

Assessment of adults' Awareness towards Hypertension Risk Factors in Tabuk, Saudi Arabia: A Sectional-Cross Study

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Abstract

Background: Hypertension is the leading source of morbidity and death. There is still a significant divide between high-income and low-to-middle-income countries in awareness, management, and control in the twenty-first century.

Objectives: To assess the adults' (> 18 years old) awareness of hypertension risk factors in Tabuk, Saudi Arabia.

Methods: A descriptive cross-sectional, questionnaire-based research design was used to assess the adults' awareness of hypertension risk factors in Saudi Arabia. An online survey was conducted among Saudi adults in January 2023 using an online questionnaire platform in Google Forms.

Results: The present study included 223 participants. 41.3% of participants were aged 18-27 years old, most of them were females 76.7%, more than half of them had a Bachelor's degree 54.3%, and jobless 65.5%. Most of them live in urban areas 74.9%. 88.8% are non-smokers. Most of the participants were not hypertensive patients 88.3%, P value = 0.543. 3.1% of hypertensive patients had HTN less than a year or 1-3 years ago. Most of the participants had their knowledge from the internet and awareness campaigns.

Conclusion: The general awareness of HTN risk factors was acceptable. In order to reduce financial loss, national studies should be carried out to evaluate the general attitudes, knowledge, and practices of hypertensive patients. The importance of adequate teaching regarding HTN risk factors in Saudi Arabia is emphasized by this study. Making policies to raise awareness about the risk factors of hypertension is recommended.

Background

Hypertension is a common non-communicable disease with a massive global impact. Numerous medical disorders, including congestive heart failure, stroke, retinal hemorrhage, and kidney disease, are made more likely by it (Kjeldsen, 2018). Globally, seven million people die each year because of hypertension (Alshammari et al., 2021). In Eastern Mediterranean Region countries, the overall prevalence of hypertension and pre-hypertension was 24.36% and 28.60%, respectively (Okati-Aliabad et al., 2022). WHO estimated that one-fifth of women and a quarter of men were hypertensive worldwide (WHO, 2020).

A number of risk factors, including aging of the population, family history, socioeconomic changes that encourage a sedentary lifestyle, obesity, smoking, alcohol consumption, bad eating habits, and stress, are closely linked to the development of hypertension and other cardiovascular illnesses. Modifiable risk factors for cardiovascular diseases that are common among adults with hypertension include cigarette smoking and exposure to tobacco smoking (Akpa et al., 2021). The appropriate lifestyle modifications to prevent and treat hypertension are to restrict dietary sodium and encourage the consumption of diets that are rich in fruits, vegetables, and dietary and soluble fiber (Nerenberg et al., 2018). Elbashir et al. (2021) study showed that non-hypertension participants exercised more frequently than hypertensive patients. Cardioprotective effects of regular exercise include adaptive molecular and cellular reprogramming, which have a favorable impact on the cardiovascular system (Makar & Siabrenko, 2018).

Keywords:

Hypertension, risk factors, Saudi Arabia, awareness, adults

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Stress is defined as a process in which environmental demands strain an organism's adaptive capacity resulting in both psychological demands as well as biological changes that could place it at risk for illness. Since blood pressure and serum cholesterol increase during stress, the relationship between stress and hypertension has long been suspected (Bhelkar et al., 2018). The association between the knowledge of hypertension management and drug adherence reported that Saudi hypertensive patients had a poor knowledge with regard to hypertension (Al Zahrani et al., 2019). Awareness regarding different aspects of any illness is vital in the prevention and control of that illness. Many health programs have endorsed this for the prevention and control of diseases in the community. Therefore, it is crucial to evaluate the awareness of hypertension among the Saudi community. Therefore, this study aimed to assess the adults' (> 18 years old) awareness of hypertension risk factors in Tabuk, Saudi Arabia. The ultimate objective is to investigate individuals' knowledge of hypertension risk factors in order to assist in formulating methods to raise Saudi society's awareness.

Methods

Research design and population

A descriptive cross-sectional, questionnaire-based research design whereby the population was selected based on convenience sampling was used to assess the adults' awareness of hypertension risk factors in Saudi Arabia. An online survey was conducted among Saudi adults from 15th to 30th January 2023 using an online questionnaire platform in Google Forms. The invitations were distributed by the researchers via social media platforms. The inclusion criteria for respondents were as the following:

1. Male and female adults (>18 years old)
2. Population living in Tabuk city
3. Those who willing to participate in the present study

Results

The present study included 223 participants. The demographic profile of participants revealed that 41.3% of participants were aged 18-27 years old, most of them were females 76.7%, more than half of them had a Bachelor's degree 54.3%, and jobless

The exclusion criteria for respondents were included those who are less than 18 years old

Research instrument

An online questionnaire in English was retrieved and modified from Alshammari et al. (2021) study. The original questionnaire included 15 questions. The questionnaire was composed of two sections: A demographic section and an Awareness level section. The demographic section consisted of 10 questions and includes (Age, gender, marital status, education, occupation, income, locality, smoking, and whether HTN patient or not), while the Awareness level section consisted of 10 questions including questions about risk factors of HTN (Stress, smoking, obesity, aging, and lifestyle). The questionnaire was translated into Arabic by a certified translator.

