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AWARENESS OF THE IMPACT OF HEALTHY LIFESTYLE BEHAVIORS ON BLOOD PRESSURE AMONG THE SAUDI ARABIAN POPULATION: A STUDY OF PUBLIC KNOWLEDGE AND PERCEPTION

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Abstract

Background: Hypertension, commonly known as high blood pressure, is a prevalent condition that can cause significant alterations in the heart and blood vessels if left uncontrolled, leading to various cardiovascular diseases. Proper management of blood pressure is essential for preventing these complications. Awareness and knowledge about hypertension and its risk factors, such as smoking, lack of exercise, poor diet, and stress, play a crucial role in controlling the condition. Previous studies have shown that patient education significantly improves hypertension management, but there is limited research on this topic within the Saudi Arabian context. **Objectives:** The primary objective of this study is to evaluate the knowledge, attitude, and practices (KAP) related to hypertension among hypertensive patients in Saudi Arabia. Specifically, it aims to Assess the level of knowledge about hypertension and its risk factors. Also to evaluate the awareness of lifestyle modifications necessary for managing hypertension. **Methodology:** This study employed a cross-sectional questionnaire survey design conducted among hypertensive patients in Saudi Arabia. Participants were recruited during 2024-2025, and the sample size was calculated to be 384 using a 95% confidence level. The inclusion criteria included men and women aged 18 and older residing in Saudi Arabia. Data was collected using a structured questionnaire comprising 31 questions divided into three sections: demographic information, knowledge of hypertension, and awareness of lifestyle modifications. The collected data were analyzed using SPSS software to determine the level of knowledge and awareness among the participants.

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Results: The study assessed awareness of healthy lifestyle behaviors' impact on blood pressure among 1,228 Saudi participants, predominantly young and female. Results revealed that while 82.2% believed they were not hypertensive, a significant number lacked knowledge about their health status, as 65.6% rarely measured their blood pressure. Although 60.7% recognized the importance of lifestyle changes, 39.3% disagreed, highlighting a need for education. Notably, 95.5% acknowledged the necessity of a healthy diet, and 92.8% emphasized regular exercise. However, only 16.0% exhibited high knowledge levels, indicating a gap in translating awareness into actionable health practices. Awareness significantly correlated with age and marital status. **Conclusion:** While the population demonstrates a general understanding of the importance of lifestyle modifications, significant gaps exist in translating this knowledge into consistent health practices.

Keywords: Hypertension, lifestyle behaviors, awareness, knowledge, Saudi Arabia, patient education, blood pressure management.

Introduction:

An elevated level in blood pressure can lead to alterations in the heart and blood vessels if it is not regulated and This may end up with complications related to cardiovascular disease [1]. The conventional way to express BP is as a ratio between the systolic and diastolic measurements [2].

Knowing hypertension (HTN) helps for improving healthy lifestyle choices and altering an individual's perception of their risk, both of which are critical to control HTN and avoiding harm of it [3]. The following things are risk factors: smoking, lack of exercise, a high weight , excessive salt intake, drinking alcohol, and hyperlipidemia [4].

A study conducted by Anasuya et al. aimed to assess the knowledge, attitude, and practices (KAP) related to hypertension among hypertensive patients. The findings revealed significant gaps in patient awareness and practices. Only 36% of participants were aware of the DASH diet, and merely 38% regularly monitored their blood pressure. These results indicate a critical need for improved patient education regarding dietary recommendations and the importance of regular health monitoring [5].

A study published 2021 evaluating the impact of patient counseling on the KAP among hypertensive patients in a teaching hospital. The study demonstrated that patient counseling significantly improved knowledge about hypertension complications, symptoms, and the importance of lifestyle changes. For instance, awareness of hypertension symptoms increased from 36.7% to 88.3%, and daily physical exercise engagement rose from 27.5% to 98.3%. Despite these improvements, the initially low levels of knowledge and practice highlight the need for more widespread and ongoing educational interventions [6]. A 2021 cross-sectional study in Imo and Kaduna, Nigeria assessed awareness, knowledge, and practices related to hypertension and diabetes among adults 35+. While awareness was high (94.4% for hypertension, 90.5% for diabetes), comprehensive disease knowledge was lower (41.9% and 63.9% respectively). Factors like physical activity and education were linked to better knowledge. However, regular screening was low, with only 62.6% and 41.5% reporting annual blood pressure and glucose checks. Despite high awareness, the study found gaps in knowledge and healthy practices around these non-communicable diseases. Improving access to information and promoting healthy behaviors are needed to address the rising burden in these communities [7]. The existing research on the topic of public awareness of healthy lifestyle behaviors and its impact on blood pressure in Saudi Arabia lacks detailed insights. The present study aims to address this gap.

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Objectives:

The primary objective of this study is to evaluate the knowledge, attitude, and practices (KAP) related to hypertension among hypertensive patients in Saudi Arabia. Specifically, it aims to Assess the level of knowledge about hypertension and its risk factors. And also, to evaluate the awareness of lifestyle modifications necessary for managing hypertension and to Identify gaps in patient education and areas needing improvement.

Methodology:

Study design and Setting:

A cross-sectional questionnaire survey used in this study conducted in the Kingdom of Saudi Arabia.

