



KNOWLEDGE AND AWARENESS OF HYPERTENSION AMONG ELDERLY PATIENTS ATTENDING PRIMARY HEALTH CARE CENTERS AT SAUDI ARABIA 2022

Essam Abdulrahim Khan^{1*}, Ali Hadi Saleh Almas², Misfer Hussain Hammad Binnasib³, Ali Mohammed Hussain Al Abbas⁴, Abdullah Muhammad Hussein Al-Abbas⁵, Mohamed Abdullah Mosleh Alghfainah⁶, Saleh Mahdi Abdullah Al Abbas⁷, Hussain Mohammed Hussain Al Abbas⁸, Abdullah Mohammed Al Abbas⁹, Mansour Alhassan Almakrami¹⁰, Basel Salem Alsaidi¹¹, Fahad Mahdi Abdullah Alabbas¹², Fahad Jaralnabi Almalki¹³, Waleed Hamed Alghamdi¹⁴, Khoulood Mohmmad Khuzaee¹⁵

Abstract

Introduction: The prevalence of hypertension (HTN) in Saudi Arabia is witnessing an ascending trend since 1992. Hypertension (HTN) is a primary global health concern in ageing. Moreover, according to the 2020 Global Burden of Disease, hypertension accounted for roughly a quarter of cardiovascular disease fatalities and 1.9 percent of all deaths in Saudi Arabia in 2012. High blood pressure (hypertension) continues to be a global health problem. It was responsible for a yearly 10.2 million deaths and 208 million years of modified life for disability. In 2021, the Saudi Minister of health MOH declared that out of five elderly Patients in the middle east four are suffering from hypertension. However, earlier Saudi studies showed that hypertension (HTN) prevalence among elderly was around 49%. This high prevalence of hypertension in elderly would be associated with an increase in hypertension in adult.

Also, hypertension is a significant risk factor for cardiovascular disease, morbidity, and mortality especially for the elderly. However, assessing blood pressure (BP) and preventing hypertension among elderly has become a global priority. Education is one way that can be used to increase one's knowledge and awareness education can be given in various fields, including health, the important of this study was to knowledge the effect of health education on increasing the knowledge and awareness of elderly people with hypertension in Saudi Arabia.

Aim of the study: To determine the knowledge and awareness of Hypertension among elderly Patients attending Primary Health Care Centers at Saudi Arabia 2022.

Methods: A cross-sectional study was conducted to examine the study objectives. Convenience sampling was used to recruit patients with hypertension who visited primary healthcare centers in Saudi Arabia 2022.

Results : shows that most of the participants (44.0%) were in the age group 60-70 years, regarding the gender the majority of participant male were(66.0%), the occupation the majority of participant employed were (62.0%), years of Diagnosis/Duration of Hypertension the majority of participant duration from >10 years were(48.0%), the smoking the majority of participant yes, but quit now were(44.0%)

Conclusion: Prevalence of hypertension was high in elderly patients this population along with poor control, efforts are required to improve hypertension control focusing on older adults with those who are aged 60 years and above. So, measuring blood pressure is a necessity during elderly patient's check-ups.

Key words: Knowledge, awareness, Hypertension, elderly, attending, P H C, Saudi Arabia, 2022

^{1*}Family Medicine Consultant, Makkah, Saudi Arabia.

²Dental Technician, New Najran General Hospital, Health Center Affairs, Saudi Arabia.

³Dental Assistant, Najran General Hospital, Saudi Arabia.

⁴Health Administration, King Khaled Hospital, Saudi Arabia.

⁵Emergency medicine, Emergency and crisis management, Saudi Arabia.

⁶Health administration, Maternity & Children's Hospital -Najran, Saudi Arabia.

⁷Pharmacy technician, Specialized Dental Center at Najran, Saudi Arabia.

⁸Medical Records Technician, Khabash General Hospital, Saudi Arabia.

⁹Health Administration, Specialized Dental Center, Saudi Arabia.

¹⁰Medical devices, Maternity and Children's Hospital, Saudi Arabia.

¹¹General physician, Almabeda PHC, Saudi Arabia.

¹²Nursing, Nahoqa Health Center, Saudi Arabia.

¹³Nursing, Makkah Al-Mukarramah Health Complex, King Abdullah Medical City, Saudi Arabia.

¹⁴Technician-Health Informatics, Hera General Hospital, Saudi Arabia.

¹⁵Nursing technician, Al-Mansour Health Center, Saudi Arabia.

***Corresponding Author:** Essam Abdulrahim Khan

*Family Medicine Consultant, Makkah, Saudi Arabia.