Statistical Analysis

Data were entered in an Excel sheet, then analyzed statistically via Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to analyze the level of awareness about HTN risk factors. Inferential statistics were used to find out the relationship between the awareness level and demographic profile of the participants, Chi-square test was used at the alpha level of 0.05.

Ethical considerations

Participants' consent was obtained before filling out the questionnaire, which was filled out anonymously. Sensitive personal data was not handled. Permission from the ethical committee of Tabuk University was obtained prior to conducting the study. Permission from the authors of the instrument to be used in the current study was obtained. The benefit of participating in this study was limited to the contribution to professional knowledge needed to figure out the awareness level of participants about HTN risk factors and outline interventions to improve it.

65.5%. Most of them live in urban areas 74.9%. 88.8% are non-smokers (Table 1). Most of the participants were not hypertensive patients 88.3%, P value = 0.543 (Table 2). 3.1% of hypertensive patients had HTN less than a year or 1-3 years ago (Table 1).

Table 1: Demographic characteristics of the study population

		Frequency	Percent
Age	18-27	92	41.3
	28-37	69	30.9
	38-47	45	20.2
	48 and above	17	7.6
	Total	223	100.0
Gender	Male	52	23.3
	Female	171	76.7
	Total	223	100.0

Marital status	Single	105	47.1
	Married	107	48.0
	Divorced	10	4.5
	Widow	1	0.4
	Total	223	100.0
Education	No formal education	5	2.2
	Primary	5	2.2
	Intermediate	22	9.9
	High school	64	28.7
	Bachelors	121	54.3
	Masters	3	1.3
	PhD	3	1.3
	Total	223	100.0
Occupation	Retired	8	3.6
	Jobless	146	65.5
	Government job	60	26.9
	Businessman	9	4.0
	Total	223	100.0
	Income	Nil	104
Less than 5000 SR		54	24.2
5000-10,000 SR		46	20.6
10,000 - 15,000 SR		19	8.5
Total		223	100.0
Valid	Urban	167	74.9
	Rural	56	25.1
	Total	223	100.0
Do you smoke cigarettes	Yes	25	11.2
	No	198	88.8
	Total	223	100.0
Valid	Yes	26	11.7
	No	197	88.3
	Total	223	100.0
If yes, how long do you have HTN? (years)	Less than a year	7	3.1
	1-3	7	3.1
	4-5	6	2.7

6-15	1	0.4
More than 15	5	2.2
Total	26	11.7

Table 2: Number of HTN patients and non-HTN adults presenting mean, standard deviation, and P-value

Do you have HTN?	N	Mean	Std. Deviation	t	df	P value
have HTN	26	6.35	1.60	0.609	221	0.543
non-hypertensive adult	197	6.07	2.23			

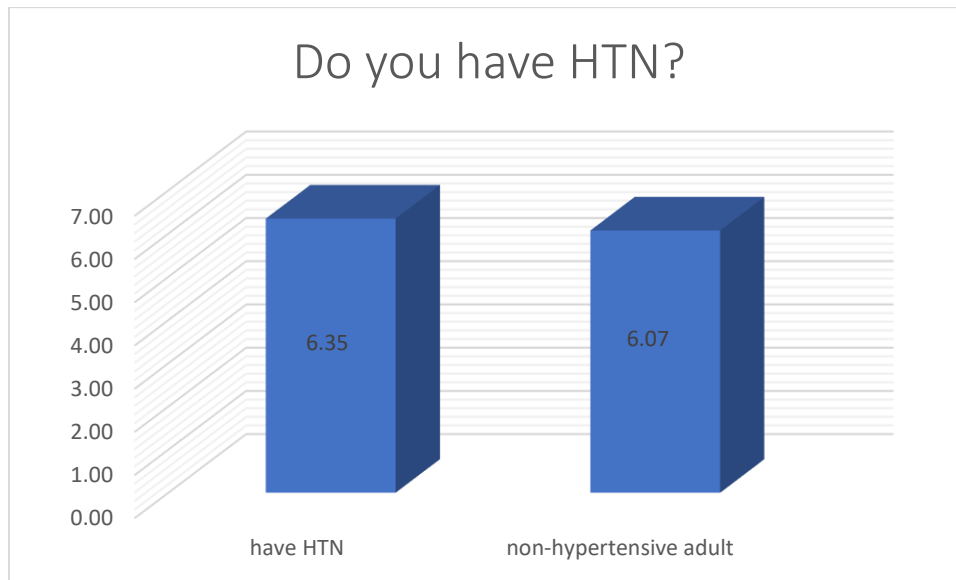


Figure 2: Percentage of adults who have HTN and those who have not.