Subject: Participants, recruitment and sampling procedure:

The study's population consisted of Saudi hypertensive patients. Participants were recruited during 2024-2025 from people receiving the questionnaire.

Sample size:

The sample size was calculated using the Qualtrics calculator with a 95% confidence level, resulting in a minimum of 384. The sample size was calculated using the following formula: n = P (1-P) * Zα 2 / d 2 with a 95% confidence level. n: calculated sample size. Z: The z-value for the chosen degree of confidence (1-a) = 1.96. 9 P An approximated knowledge. Q: (1 - 0.50) equals 50%, or 0.50. D: The maximum allowed error is 0.05. So, the minimal sample size was determined as: n = (1.96)2 X 0.50 X 0.50/ (0.05) 2 = 384.

Inclusion and Exclusion criteria:

The study population for this research includes women and men aged 18 years and older who currently reside within the borders of Saudi Arabia. Individuals under the age of 18 and those living outside of Saudi Arabia are excluded from the study sample.

Method for data collection, instrument and score system:

Structured questionnaire was used as a study tool. This tool was used from relevant study conducted in Saudi Arabia [8]. The final version of the questionnaire consisted of 31 questions with 3 sections. Section 1 starts with a demographic feature such as age, gender, educational qualifications, occupation, marital status. Section 2 includes questions about knowledge of hypertension. Section 3 is about awareness of lifestyle modification for hypertension.

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Scoring system:
In all, 31 statements served to assess the participants' attitudes and degree of knowledge. 5 statements for demographics, 21 for knowledge, and 5 for awareness. One point is given for correct answers, and zero points are given for incorrect answers or "I don't know". For scoring, we utilized Likert scales (Dichotomous, Three-Point, and Quality Scales) The maximum score was 44 and divided as follows: The original Bloom's cut-off points, 80.0%-100.0%, 60.0%-79%, and 59.0%. The participants divided into three groups based on their scores.

knowledge score varied from 0 to 21 points and was classified into three levels as follows: those with a score of 11 or below (≤ 10) were classified as having a **low level of knowledge**, those with scores between 11 and 14 as having a **moderate level of knowledge**, and those with scores 15 or above (≥ 15) as a **high level of knowledge.**

Awareness scores varied from 0 to 5 points and were classified into three levels as follows: those with a score of 3 or below (≤ 3) were classified as having a **low level of awareness**, those with scores between 3 and 4 as having a **moderate level of awareness**, and those with scores 5 or above (≥ 5) as having a **high level of awareness**.

Pilot test:

Twenty people were given the questionnaire and asked to complete it. This was done in order to assess the study's viability and the ease of use of the questionnaire. The pilot study's results were not included in the study's final analysis.

Analyzes and entry method:

Collected Data was entered on computer using the Microsoft Excel program (2016) for windows. Data was then transferred to the Statistical-Package of Social-Science Software (SPSS) program, version 20. To be statistically analyzed.

Results:

Table (1) displays various demographic parameters of the participants with a total number of (1228). The mean age of participants is 29.5 years; thus, this demographic is mostly youthful with participants under 25 being 38.1% of the sample. An important representation of 78.8% of females suggests the possibility of gender specific trends in the variables assessed. A segment worth noting for occupation is a student, who take its place of 42.4%. In addition, the educational attainment is strong, half have a bachelor's degree and could be associated to employment status and income levels. The notable thing is that most of the people remain single (62.3%). A striking predominance of participants is from the western region (59.2%), which may predispose attitudes and behavior to a regionally distinctive pattern connected to study objectives. Economic problems experienced by participants need further exploration as indicated by the income distribution that shows a large percentage of people under 1,000 SAR.

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Table (1): Sociodemographic characteristics of participants (n=1228)

Parameter		***No.***	***Percent (%)***
Age (Mean:29.5, STD:12.5)	18 to 20	272	22.1
	21 to 22	197	16.0
	23 to 25	206	16.8
	26 to 30	199	16.2
	31 to 40	148	12.1
	More than 40	206	16.8
Gender	Female	968	78.8
	Male	260	21.2
Occupational status	Student	521	42.4
	Employed	265	21.6
	Unemployed	285	23.2
	Freelancer	54	4.4
	Retired	103	8.4
Educational level	Primary school	7	.6
	Middle school	26	2.1
	High school	322	26.2
	Diploma	117	9.5
	Bachelor's degree	689	56.1
	Postgraduate degree	60	4.9
	Uneducated	7	.6
Marital status	Single	765	62.3
	Married	412	33.6
	Divorced	32	2.6
	Widowed	19	1.5
Residential region	Northern region	48	3.9
	Southern region	191	15.6
	Central region	165	13.4
	Eastern region	97	7.9
	Western region	727	59.2
Monthly income	Less than 1000 SAR	527	42.9
	1000 to 5000 SAR	316	25.7
	5001 to 10000 SAR	172	14.0
	10001 to 15000 SAR	99	8.1
	More than 15000 SAR	114	9.3

As shown in figure 1, The figure presents the insights from the provided data, which shows the trends while consuming salty food in a whole test of 1,228 respondents. In particular, 79 people (approximately 6.4 per cent) said that they always eat salty food, and 155 people (12.6 per cent) stated that they usually eat salty foods. A considerable majority of 423 (34.4%) participants then said they sometimes eat salty food. However, 298 respondents (24.3%), stated that they rarely eat salty foods, while 273 people (22.2%) said that they do not have a salty food at all. The presence of such high level of salty food

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consumption among the surveyed population of (approximately 53.4%) people who consume salty food at least sometime suggests a major prevalence of consumption of salty food.

