them were controlled yet there is no statistically significant association (p > 0.663) Between Body mass index and controlled Blood pressure.

Table 3: BMI versus controlled and uncontrolled blood pressure of participants

BMI	Controlled	Uncontrolled	P-value	Chi-square
<25	8	4	.663	1.586[a]
	66.7%	33.3%		
25-29.9	18	19		
	48.6%	51.4%		
30-35	28	31		
	47.5%	52.5%		
>35	19	21		
	47.5%	52.5%		

Table 4: Also shows that there is no significant association (p > 0.545) Between age and controlled blood pressure.

Table 4: Age versus controlled and uncontrolled blood pressure of participants

Age	Controlled	Uncontrolled	P-value	Chi-square
<45	10	15	.545	2.135[a]
	40.0%	60.0%		
45-60	42	35		
	54.5%	45.5%		
61-70	15	18		
	45.5%	54.5%		
>71	6	8		
	42.9%	57.1%		

Table 5: Shows that 92% of participants live in urban areas. Although rural areas participants were few, the percentage of participants with controlled hypertension was 69.2%. But there was no statistically significant correlation (p >0.127) with blood pressure control.

Table 5: Residence versus controlled and uncontrolled blood pressure of participants

Residence	Controlled	Uncontrolled	P-value	Chi-square
Rural	9	4	.127	2.334[a]
	69.2%	30.8%		
Urban	64	72		
	47.1%	52.9%		

Table 6: Shows no significant association (p >0.838) between Educational level and controlled blood pressure.

Table 6: Educational level versus controlled and uncontrolled blood pressure of participants

Educational level	Controlled	Uncontrolled	P-value	Chi-square
Illiterate	19	16	.838	2.083[a]
	54.3%	45.7%		
Primary	10	10		
	50%	50%		
Intermediate	9	13		
	40.9%	59.1%		
High school	14	16		
	46.7%	53.3%		
University	20	21		
	48.8%	51.2%		

Table 7: Shows no significant association (p >0.540) between occupation and controlled blood pressure.

Table 7: occupation versus controlled and uncontrolled blood pressure of participants

Occupation	Controlled	Uncontrolled	P-value	Chi-square
Office Job	16	19	.540	2.160[a]
	45.7%	54.3%		
Field Job	11	13		
	45.8%	54.2%		
Housemaid	24	29		
	45.3%	54.7%		
Unemployed	22	15		
	59.5%	40.5%		

Table 8: state that there is no significant association (p >0.189) between participant's frequency of blood pressure measurement in the last 6 months and their blood pressure control.

Table 8: Participant's blood pressure frequency measurement in the last 6 months versus their controlled and uncontrolled blood pressure

Measurement frequency	Controlled	Uncontrolled	P-value	Chi-square
Never	8	2	.189	4.778[a]
	80.0%	20.0%		
1 to 10 times	48	48		
	50.0%	50.0%		
11 to 30 times	9	14		
	39.1%	60.9%		
More than 30 times	5	6		
	45.5%	54.5%		

Chart 2: Illustrate the knowledge of hypertensive patients about the ideal blood pressure measurement. 45% lack the ideal pressure range, were 31% says that they know the ideal range of the blood pressure yet they were wrong. Only 21% of the participants know the exact range of the ideal blood pressure.

Chart 2:

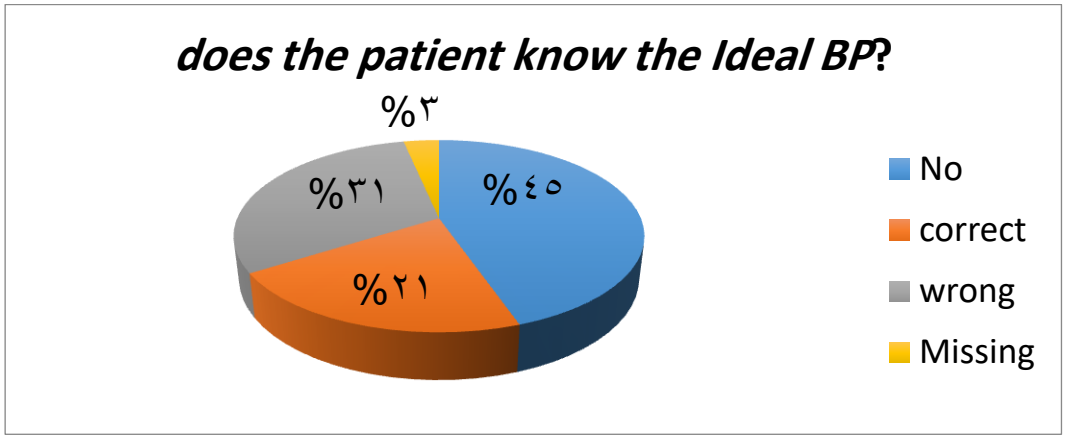


Table 9: Shows no significant association (p >0.606) between smoking and controlled blood pressure.