In the Awareness level questionnaire, awareness level about HTN risk factors was good in both adults who have HTN and those who are HTN-free. Adults who have HTN were slightly more aware than those who are HTN-free. The mean percent for HTN

patients who answered right answers was 70.5%, while adults who are HTN-free had a mean percent of 67.5%. Both categories did not know that dietary approaches to reduce hypertension are beneficial to control HTN (Table 2).

Table 3: Awareness level questionnaire in relation to being an HTN patient or not

		Do you have HTN?						p value
		have HTN		non-hypertensive adult		Total		
		Frequency	%	Frequency	%	Frequency	%	
1. Does stress cause hypertension?	No	1	4%	19	10%	20	9%	0.074
	Don't know	1	4%	37	19%	38	17%	
	Yes	24	92%	141	72%	165	74%	
2. Both genders have an equal chance of developing hypertension	No	12	46%	94	48%	106	48%	0.901
	Don't know	9	35%	72	37%	81	36%	
	Yes	5	19%	31	16%	36	16%	
3. The older a person is, the greater the risk of having hypertension	No	6	23%	28	14%	34	15%	0.355
	Don't know	1	4%	19	10%	20	9%	
	Yes	19	73%	150	76%	169	76%	
4. Smoking is a risk factor for hypertension	No	3	12%	10	5%	13	6%	0.165
	Don't know	7	27%	34	17%	41	18%	
	Yes	16	62%	153	78%	169	76%	
5. Eating fatty food is a risk factor for hypertension	No	0	0%	23	12%	23	10%	0.021
	Don't know	2	8%	44	22%	46	21%	
	Yes	24	92%	130	66%	154	69%	

6. Being Overweight increases the risk of hypertension	No	1	4%	19	10%	20	9%	0.615
	Don't know	5	19%	38	19%	43	19%	
	Yes	20	77%	140	71%	160	72%	
7. Regular physical activity lowers the chance of hypertension	No	3	12%	15	8%	18	8%	0.520
	Don't know	1	4%	19	10%	20	9%	
	Yes	22	85%	163	83%	185	83%	
8. Eating more salt has no effect on blood pressure	No	16	62%	116	59%	132	59%	0.152
	Don't know	2	8%	43	22%	45	20%	
	Yes	8	31%	38	19%	46	21%	
9. Dietary approaches to reduce hypertension do no good	No	12	46%	109	55%	121	54%	0.356
	Don't know	6	23%	51	26%	57	26%	
	Yes	8	31%	37	19%	45	20%	
Mean percentage of aware adults			70.5%		67.5%			

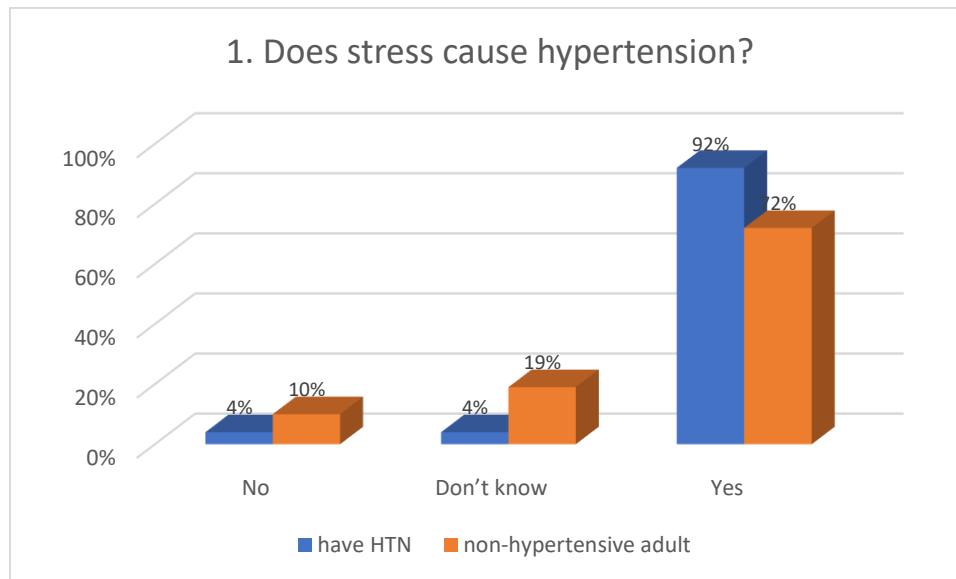


Figure 3: Answers to assess if the participants know that stress is a risk factor for HTN.