Figure (1): Illustrates salty food consumption among participants.

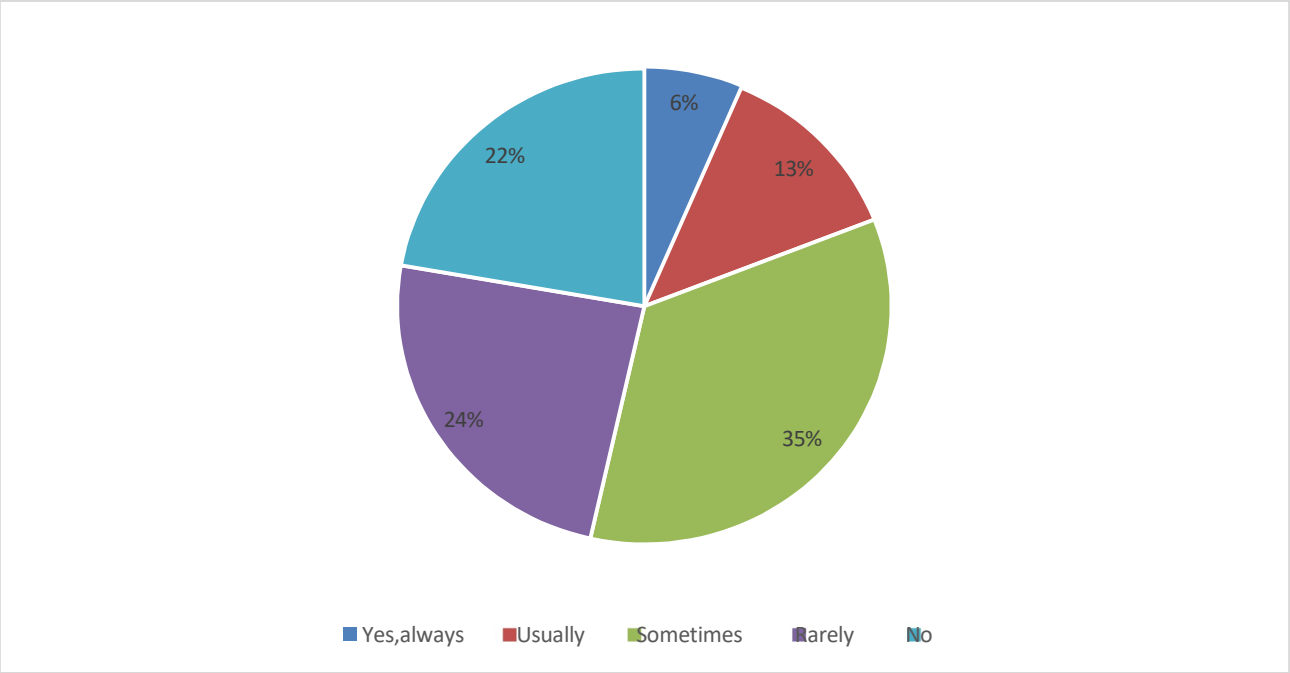

Table 2 presents the results of the measures of awareness and behavior concerning hypertension among a sample of 1,228 individuals. In fact, 82.2 percent of respondents said they weren't hypertensive, and 10.6 percent were uncertain of their condition, indicating a possible lack of knowledge among several regarding their health status. This further raises the concerns of proactive health management because 65.6% of participants rarely measure their blood pressure. Sixty-point seven percent of respondents acknowledged lifestyle changes to help prevent hypertension but there is still a sizable percentage, 39.3 percent, who disagreed, indicating the need for more education with regards to the topic. The data also reflects how many people recognize dietary concerns – 76.2% know about the risks of salty diets and 61.9% realize that consuming saturated fats may pose a problem. But behaviourally, there is a gap; only 30.6 percent said they regularly ate vegetables.

Table (2): Parameters related to knowledge of the impact of healthy lifestyle behaviors on blood pressure (n=1228).