Table 9: smoking versus controlled and uncontrolled blood pressure of participants

Smoking	Controlled	Uncontrolled	P-value	Chi-square
No	64	65	.606	1.000[a]
	49.6%	50.4%		
Yes	9	10		
	47.4%	52.6%		

Table 10: Shows no significant association (p >0.193) between number of meals they ate per day and blood pressure control.

Table 10: Number of meals per day versus controlled and uncontrolled blood pressure of participants.

Number of meals per day	Controlled	Uncontrolled	P-value	Chi-square
2 or less	25	17	.193	3.291[a]
	59.5%	40.5%		
3	44	57		
	43.6%	56.4%		
More than 3	3	2		
	60.0%	40.0%		

Chart 3: Demonstrate that only 38% of the participants follow a special diet pattern.

Chart 3:

Table 11: Shows no significant association (p >0.05) between all types of diet pattern in relation to blood pressure control.

Table 11: Types of diet versus controlled and uncontrolled blood pressure of participants

Type of diet		Controlled	Uncontrolled	P-value	Chi-square
Low salt food	No	51	57	.433	1.674[a]
		47.2%	52.8%		
	Yes	22	18		
		55.0%	45.0%		
Low fat food	No	51	52	.615	.972[a]
		49.5%	50.5%		
	Yes	22	23		
		48.9%	51.1%		
Food rich of fibers	No	65	64	.491	1.422[a]
		50.4%	49.6%		
	Yes	8	11		
		42.1%	57.9%		
Other	No	69	68	.286	2.501[a]

		50.4%	49.6%		
	Yes	3	7		
		30.0%	70.0%		

Chart 4: shows that nearly 75% of the participants have tried to decrease their weight.
Chart 4:

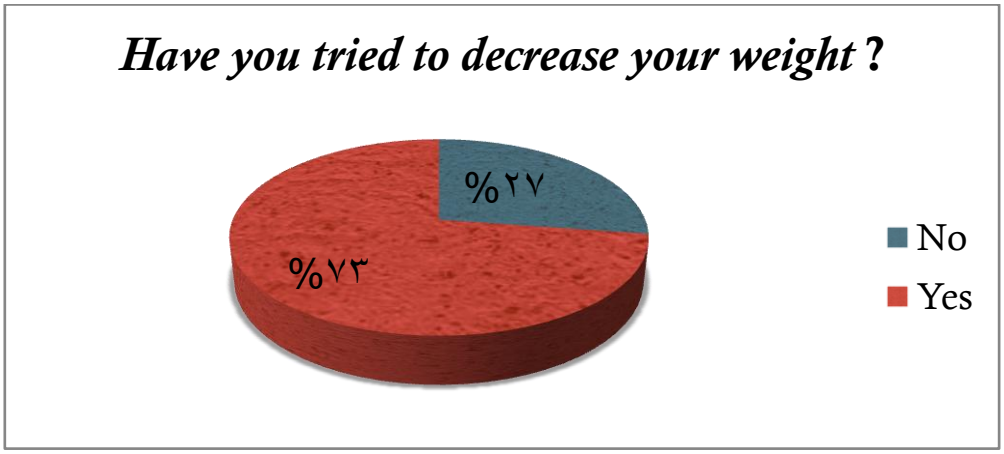


Chart 5: demonstrate up to two third of patients have not visit a dietitian before.
Chart 5:

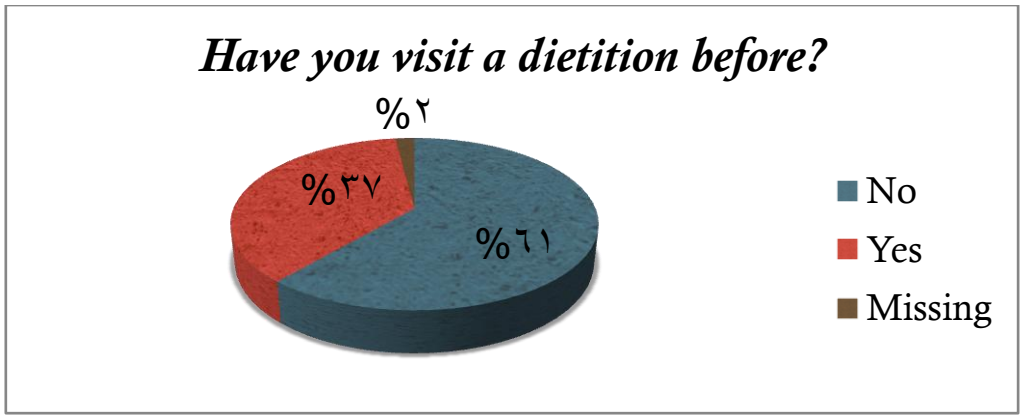


Chart 6: shows that 47% of the participants exercise.
Chart 6:

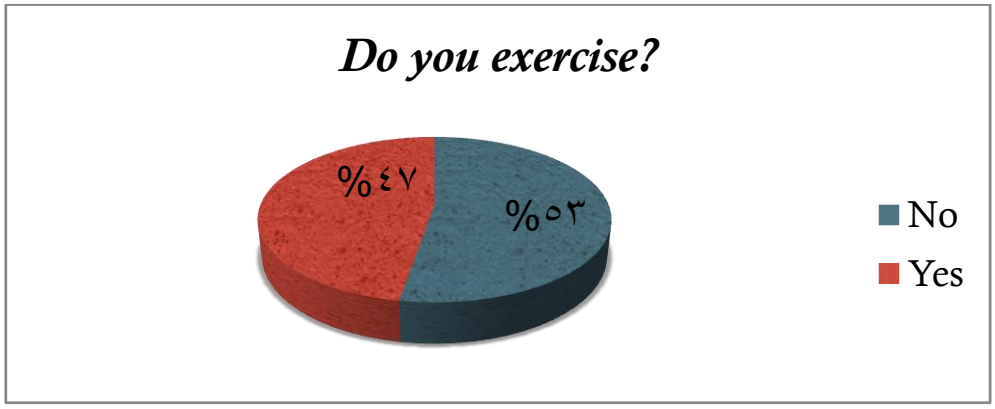


Table 12: Shows no significant association (p >0.922) between individuals' hours of exercise per week in relation to blood pressure control.

Table 12: individual Hours of exercise per week versus controlled and uncontrolled blood pressure of participants

Exercise per week	Controlled	Uncontrolled	P-value	Chi-square
Doesn't Exercise	40	38	.922	.162[a]
	51.3%	48.7%		
Less than 2 hours exercise	16	16		
	50.0%	50.0%		
2 hours or more	17	19		
	47.2%	52.8%		

Table 13: Shows no significant association (p >0.05) between all types of exercise in relation to blood pressure control.

Table 13: Types of exercise versus controlled and uncontrolled blood pressure of participants

Types of exercise		Controlled	Uncontrolled	P-value	Chi-square
Walking	No	41	41	.786	.074[a]
		50.0%	50.0%		
	Yes	32	35		
		47.8%	52.2%		
Running	No	71	72	.433	.614[a]
		49.7%	50.3%		
	Yes	2	4		
		33.3%	66.7%		
Swimming	No	70	75	.292	1.112[a]
		48.3%	51.7%		
	Yes	3	1		
		75.0%	25.0%		

Chart 7: demonstrate that 60% among the participant who don't exercise wants to start exercising.
Chart 7:

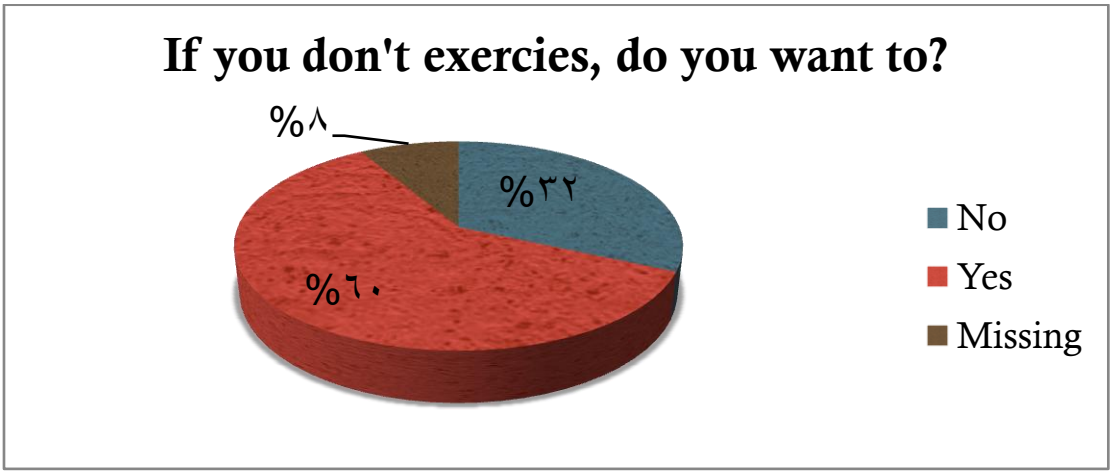


Chart 8: shows the health problems that participants suffer from other than hypertension. Diabetes has the maximum percentage (37%) in relation with diseases occurred with hypertension.