It is clear from the previous figure regarding those with have HTN, their answers were as follows: “Yes, in a percentage (92%), I do not know a percentage (4%), and no a percentage (4%). As for

those who were not affected, their answers were as follows: “Yes, in a percentage (72%), I do not know a percentage (19%)., No by (10%)

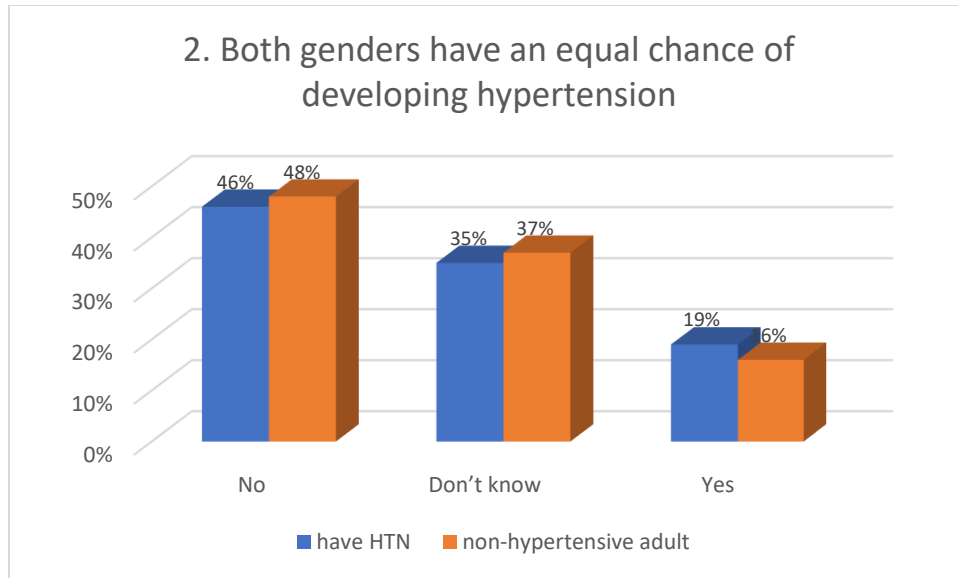


Figure 4: Answers to assess if participants know that gender is a risk factor or not.

It is clear from the previous figure regarding those with have HTN, their answers were as follows: “Yes, in a percentage (19%), I do not know a percentage (35%), and No a percentage (46%). As for those who were not affected, their answers were as follows: “Yes, in a percentage (6%), I do not know a percentage (37%). , No by (48%).

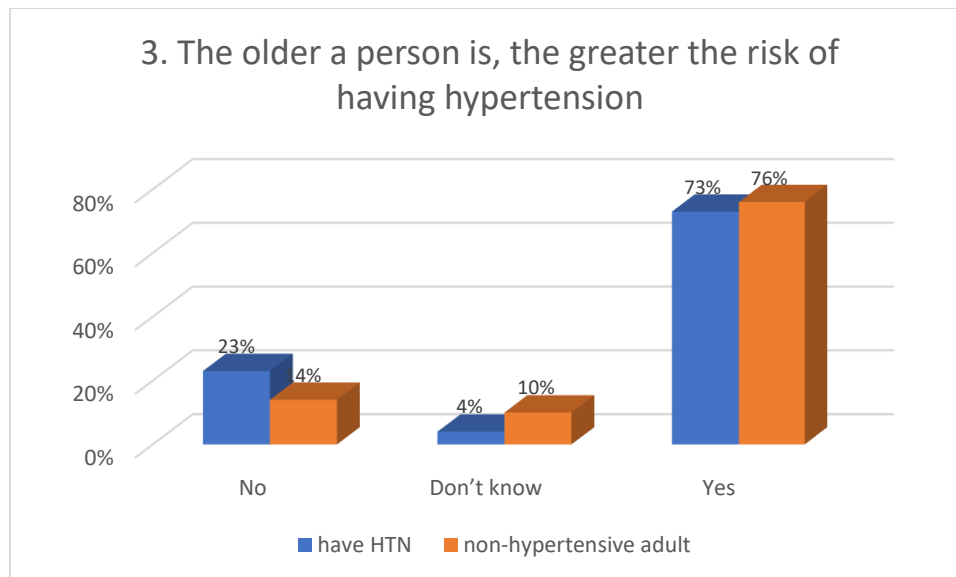


Figure 5: Answers to assess if participants know that age is a risk factor for HTN or not.

It is clear from the previous figure regarding those with have HTN, their answers were as follows: “Yes, in a percentage (73%), I do not know a percentage (4%), and No a percentage (23%). As for those who were not affected, their answers were as follows: “Yes, in a percentage (76%), I do not know a percentage (10%). , No by (4%).