Parameter		***No.***	***Percent (%)***
Are you known hypertensive?	Yes	89	7.2
	No	1009	82.2
	Don't know	130	10.6
Do you measure your blood pressure?	Yes	423	34.4
	No	805	65.6
Lifestyle changes prevent hypertension?	Yes	745	60.7

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	No	483	39.3
Healthy lifestyle is important in preventing illnesses?	Yes	1170	95.3
	No	58	4.7
Eating salty food more than recommended is a risk factor for hypertension?	Yes	936	76.2
	No	108	8.8
	Don't know	184	15.0
Do you eat salty food?	Yes,always	79	6.4
	Usually	155	12.6
	Sometimes	423	34.4
	Rarely	298	24.3
	No	273	22.2
Eating saturated fatty food is a risk factor for hypertension?	Yes	760	61.9
	No	143	11.6
	Don't know	325	26.5
Do you eat vegetables?	Yes, always	376	30.6
	Usually	349	28.4
	Sometimes	390	31.8
	Rarely	91	7.4
	No	22	1.8
Eating fruits is a risk factor of hypertension?	Yes	69	5.6
	No	763	62.1
	Don't know	396	32.2
Do you eat fruits?	Yes, always	312	25.4
	Usually	363	29.6
	Sometimes	424	34.5
	Rarely	111	9.0
	No	18	1.5
Practice regular physical activities is a risk factor for hypertension?	Yes	100	8.1
	No	890	72.5
	Don't know	238	19.4
Do you practice exercise?	Yes, always	213	17.3
	Usually	261	21.3
	Sometimes	383	31.2
	Rarely	237	19.3
	No	134	10.9
Smoking is a risk factor for hypertension?	Yes	887	72.2
	No	52	4.2
	Don't know	289	23.5
Do you smoke?	Yes	123	10.0
	No	1105	90.0
Stress is a risk factor for hypertensin?	Yes	1023	83.3
	No	60	4.9
	Don't know	145	11.8
Social relation is a preventive factor for hypertension?	Yes	826	67.3

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	No	124	10.1
	Don't know	278	22.6
Obesity is a risk factor for hypertension?	Yes	990	80.6
	No	47	3.8
	Don't know	191	15.6
Reducing weight is a preventive factor for hypertension?	Yes	854	69.5
	No	90	7.3
	Don't know	284	23.1
Diabetes mellitus is a risk factor for hypertension?	Yes	621	50.6
	No	104	8.5
	Don't know	503	41.0

As shown in figure (2), Insights on smokers' perceptive view of the link between smoking and hypertension are derived from data of a sample of 1,228 respondents. A total of 887 persons constitute approximately 72.3 % of the total sample and affirm that smoking is a risk factor for hypertension. However, less than half of them, 52 or about 4.2%, think smoking poses such a risk. Over a third, 289 respondents or about 23.5 percent are uncertain suggesting potential for further educational outreach.

Figure (2): Illustrates smoking effect on blood pressure among participants.

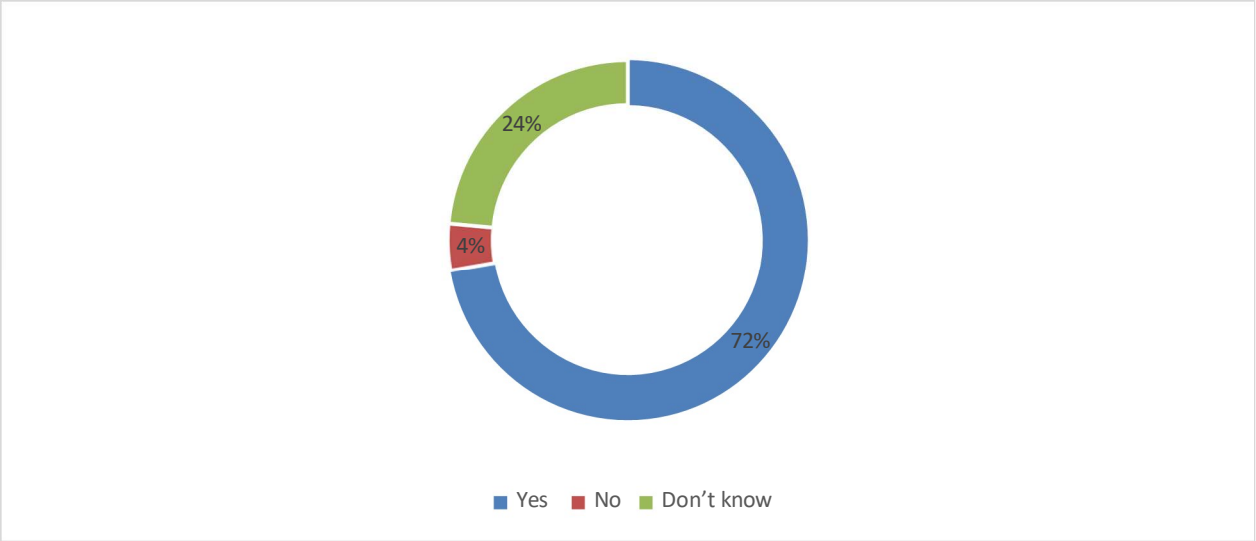

Table 3 presents data in a manner that offers a summary of the topic participants can understand the relation of the healthy lifestyle behaviors and the significance to manage hypertension in a cohort of 1,228 participants. More than 95.5 percent of respondents acknowledged the necessity of maintaining a healthy diet among hypertensive patients, stated the overwhelming majority. Like blood pressure, a whopping 92.8 percent also recognized the importance of undertaking regular exercise, suggesting a unanimity in the understanding of physical activity as essential for reducing blood pressure levels. In addition, robust 94.5% thought that smoking cessation acts as a major factor in wiping out the complications caused by hypertension, while 94.7% agreed that chronic stress has an essential role to play on high blood pressure. Moreover, 93.7% attested to the significance of eating a low salt diet among people with hypertension. These results suggest a well-informed population regarding risks associated

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with lifestyle choices for effective, disease prevention and subsequently for health promotion strategies.