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Introduction:

Recently, a survey demonstrated a decreasing trend of hypertension in western countries, but an increasing trend among Southeast Asia and Saudi Arabia [1]. The incidence of hypertension significantly rises with increasing age [2]; hence, it is more prevalent among older adults than in young and middle-aged population [3]. Numerous population-based surveys in various regions of the world estimate that 7 out of 10 adults, 65 years and older, have been diagnosed with elevated blood pressure [4]. This trend is likely to persist, as the population of older persons in high-income countries continues to grow [5]. In some countries such as the U.S., even though the trends in incidence of hypertension have only slightly changed [6], the absolute number of people with hypertension is ever growing due to the aging population [7]. Some studies observed that about 24–30% of older adults with hypertension were not aware of their hypertension status [8], and about 32% were not on treatment [9]. In the same studies, the proportion of treated and controlled hypertension was barely 50% [10], which suggests that treatment and controlled hypertension in older adults is suboptimal — and an issue of great public health interest.

An estimated 1.28 billion adults aged 30-79 years worldwide suffer from hypertension, the majority (two thirds) live in low- and middle-income countries.[11] 46% of elderly patients with hypertension are unaware that they have the condition. Less than half of elderly (42%) with hypertension are diagnosed and treated. About two in 5 adults (21%) with hypertension can control it. [12] Chronic diseases are an important public health problem and contribute about 71% of mortality worldwide [13]. In the Kingdom of Saudi Arabia, a large proportion of morbidity and mortality is attributed to chronic illnesses or long-term conditions. Hypertension is a global issue because it is one of the main preventable causes of morbidity and mortality.[14] Hypertension is an illness that has a major effect on communities' health, and it is widely prevalent in the Arab Gulf region, the Middle East, and the world. It is anticipated to affect around 1.56 billion people worldwide in 2025 [15] Hypertension is the main cause of premature death worldwide [16]. One of the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 33% between 2010 and 2030. According to the age group cardiovascular disease (CVD) is one of the leading causes of death worldwide, and it is enormous burden in developed and developing countries [17]. As one of the most important risk

factors of CVD, hypertension accounts for approximately 50% of coronary heart disease and 67% for the cerebrovascular disease burden worldwide [18]. People suffering from long-term conditions receive therapy for a protracted period of time. Quality of life has become an essential measure of results to evaluate the efficiency of the management plan of any illness. Drug therapy alongside with lifestyle adjustments remain the effective control of hypertension, so compliance with the drug is the main factor contributing to attaining the desired clinical result. Non-compliance with antihypertensive drugs is the main cause of poor control of high blood pressure [19]

In Saudi Arabia, it was found that the prevalence of hypertension in southwestern areas was 11.1%; it was found to be more in females than males unlike the worldwide proportions. It was also found that 76% of patients received treatment, however, only 20% were controlled which is considered a very low percent [20].

Literature Review

Study by Sierra et al (2017) reported that 2018 Basic Health Research in Indonesia + 75 years as much as 69.5%, second age 65-74 years 63.2%, third age 55-64 years as much as 52.2%. The above data is in line with research conducted [21] that the proportion of hypertension at age ≥ 40 years is higher than the proportion of hypertension at age < 40 years. The results of this study are also in line with the results of Muntner, (2020),

Proving that the older a person is, the greater the risk of developing hypertension. The results of the research analysis show that respondents aged ≥ 60 years are at risk of 5,216 times experiencing hypertension [24]. ("National High Blood Pressure Education Program Working Group Report on Hypertension in the Elderly

In China, hypertension has ranked first as a risk factor of CVD, and many associated complications, such as stroke, heart and renal diseases, which are major causes of mortality [25]. According to the 2002 National Nutrition and Health Survey (NNHS), the prevalence of hypertension in adult Chinese population of 60 years or older was 49.1%, and the rates of awareness, treatment and control were 37.6%, 32.2%, and 7.6%, respectively [26]. Province is located in Southern China, it has an aging population (60 years or older) of approximately 7.5 million in 2011 which accounts for 13.39% of the total population. As one of the most rapidly developing provinces, dramatic social and economic changes, including rapid urbanization

has occurred in Zhejiang over the past 2 decades. These factors, in part, contributed to the inadequate control of hypertension [27]. However, little is known about whether hypertension is adequately controlled among the elderly in Southern China .

A survey was conducted with 10644 elderly hypertensive patients living in Zhejiang province to study awareness, treatment and control of hypertension, and investigate the associated factors of uncontrolled hypertension.[28] In Germany, epidemiological studies on prevalence, awareness, treatment and control of hypertension have only been conducted in adults aged 18–79 years [29], but so far not in the very old population. Therefore, the aim of this study is to determine the prevalence, awareness, treatment and control of hypertension, and their associated factors in older people aged 65–94 years from the general population in Germany.