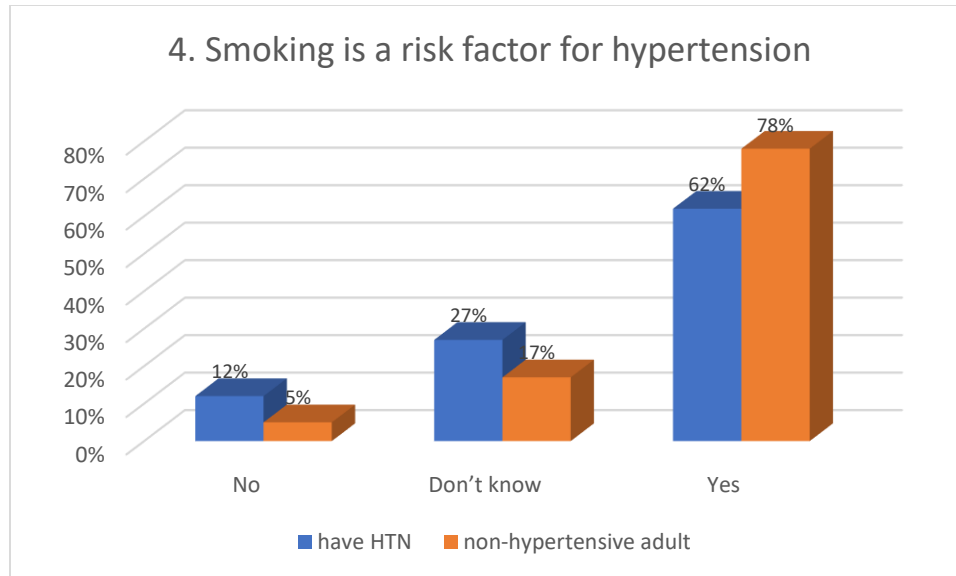


Figure 6: Answers to assess if participants know that smoking is a risk factor for HTN or not.

It is clear from the previous figure regarding those with have HTN, their answers were as follows: “Yes, in a percentage (62%), I do not know a percentage (27%), and no a percentage (12%). As for those who were not affected, their answers were as follows: “Yes, in a percentage (78%), I do not know a percentage (7%). , No by (5%).

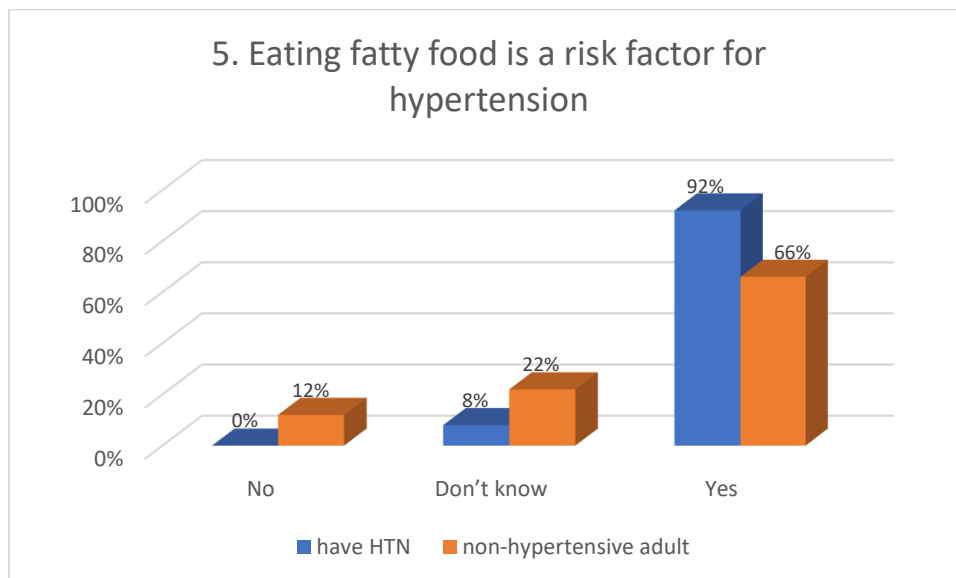


Figure 7: Answers to assess if participants know that fatty diet is a risk factor for HTN or not.

It is clear from the previous figure regarding those with have HTN, their answers were as follows: “Yes, in a percentage (92%), I do not know a percentage (8%).As for those who were not affected, their answers were as follows: “Yes, in a percentage (66%), I do not know a percentage (22%)., No by (12%).