Table (3): participants' awareness of the impact of healthy lifestyle behaviors on blood pressure (n=1228).

Parameter		*No.*	*Percent (%)*
A person with hypertension should practice a healthy diet?	No	55	4.5
	Yes	1173	95.5
Hypertensive patients should participate in exercise?	No	88	7.2
	Yes	1140	92.8
Cessation of smoking help control hypertension complications?	No	68	5.5
	Yes	1160	94.5
Chronic stress contributes to elevated blood pressure?	No	65	5.3
	Yes	1163	94.7
Hypertensive patients should eat low salt diet?	No	77	6.3
	Yes	1151	93.7

Table 4 presents a complete result of the participants' knowledge on healthy lifestyle behavior's effect on blood pressure scores. According to the data, only 16.0% have a high level of knowledge, which is concerning in terms of how little people are aware of much. Compared, more than half, 54.5 percent, have moderate knowledge that indicates an understanding of the concepts without depth to translate into actionable health practices. In the meantime, the 29.5% low knowledge more clearly highlights the need for targeted educational efforts.

Table (4): Shows knowledge of the impact of healthy lifestyle behaviors on blood pressure score results.

	Frequency	**Percent**
High knowledge level	197	16.0
Moderate knowledge level	669	54.5
Low knowledge level	362	29.5
Total	1228	100.0

Table 5 shows a strong correlation between responding population awareness of lifestyle and blood pressure scores. An astonishingly high 83.1% of respondents obviously spoke to a high level of mindfulness concerning the effect healthy way of life propensities have on one's circulatory strain, demonstrating a solid comprehension of the significance of health cognizant choices in directing this critical wellbeing parameter. On the other hand, only 14.0% had moderate awareness while only 2.9% was low aware.

Table (5): Shows awareness about the impact of healthy lifestyle behaviors on blood pressure score results.

	Frequency	**Percent**
High awareness level	1021	83.1

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Moderate awareness	172	14.0
Low awareness	35	2.9
Total	1228	100.0

Table (6) shows that knowledge of the impact of healthy lifestyle behaviors on blood pressure has statistically significant relation to gender (P value=0.019) and age (P value=0.011). It also shows statistically insignificant relation to occupational status, educational level, marital status, residential region, and monthly income.

Table (6): Relation between knowledge of the impact of healthy lifestyle behaviors on blood pressure and sociodemographic characteristics.

Parameters		***Knowledge level***		***Total (N=1228)***	***P value****
		High or moderate knowledge	**Low knowledge level**		
Gender	Female	698	270	968	0.019
		80.6%	74.6%	78.8%	
	Male	168	92	260	
		19.4%	25.4%	21.2%	
Age	20 or less	179	93	272	0.011
		20.7%	25.7%	22.1%	
	21 to 22	143	54	197	
		16.5%	14.9%	16.0%	
	23 to 25	140	66	206	
		16.2%	18.2%	16.8%	
	26 to 30	132	67	199	
		15.2%	18.5%	16.2%	
	31 to 40	107	41	148	
		12.4%	11.3%	12.1%	
	More than 40	165	41	206	
		19.1%	11.3%	16.8%	
Occupational status	Student	368	153	521	0.290
		42.5%	42.3%	42.4%	
	Employed	189	76	265	
		21.8%	21.0%	21.6%	
	Unemployed	191	94	285	
		22.1%	26.0%	23.2%	
	Freelancer	44	10	54	
		5.1%	2.8%	4.4%	
	Retired	74	29	103	
		8.5%	8.0%	8.4%	
Educational level	Primary school	2	5	7	0.070
		0.2%	1.4%	0.6%	
	Middle school	18	8	26	

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		2.1%	2.2%	2.1%	
	High school	224	98	322	
		25.9%	27.1%	26.2%	
	Diploma	76	41	117	
		8.8%	11.3%	9.5%	
	Bachelor's degree	492	197	689	
		56.8%	54.4%	56.1%	
	Postgraduate degree	49	11	60	
		5.7%	3.0%	4.9%	
	Uneducated	5	2	7	
		0.6%	0.6%	0.6%	
Marital status	Single	528	237	765	0.340
		61.0%	65.5%	62.3%	
	Married	304	108	412	
		35.1%	29.8%	33.6%	
	Divorced	21	11	32	
		2.4%	3.0%	2.6%	
	Widowed	13	6	19	
		1.5%	1.7%	1.5%	
Residential region	Northern region	31	17	48	0.588
		3.6%	4.7%	3.9%	
	Southern region	131	60	191	
		15.1%	16.6%	15.6%	
	Central region	111	54	165	
		12.8%	14.9%	13.4%	
	Eastern region	70	27	97	
		8.1%	7.5%	7.9%	
	Western region	523	204	727	
		60.4%	56.4%	59.2%	
Monthly income	Less than 1000 SAR	352	175	527	0.102
		40.6%	48.3%	42.9%	
	1000 to 5000 SAR	231	85	316	
		26.7%	23.5%	25.7%	
	5001 to 10000 SAR	121	51	172	
		14.0%	14.1%	14.0%	
	10001 to 15000 SAR	76	23	99	
		8.8%	6.4%	8.1%	
	More than 15000 SAR	86	28	114	
		9.9%	7.7%	9.3%	

P value was considered significant if ≤ 0.05.