At 2015, Burnier et al. conducted a cross-sectional descriptive study on 72 hypertensive patients in Arar, Kingdom of Saudi Arabia to assess their knowledge and awareness about their disease, drug, and compliance in 2 major hospitals. Data were collected using an interviewer-administered questionnaire, based on Hypertension Knowledge Level Scale (HK-LS). The male patients were (53%), and (47%) were female. However, patients who had a job were (55.6%) but those who were unemployed (41.6%). Also, (80%) of patients were over 50 years of age, (43%) with no formal education, (27%) with 1-8 years of formal education and (29%) with more than nine years of formal educations.[30]

About (50%) of patients could define the disease, awareness of HTN complication ranged between (74%-86%). In addition to that, awareness about medical treatment were (68%-86%) and about the importance of drug compliance were (60%-72%). The researcher used the chi-squared test for nominal variables to assess correlations. There was a significant correlation ($p < 0.05$) with age and education. On the hand, there was no correlation between gender or job status and awareness of the disease.[31]

Poor hypertension management has many multifaceted causes including obesity, medical adherence, and poor dietary and other lifestyle habits management. According to previous systematic reviews, individuals' health literacy is one of the contributing factors in controlling hypertension [32]. Health literate patients seem to have better control of their hypertension knowledge of hypertension and sodium restriction [22].

Rational:

Older adults aged 60e70 years were two times more likely to achieve adequate control of hypertension compared to those aged 70 years and above. This could be due to financial problems and lack of family support as also indicating the role of education in hypertension control. Interestingly, while individuals with diabetes have a higher odd of hypertension, the hypertensive individuals with diabetes have higher odds towards hypertension control. This paradoxical association requires further exploration. Some evidence points that treatment for hypertension to be higher among hypertensive older adults with diabetes. Availability & accessibility of knowledge and awareness of Hypertension among elderly services, financial wellbeing, and awareness about hypertension were found to influence diagnosis, monitoring and treatment of hypertension among the elderly.

Aim of the study:

To determine the knowledge and awareness of Hypertension among elderly Patients attending Primary Health Care Centers at Saudi Arabia 2022.

Objective :

To determine the knowledge and awareness of Hypertension among elderly Patients attending Primary Health Care Centers at Saudi Arabia 2022.

Methodology:

Study design:

This study is cross-sectional study was conducted among 300 of the hypertensive among elderly Patients attending Primary Health Care Centers at Saudi Arabia, has be applying a convenience sampling technique

Study Area

The study has been carried out in Saudi Arabia the holiest spot on Earth. It is the birthplace of the Prophet Mohammad and the principal place of the pilgrims to perform Umrah and Hajj. Contains a population around more than 2 million elderly Population, this study was conducted at visiting the Primary Health Care Centers in Saudi Arabia in 2022. During the June to July, 2022, participants on Visiting the Primary Health Care Centers in Saudi Arabia in 2022, it reflects a diversified demographic profile with a considerable portion of the population comes from rural descent, while others come from an urban one. This difference translates into biological, socioeconomic and lifestyle differences in the population

Study Population

The study has been conducted regarding the hypertensive elderly patients with Visiting the Primary Health Care Centers in Saudi Arabia in 2022 During the April to June, 2022.

Selection criteria:

Inclusion criteria

- Elderly patient's hypertension.
- Diagnosis of hypertension.
- Attending Primary Health Care Centers.
- Sound cognitive abilities
- All nationalities
- Both males and females.

Exclusion criteria :

- Pediatric patients.
- Patients with severe cognitive impairment such as dementia or delirium.
- Patients unwilling to give written consent to participate.
- Severely ill patients such as patients with malignancy
- Pregnancy
- Patient without established diagnosis with hypertension

Sample size:

The total population of hypertensive patients 20000 (Sample size calculated by using Epi info-2000 software) . The calculation is based on 50% response distribution. 5% margin of error and 95% confident interval. The assumption that the response rate is 50% . The calculated sample size was 37.2 to ensure accuracy, the sample size will be increased to 300 to account for any missing data or non-response rate .

Sampling technique: Systematic random sampling technique is adopted. After that, by using random number generator, then simple random sampling technique has been applied to select the PHC. Also, convenience sampling technique has been utilized to select the participants in the study. By using systematic sampling random as dividing the total patients by the required sample size; (300).

Data collection tool

The self-administered questionnaire is designed based on previous studies to determine the knowledge and awareness of Hypertension among elderly Patients attending Primary Health Care Centers at Saudi Arabia. The questionnaire has been developed in English. The questions were first pre-tested and were revised and finalized after it has been pilot tested. Before completing the

survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. The survey is estimated to take 10 min to complete .

To collect the information, a set of questions were constructed and developed. All questions were closed-ended, with tick boxes provided for responses; participants answered the questionnaires from the June to July 2022 the period of study in 2022.