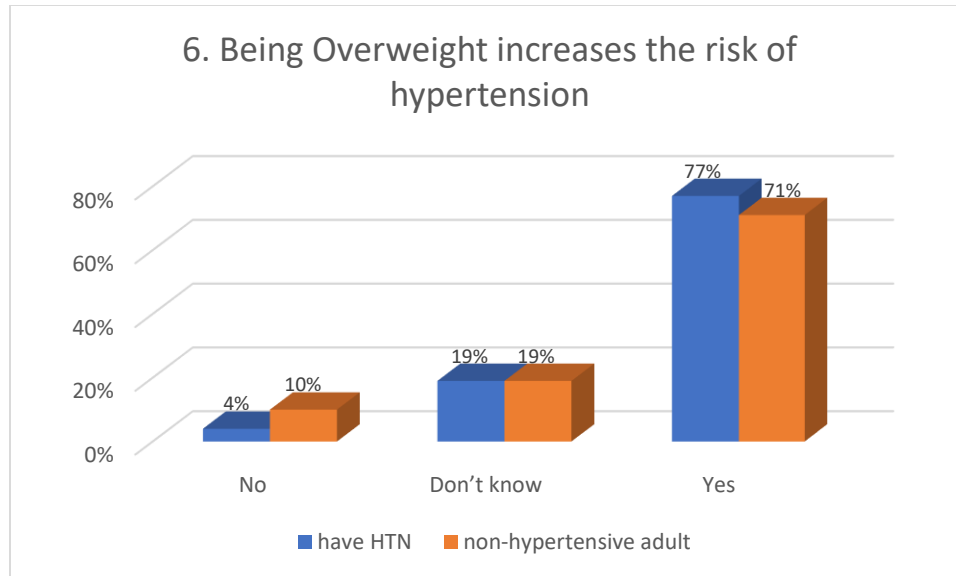


Figure 8: Answers to assess if participants know that obesity is a risk factor for HTN or not.

It is clear from the previous figure regarding those with HTN, their answers were as follows: “Yes, in a percentage (72%), I do not know a percentage (19%), and no a percentage (4%). As for those who were not affected, their answers were as follows: “Yes, in a percentage (71%), I do not know a percentage (19%). , No by (10%).

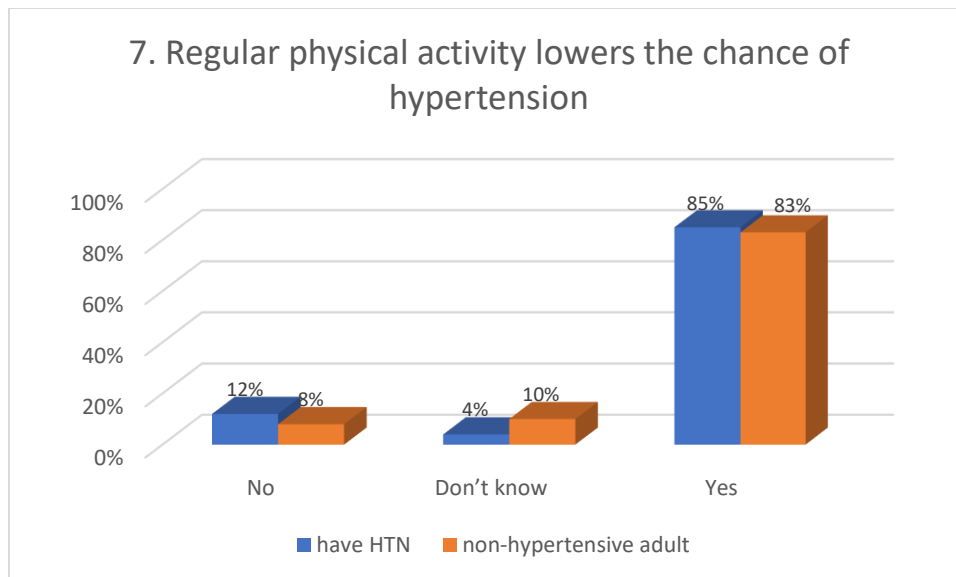


Figure 9: Answers to assess if participants know that physical activity protects from HTN or not.

It is clear from the previous figure regarding those who have HTN, their answers were as follows: “Yes, in a percentage (85%), I do not know a percentage (4%), and no a percentage (12%). As for those who were not affected, their answers were as follows: “Yes, in a percentage (83%), I do not know a percentage (10%)., No by (8%).