Table (7) shows that awareness of the impact of healthy lifestyle behaviors on blood pressure has statistically significant relation to age (P value=0.0001) marital status (P value=0.022) and monthly income (P value=0.050). It also shows statistically insignificant relation to occupational status,

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educational level, residential region, and gender.

Table (7): awareness of the impact of healthy lifestyle behaviors on blood pressure in association with sociodemographic characteristics.

Parameters		***Awareness level***		***Total (N=1228)***	***P value****
		High awareness level	**Moderate or low awareness**		
Gender	Female	812	156	968	0.181
		79.5%	75.4%	78.8%	
	Male	209	51	260	
		20.5%	24.6%	21.2%	
Age	20 or less	198	74	272	0.0001
		19.4%	35.7%	22.1%	
	21 to 22	175	22	197	
		17.1%	10.6%	16.0%	
	23 to 25	174	32	206	
		17.0%	15.5%	16.8%	
	26 to 30	163	36	199	
		16.0%	17.4%	16.2%	
	31 to 40	123	25	148	
		12.0%	12.1%	12.1%	
	More than 40	188	18	206	
		18.4%	8.7%	16.8%	
Occupational status	Student	422	99	521	0.423
		41.3%	47.8%	42.4%	
	Employed	227	38	265	
		22.2%	18.4%	21.6%	
	Unemployed	237	48	285	
		23.2%	23.2%	23.2%	
	Freelancer	47	7	54	
		4.6%	3.4%	4.4%	
	Retired	88	15	103	
		8.6%	7.2%	8.4%	
Educational level	Primary school	6	1	7	0.155
		0.6%	0.5%	0.6%	
	Middle school	19	7	26	
		1.9%	3.4%	2.1%	
	High school	256	66	322	
		25.1%	31.9%	26.2%	
	Diploma	103	14	117	
		10.1%	6.8%	9.5%	
	Bachelor's degree	584	105	689	
		57.2%	50.7%	56.1%	
	Postgraduate degree	48	12	60	
		4.7%	5.8%	4.9%	

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	Uneducated	5	2	7	
		0.5%	1.0%	0.6%	
Marital status	Single	620	145	765	0.022
		60.7%	70.0%	62.3%	
	Married	361	51	412	
		35.4%	24.6%	33.6%	
	Divorced	26	6	32	
		2.5%	2.9%	2.6%	
	Widowed	14	5	19	
		1.4%	2.4%	1.5%	
Residential region	Northern region	39	9	48	0.125
		3.8%	4.3%	3.9%	
	Southern region	147	44	191	
		14.4%	21.3%	15.6%	
	Central region	139	26	165	
		13.6%	12.6%	13.4%	
	Eastern region	79	18	97	
		7.7%	8.7%	7.9%	
	Western region	617	110	727	
		60.4%	53.1%	59.2%	
Monthly income	Less than 1000 SAR	421	106	527	0.050
		41.2%	51.2%	42.9%	
	1000 to 5000 SAR	272	44	316	
		26.6%	21.3%	25.7%	
	5001 to 10000 SAR	142	30	172	
		13.9%	14.5%	14.0%	
	10001 to 15000 SAR	89	10	99	
		8.7%	4.8%	8.1%	
	More than 15000 SAR	97	17	114	
		9.5%	8.2%	9.3%	

P value was considered significant if ≤ 0.05.

Discussion:

This cross-sectional study was conducted to evaluate the knowledge, attitude and practices (KAP) of hypertension amongst hypertensive patients in Saudi Arabia. However, they also point to positive indicators of awareness and critical gaps for which targeted educational interventions are needed.
Of note, over 95% of participants recognized the importance of both a healthy diet, and regular exercise, smoking cessation, and stress management all in reducing the risk of developing hypertension [9]. This agrees with previous studies showing how lifestyle modifications are used in controlling blood pressure [10]. In addition, most respondents were aware of the risks from heavy salt intake and saturated fats and physical inactivity [11]. They suggest that a generally well-informed population knows how their lifestyle decisions affect hypertension.
At the same time, the study found glaring gaps in behavior: 30.6 percent of participants reported eating vegetables regularly, and 65.6 percent said they never measured their blood pressure [12]. Like other

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studies that have found this chasm between knowledge and practice, the findings of this study reflect the challenge of translating awareness into regular lifestyle changes [13]. Even if one recognizes the importance, factors like socioeconomic status, access to health care and cultural norms can be barriers to adoption of healthy behaviours [14].

The study, interestingly also revealed, that only 16.0 % of the participants had a high level of knowledge about how life styles affect blood pressure, whilst 29.5 % exhibited low knowledge levels [15]. This suggests that there is a need to pursue more individualized and deepened education to extend understanding of how lifestyle relates to hypertension management. Previous research has demonstrated clearly the potential impact of such interventions on hypertension control, patient education is shown to have an important role in improving hypertension control [16].