Chart 8:

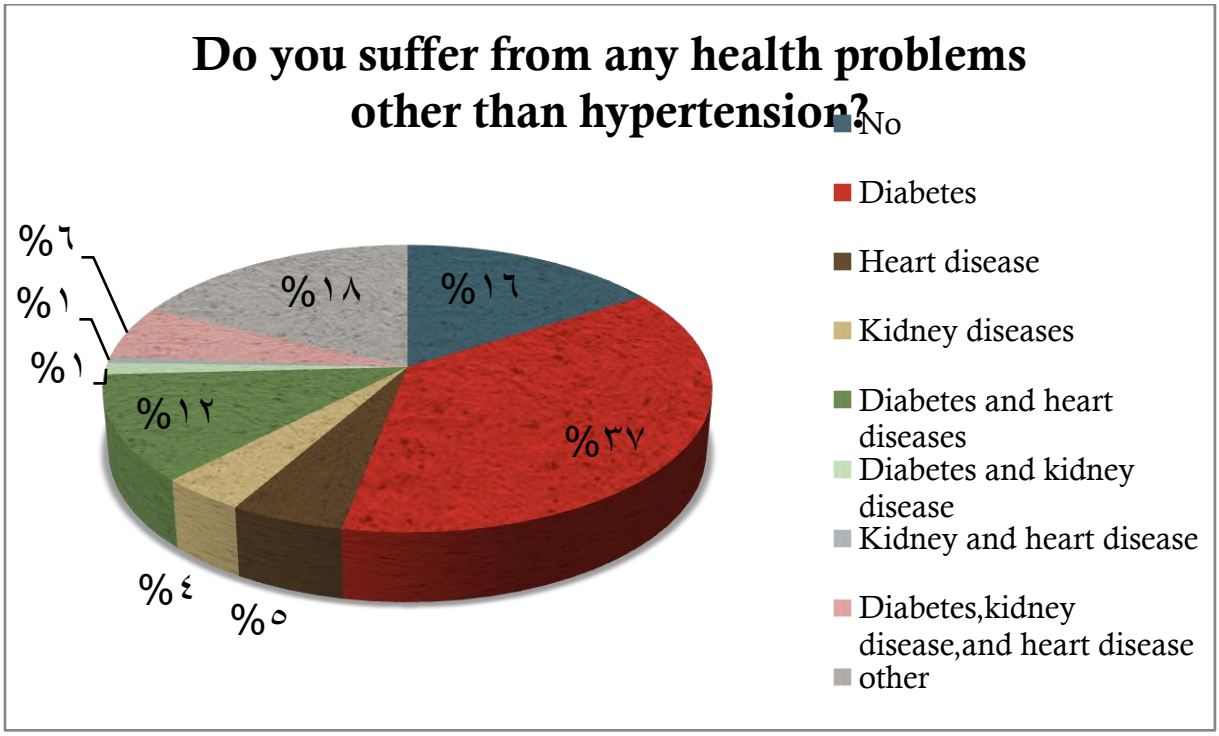


Chart 9: illustrate that hypertension is highly predominant in patients with family history of hypertension, Since it shows that 67% of the participants have a first degree relative of the same disease, another 8% have second-degree relative or others.

Chart 9:

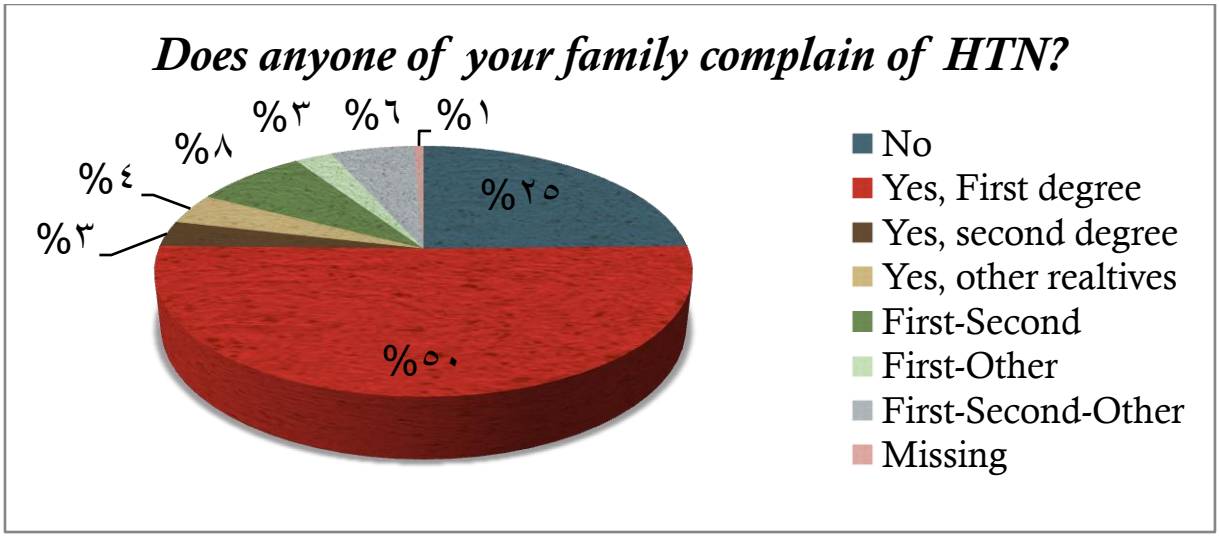


Chart 10: shows the knowledge of patient about the nature of the hypertension disease.

Chart 10:

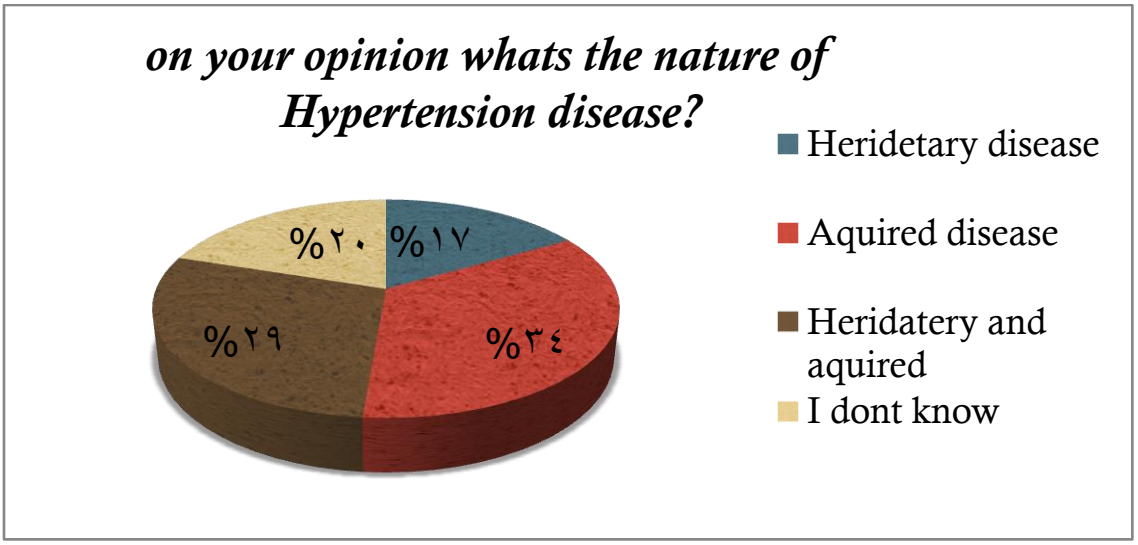


Chart 11: shows that 52% of participants believe that hypertension is curable while 40% believe that it is not curable but we can control it.

Chart 11:

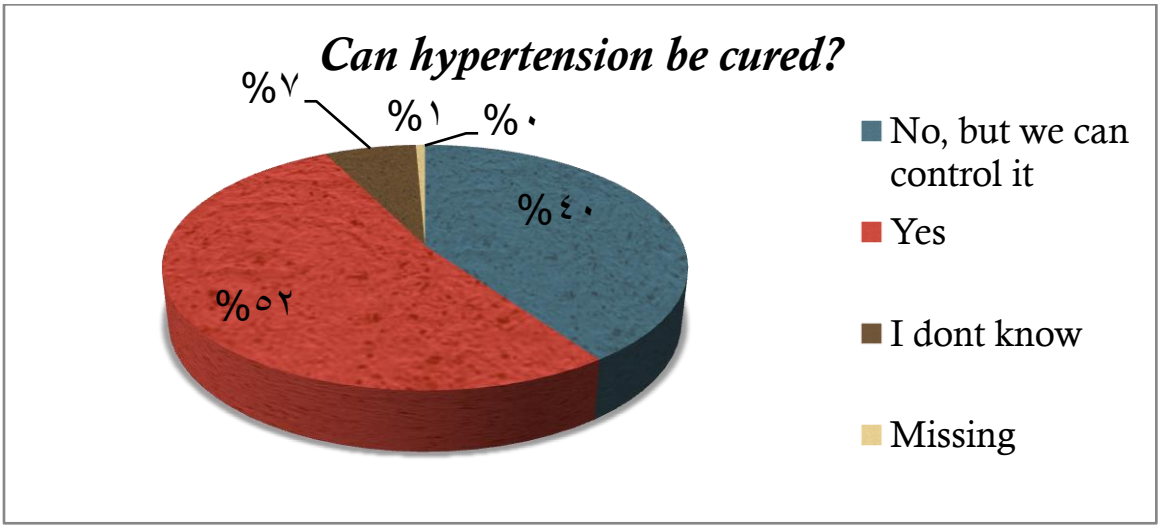


Chart 12-14: Clarifies the knowledge of the participants about (smoking, diet and exercise) effect on blood pressure.
Nearly one third believe that smoking has no effect in elevating Blood pressure.
Nearly half of the participants believe that diet has an effect in decreasing blood pressure.
63% of participants think that exercise decrease blood pressure.

Chart 12:

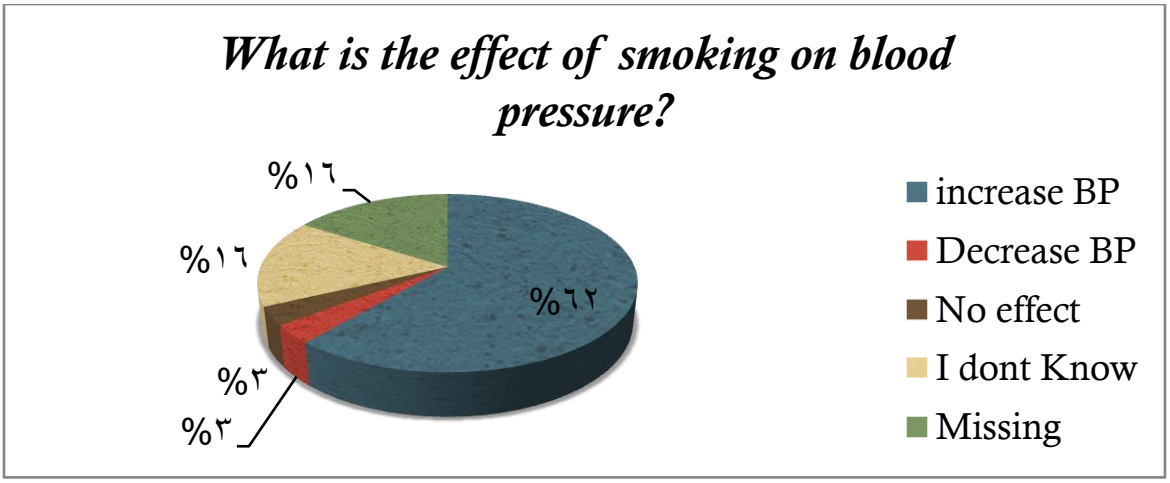


Chart 13:

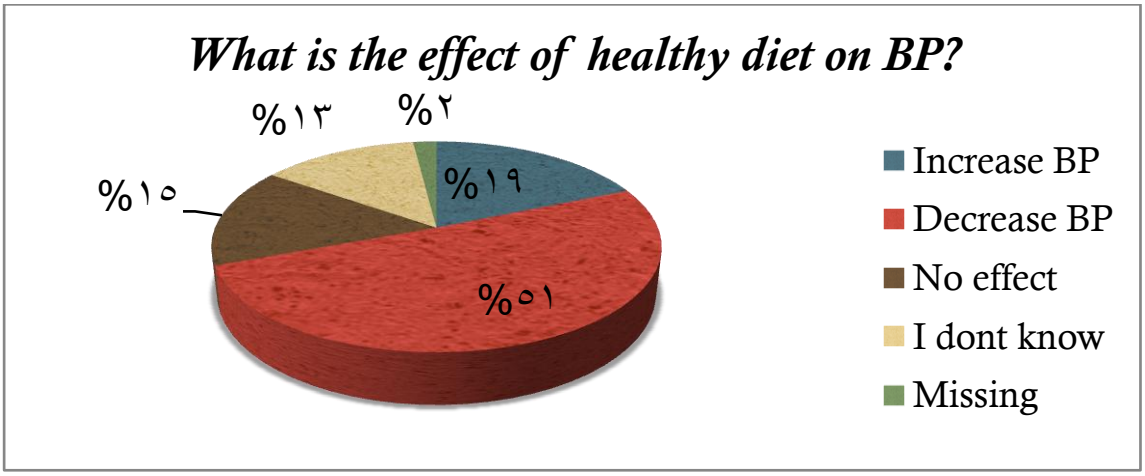


Chart 14:

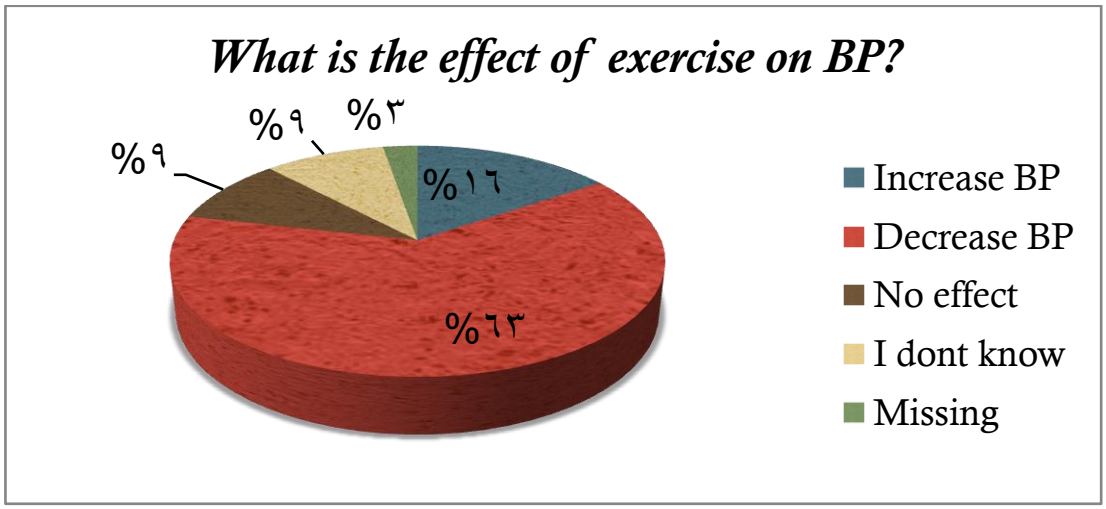


Chart 15, 16: illustrate that:
74% thought that stroke is a complication of hypertension.
66% thought that heart disease is a complication of hypertension.
41.3% thought that kidney disease is a complication of hypertension.
34% thought that blindness is a complication of hypertension.
While 7.3% believe that there are no complications of hypertension.

Chart 15:

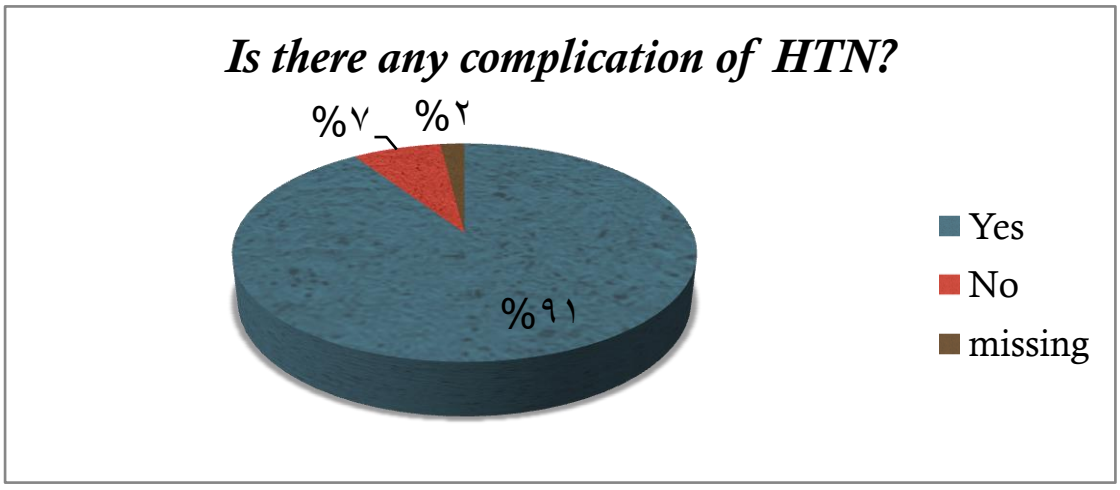
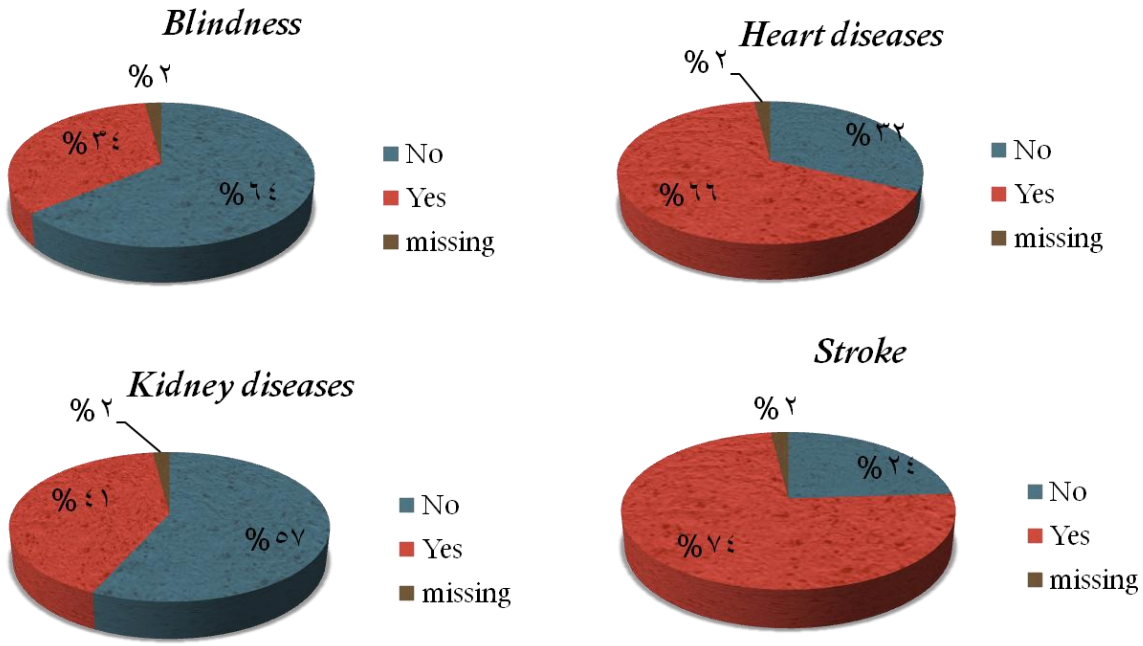


Chart 16: What is the complication of hypertension?



DISCUSSION

The study shows that the vast majority of participated patients were above 45 years, which is reasonable as other studies held in Saudi Arabia (19) and Qatar (24) suggest. Female patients occupied 43.3% of our whole participants. This contradicts a study emphasizes that women in our society have higher prevalence of hypertension than men (19). This contradiction might be due to that our sample was not highly representative as it was taken from KKUH only in addition to the lack of enough cooperation from female participants. Gender and control was studied and revealed that 50% of males are controlled while 46% of females are. Speaking of gender apart from our community, our results correspond to worldwide studies suggest that there is no gender variances in relation to hypertension.

There was no significant association with age, yet an interesting finding is that 60% of patients younger than 40 were uncontrolled, this percentage decreases in the group of patients aged 45 and 60 years to 46%. The study shows that 47% of patients are exercising, which is much higher proportion than the general community as a study about Prevalence of physical activity and inactivity among Saudis suggests. This reflects the education and awareness provided in king Khalid hospital about exercise benefits.Neither educational level nor body mass index was statistically significant. Yet 92% of participants were either overweight or obese, awareness and education programs about obesity are needed.

Many participants had other chronic diseases; diabetes was the most common with more than 49% of them, followed by heart diseases with more than 18% of the patients. Residency was not statistically significant

beside that up to 70% of the rural participants were controlled while 47% of urban patients are. This might be due to that only 9% of the participants came from rural areas as the study was held only in KKUH. Evidence that the prevalence of hypertension among rural people is lesser in Saudi Arabia was provided (1).

CONCLUSION AND RECOMMENDATION

The study revealed an overall no association between age, gender, exercise, smoking … etc. and being controlled hypertensive patient. The current study did not investigate the effect of compliance with medications on level of blood pressure control, which proved to play a major role in other study. It might be advisable to include such variable in future studies. Moreover, the study indicates a limited awareness about the normal range of the blood pressure and the ophthalmic and kidney complications of hypertension. This an indication that public health education program are badly needed.

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