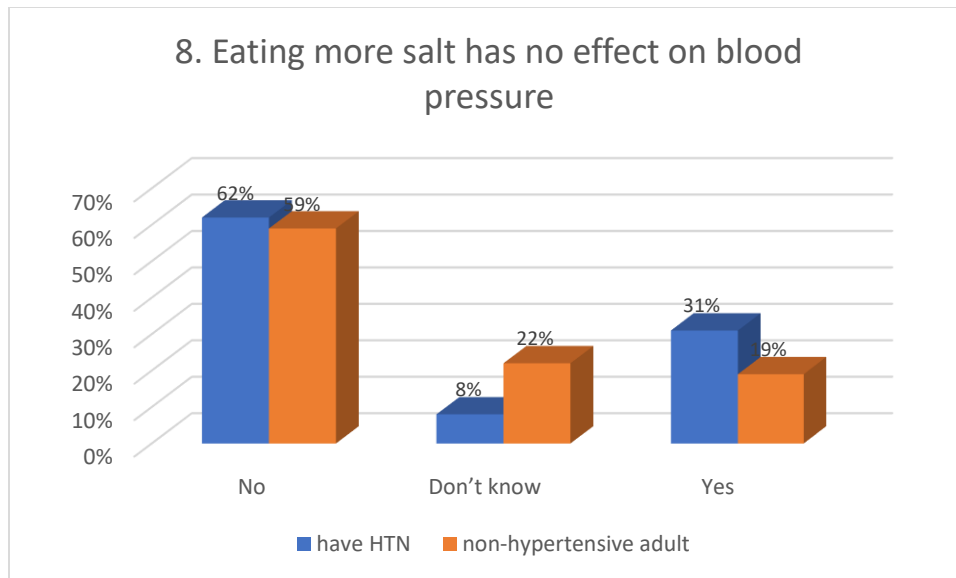


Figure 10: Answers to assess if participants know that a salty diet is a risk factor for HTN or not.

It is clear from the previous figure regarding those with HTN, their answers were as follows: “Yes, in a percentage (31%), I do not know a percentage (8%), and No a percentage (62%). As for those who were not affected, their answers were as follows: “Yes, in a percentage (9%), I do not know a percentage (22%). No by (59%).

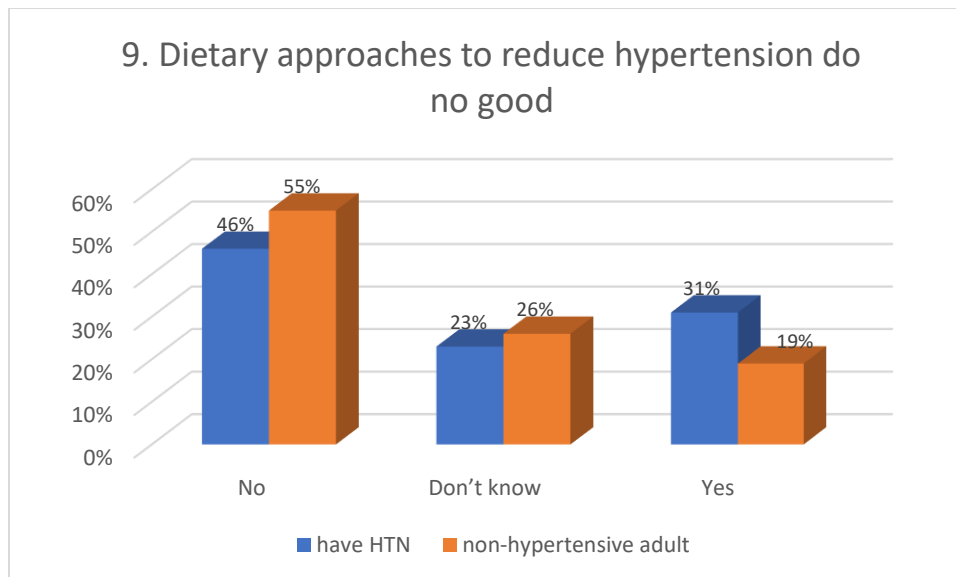


Figure 11: Answers to assess if participants know that diet could control HTN or not.

It is clear from the previous figure regarding those with have HTN, their answers were as follows: “Yes, in a percentage (31%), I do not know a percentage (23%), and No a percentage (46%). As for those who were not affected, their answers were as follows: “Yes, in a percentage (19%), I do not know a percentage (26%)., No by (55%).