Moreover, the study revealed demographic variables related to the awareness and the behavior. There were significant relations between levels of knowledge (awareness) and gender and age, with women and the elderly demonstrating greater knowledge [17]. Consistent with research suggesting that women and older adults may be more receptive to health-related information and more engaged with lifestyle modification recommendations [9], this aligns. On the other hand, occupational status, level of education, marital status, residence region and monthly income have no significant correlation, implying that education is necessary across the socioeconomic strata [18].

Age, marital status and monthly income were significant in terms of awareness of healthy lifestyle behaviors [19]. Those with lower incomes were more aware than younger (34 years or less) and unmarried individuals. It is the case that such subgroups have particular needs and barriers and require distinct interventions [20].

One drawback of the present study is the cross-sectional nature, which does not enable us to establish causal association between variables. Research longitudinal would be useful to better understand the dynamic interaction between knowledge and behavioral changes lasting over time [21]. Furthermore, the study was based on self-reported data, which is prone to such social desirability bias or poor recall. This makes the results more valid [22] if objective measures of lifestyle factors and clinical outcomes were incorporated.

Limitations notwithstanding, the study has important implications for the level of hypertension awareness and lifestyle behaviours in the Saudi Arabian context. The findings emphasize the need for broad based, multiple concurrent educational interventions to close knowledge gaps as well as practical barriers to adoption of healthy lifestyles [23]. Given such efforts, they should deploy through different channels such as community programmes, healthcare and online platforms to various segments of the population [24]. Furthermore, the study highlights the importance of tailoring interventions to specific demographic characteristics, such as age, gender, and socioeconomic status. By addressing the unique needs and barriers faced by different subgroups, educational initiatives can be more effective in promoting sustained lifestyle changes and improving hypertension management [25].

Conclusion:

The challenge of a complex landscape in the awareness of the impact of healthy lifestyle behaviors on blood pressure among the Saudi Arabian population is the focus of this cross-sectional study. The population displays a basic understanding of the significance of health modifying behaviours, yet there is a lack of translation of this knowledge into consistent health practice. To meet the challenge, targeted educational interventions, informed by the demographic and socioeconomic factors that shape awareness and behaviours with regard to hypertension and the cardiovascular disease burden in Saudi Arabia, will be essential to power individuals to be proactive in managing their hypertension and reducing the burden of cardiovascular disease in the kingdom.

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Ethical approval:

After fully explaining the study and emphasizing that participation is optional, each participant gave their informed consent. The information gathered was safely stored and utilized exclusively for study.

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Conflict of interests:

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability:

All data associated with this study are present in the paper.

References:

1. Pahria T, Nugroho C, Yani DI. Factors Influencing Self-Care Behaviors in Hypertension Patients With Complications. Vasc Health Risk Manag. 2022;18:463–71.
2. Elgendy MF, Dawa AEAE, Elawady MA, Zidan SYE, Elmahdy MA. Lifestyle Modification and Its Effect on The Control of Hypertension. Egypt J Hosp Med. 2022;89(1):4811–6.
3. Almomani MH, Akhu-Zaheya L, Alsayyed M, Alloubani A. Public's Knowledge of Hypertension and its Associated Factors: A Cross-Sectional Study. Open Nurs J. 2022;16(1):1–11.
4. Yaqoob S, Yaseen M, Jarullah FA, Saleem A, Mohan A, Essar MY, et al. Awareness, treatment, and practices of lifestyle modifications amongst diagnosed hypertensive patients attending the tertiary care hospital of Karachi: A cross-sectional study. Ann Med Surg [Internet]. 2022;82(August):104587. Available from: https://doi.org/10.1016/j.amsu.2022.104587
5. Chinnadurai A, Raghunath DP, Bhattacharya S. Awareness, knowledge & perception on hypertension & self-care practices among general population of both male & female adults. ~ 134 ~ Int J Physiol [Internet]. 2021;6(2):134–42. Available from: www.journalofsports.com
6. Ashik Ali MB, Hashim M, Nabeel M, Sanaz M, Shabaraya A. A STUDY TO ASSESS KNOWLEDGE, ATTITUDE, PRACTICES ON HYPERTENSION AMONG HYPERTENSIVE PATIENTS. Certif J │ 1466 World J Pharm Res SJIF Impact Factor [Internet]. 2021;10:1467. Available from: www.wjpr.net