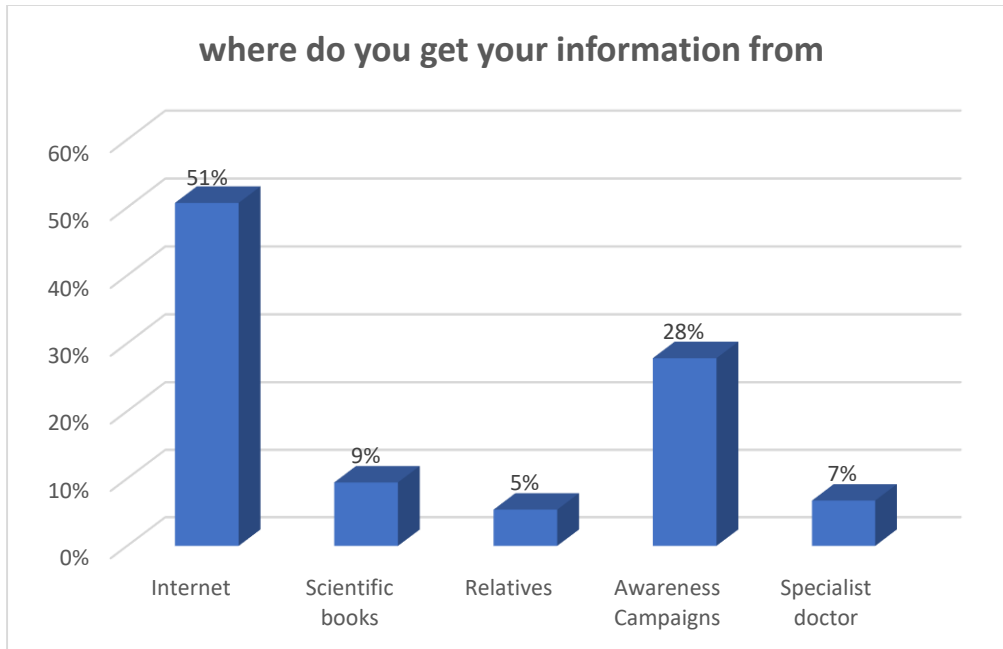


Figure 12: Answers to the source participants got their information from

It is clear from the previous figure that whoever obtained his information about HTN, through the Internet came with a percentage of (50.7%), Awareness Campaigns (27.8%), Scientific books(9.4%), Specialist doctors (6.7%), Relatives(5.4%).

Discussion

Hypertension remains a challenging medical condition among the noncommunicable diseases of any ever-growing population. Efforts to control HTN include increasing public knowledge and awareness about the risks associated with high BP. Awareness of the major lifestyle risk factors of hypertension and its warning signs has a direct implication for the therapeutic measures and prevention of its complication among hypertensive patients. We conducted this cross-sectional descriptive survey to evaluate the current status of hypertension awareness among Saudi adults. Our study revealed that the Saudi population had an average to good awareness level regarding HTN risk factors. The study showed that a low percentage of participants were HTN patients, while most of the participants were not hypertensive patients.

This study found that most of both HTN patients and HTN-free adults were adequately aware of HTN risk factors. Our study findings agree with what Elsheikh et al. (2021) found as they reported that more than two third of the study subjects had average to good awareness levels about hypertension and its risk factors. Awareness of the most common risk factors noticed in Elsheikh et al. (2021) study by the participants is too much salt intake (90%), stress (89.1 %), obesity (75.5%), and smoking (62.1%), while in our study were salt intake (59%), stress (74 %),

obesity (72%), and smoking (76%). A previous study done in Jeddah, Saudi Arabia, reported that only 64.9 % of the participants consider high salt intake as a risk factor, as well as stress (58.8%) (Bakhsh et al., 2017). In another previous study in Pakistan and Najera, showed less knowledge regarding the risk factors of HTN (Shaikh et al., 2012; Bakhsh et al., 2017). Contrary to what was found in study conducted in other parts of the world, more people were aware of the risk factors for hypertension. For instance, more than 70% of participants knew that being overweight was a risk factor for hypertension, while lower percentages were seen in other research (Bs et al., 2011; Shaikh et al., 2012).

Awareness of aging and smoking as risk factors for HTN in the Elsheikh et al. (2021) study was found to be low compared with our study which showed a higher percentage. The majority of participants (nearly all) are between the ages of 18 and 27, and their degree of education has a favorable impact on their awareness. In agreement with our findings, a study conducted by Alsalman et al. (2018) in Al Riyadh reported acceptable knowledge about the risks of HTN. The participants' characteristics of Alsalman et al. (2018) study was like ours in that majority of participants had a bachelor's degree, while differ in that half of the participants were male and employed while in our study most participants were female and unemployed. However, six out of every ten hypertensive patients were aware of their condition, according to research was done in Nigeria by Odili et al. (2020) to assess regional and urban-rural differences in hypertension awareness. Men (34.3%) were less likely than women (65.7%) to be aware of their hypertension status. Participants in the urban region were more conscious

of their status (52.2% vs. 47.8%) than those in the rural areas. The results agree with our findings because most of our participants were female and in urban areas.

Additionally, the majority of the participants in this study learned about these topics from online resources and awareness initiatives. Information and communication technology-based hypertension management will likely play an important role in promoting public health (Yatabe et al., 2021), even though there are still issues with cost, data integration, team-based care reform, and user experience. Therefore, measures to improve hypertension awareness in individuals are recommended. Infrequent healthcare visits are a significant risk factor for low awareness, according to prior studies (Kang et al., 2019). In order to reduce financial loss, national studies should be carried out to evaluate the general attitudes, knowledge, and practices of hypertension patients.

This study highlights the need for Saudi Arabia to implement an effective technology-based hypertension management education program on HTN risk factors. This research will be useful in developing hypertension policies to raise awareness of the condition and its risk factors. This study has some limitations including that small sample and doesn't represent the whole Saudi population, so, the results can't be generalized. Few long-term studies in the area have been conducted to evaluate results.

Conclusion

In summary, despite the fact that study participants had a good general knowledge and awareness of hypertension, this study highlights the value of comprehensive instruction of HTN risk factors in Saudi Arabia. With the aid of this study, it will be simpler to develop policies that increase public knowledge of hypertension and its risk factors. High-quality long-term studies can help adopt effective HTN preventive and management measures.

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