7. Thomas SM, Varghese S, Raj B. Chinnadurai, A., Raghunath, D. P., & Bhattacharya, S. (2021). Awareness, knowledge & perception on hypertension & self-care practices among general population of both male & female adults. wledge, Attitude and Practice among Hypertensive Patients in a Teaching Hospital. J Young Pharm. 2021 Sep 15;13(3):279–84.
8. Elbashir B, Al-dkheel M, Aldakheel H, Aruwished N, Alodayani N. Hypertension in Saudi Arabia: Assessing Life Style and Attitudes. Int J Transl Med Res Public Heal. 2020 May 6;4(1):23–9.
9. Aljuraiban, G., Gibson, R., Chan, D., Chan, Q., & Griep, L. (2023). Evaluation of lifestyle scores in relation to blood pressure in young and older adults of the airwave health monitoring study of british police force employees. Proceedings of the Nutrition Society, 82(OCE1). https://doi.org/10.1017/s0029665123000228
10. Ijioma, C. (2023). Impact of training programs on awareness and practice of lifestyle modifications among hypertensive patients attending outpatient clinic of the university college hospital, ibadan, nigeria. Cardiology and Angiology an International Journal, 12(4), 130-143. https://doi.org/10.9734/ca/2023/v12i4352
11. Israfil, I. and Pandin, M. (2021). Current methods of health education by nurses and its impact on hypertension patients: a literature review.. https://doi.org/10.20944/preprints202103.0791.v1
12. Alefan, Q., Huwari, D., Alshogran, O., & Jarrah, M. (2019). <p>factors affecting hypertensive patients’ compliance with healthy lifestyle</p>. Patient Preference and Adherence, Volume 13, 577-585. https://doi.org/10.2147/ppa.s198446
13. Santa-Rosa, F., Shimojo, G., Dias, D., Viana, A., Lanza, F., Irigoyen, M., … & Angelis, K. (2020). Impact of an active lifestyle on heart rate variability and oxidative stress markers in offspring of hypertensives. Scientific Reports, 10(1). https://doi.org/10.1038/s41598-020-69104-w
14. Levy, M., Ae, G., Hart, R., Happ, L., Hadigan, C., & Castel, A. (2017). High burden of metabolic comorbidities in a citywide cohort of hiv outpatients: evolving health care needs of people aging with hiv in washington, dc. Hiv Medicine, 18(10), 724-735. https://doi.org/10.1111/hiv.12516
15. Wan, E., Fung, C., Choi, E., Wong, C., Chan, A., Chan, K., … & Lam, C. (2016). Main predictors in health-related quality of life in chinese patients with type 2 diabetes mellitus. Quality of Life Research, 25(11), 2957-2965. https://doi.org/10.1007/s11136-016-1324-4
16. Danielewicz, A., Morze, J., Przybyłowicz, M., & Przybyłowicz, K. (2019). Association of the dietary approaches to stop hypertension, physical activity, and their combination with semen quality: a cross-sectional study. Nutrients, 12(1), 39. https://doi.org/10.3390/nu12010039
17. Sundarakumar, J. (2023). Impact of the covid-19 pandemic on some modifiable risk factors of dementia in an aging, rural indian population. Frontiers in Psychiatry, 14. https://doi.org/10.3389/fpsyt.2023.954557
18. Ozemek, C., Tiwari, S., Sabbahi, A., Carbone, S., & Lavie, C. (2020). Impact of therapeutic lifestyle changes in resistant hypertension. Progress in Cardiovascular Diseases, 63(1), 4-9. https://doi.org/10.1016/j.pcad.2019.11.012
19. Mustapha, A., Ssekasanvu, J., Chen, I., Grabowski, M., Ssekubugu, R., Kigozi, G., … & Post, W. (2022). Hypertension and socioeconomic status in south central uganda: a population-based cohort study. Global Heart, 17(1). https://doi.org/10.5334/gh.1088
20. Fountoulakis, N., Wijesuriya, M., Gnudi, L., Gulliford, M., & Karalliedde, J. (2019). Reducing the incidence of predictors of cardio-metabolic disease and dysglycaemia with lifestyle modification in at-risk persons – results of further analyses of diabrisk-sl in those below 18 years of age. BMC Medicine, 17(1). https://doi.org/10.1186/s12916-019-1398-2

21. Alves-Silva, J., Zuzarte, M., Girão, H., & Salgueiro, L. (2022). Natural products in cardiovascular diseases: the potential of plants from the allioideae subfamily (ex-alliaceae family) and their sulphur-containing compounds. Plants, 11(15), 1920. https://doi.org/10.3390/plants11151920
22. Hussain, A., Hafeez, M., Naveed, M., Shah, S., Khan, M., & Shabir, M. (2022). Optimization of blood pressure in adult hypertensive patients with lifestyle modifications. Pakistan Armed Forces Medical Journal, 72(6), 2010-13. https://doi.org/10.51253/pafmj.v72i6.4545
23. Kieck, D., Ostir, S., Blair, J., Yenser, E., Chapin, M., Lovett, S., … & Pezzino, N. (2021). Patient perceptions of a student-led remote hypertension education program. Journal of the American College of Clinical Pharmacy, 4(10), 1315-1323. https://doi.org/10.1002/jac5.1507
24. Masrouri, S., Alijanzadeh, D., Amiri, M., Azizi, F., & Hadaegh, F. (2023). Predictors of decline in kidney function in the general population: a decade of follow-up from the tehran lipid and glucose study. Annals of Medicine, 55(1). https://doi.org/10.1080/07853890.2023.2216020
25. Nardi, A., Pfeifer, L., Oliveira, N., Botton, C., Santos, L., & Umpierre, D. (2022). Perspectives of older participants on the delivery of individual results: study within a trial (swat) hosted by the hael study. Research Methods in Medicine & Health Sciences, 4(2), 61-70. https://doi.org/10.1177/26320843221131293