The questionnaire consisted of questions that First part General and Socio demographic information. These variables included contact data (email or mobile phone number),(age, gender, Sources of information). Other variables were education level, economic level.

A questionnaire has been developed that had Socio demographic data and questions related to knowledge and awareness of Hypertension among elderly Patients. The two senior faculty members checked the questionnaire's validity and comprehension, and it was revised according to their suggestions. A pilot study has been conducted on elderly Patients to check the questionnaire's understanding and responses further, and its Cronbach's alpha was 0.75. The results of the pilot study were not included in the final analysis.

The assessment the determine the knowledge and awareness of Hypertension among elderly Patients attending Primary Health Care Centers at Saudi Arabia as per each topic/question, and also as per each response/answer. Data entry and analysis were carried out using the Statistical Package for the Social Sciences .

Data Collection technique

The researcher has be used Arabic version of the questionnaire since the target population are Saudi and non-Saudi elderly age. The questionnaire has be distributed to all elderly patients attending primary health care center during the data collection period The questionnaire was distributed equally between male and female section because it is separate departments. The researcher has be train 2 nurses on how to fulfill the questionnaire in order to optimize the interpreter reliability. The researcher has be distribute the questionnaire in the waiting area in male while in female section, has be trained nurse was be distribute the questionnaire in female waiting area. After that, the researcher was being collected the paper daily from the nurse for data entry and analysis after thanking the participants for their precious time and effort.

Pilot study/pretesting

A pilot study on 40 participants representing 10% of study sample size (out of study area) has been conducted to explore applicability, acceptance and obstacles and plan to overcome these problems.

Ethical consideration

- Permission from the joint program of family medicine has been obtained.

- Permission from the Directorate of Health Affairs of the Holy Capital Primary Health Care has been obtained.
- Permission from administration of public health has been obtained.
- Written consents from all participants in have are obtained.
- All information will be confidential, and a result has been submitted to the department.

Budget: The research has been self-budgeted.

Results

Table 1 Distribution of demographic data (age, gender, social, Smoking, HYN duration, Occupation) in our study (n=300)

level	N	%
Age		
50- 60	96	32
60-70	132	44
Above ≥70 years	72	24
Gender		
Male	198	66
Female	102	34
Nationality		
Saudi	264	88
Non- Saudi	36	12
Marital state (%)		
Married	159	53
Single	81	27
Divorced	33	11
Widowed	27	9
Level of education		
No formal education	51	17
Elementary	117	39
Secondary	87	29
university	45	15
Occupation		
Employed	186	62
Unemployed	114	38
Years of Diagnosis/Duration of Hypertension		
<5 Years	54	18
5-10 years	102	34
> 10 years	144	48
Smoking history:		
Never	102	34
Yes, but quit now	132	44
Continue to smoke	66	22

Table 1 shows that most of the participants (44.0%) were in the age group 60-70 years followed by the (32.0%) in the age group 50-60 years while above ≥70 years were (24), regarding the gender the majority of participants were male (66.0%) followed by female (34.0%), regarding the nationality the majority of participants were Saudi (88.0%) while non-Saudi were (12.0%), regarding marital status the majority of participants were married (53.0%) while single (27.0%) but the divorced were (11.0%) while widowed were (9.0%), regarding level of education the majority of participants were elementary (39.0%) while

secondary education were (29.0%) while no formal education were (17.0%) but university were (15.0%), regarding the occupation the majority of participants employed were (62.0%) followed by unemployed (38.0%), regarding years of Diagnosis/Duration of Hypertension the majority of participants duration from >10 years were (48.0%) while 5-10 years were (34.0%) but the <5 years were (18.0%), regarding the smoking the majority of participants yes, but quit now were (44.0%) while never smoker were (34.0%) but continue smoke were (22.0%).

Table 2 Distribution of Responses among Hypertensive Patients about Knowledge and Awareness of Hypertension .

Variables	N	%
Knowledge of Normal BP		
Yes	144	48
No	156	52
Knowledge of One self's BP		
Yes	195	65
No	105	35
Knowledge of Hypertension Being the Commonest Non-communicable Disease in Saudi Arabia		
Yes	225	75
No	75	25
Most Common Symptoms of Hypertension		
Yes	105	35
No	195	65
Severity of Hypertension More in Black than White		
Yes	90	30
No	210	70
Severity of Hypertension More in Male than Female		
Yes	39	13
No	261	87
Knowledge of the Target Organ's Damage		
Yes	93	31
No	207	69
Hypertension Treatment Is for Life		
Yes	225	75
No	75	25
Adequate Control of BP		
Yes	198	66
No	102	34
Family history of Diabetes		
Yes	234	78
No	66	22
Comorbidity		
No Comorbidity	36	12
Coronary artery disease	69	23
Diabetes mellitus	114	38
Chronic kidney disease	36	12
Stroke	30	10
More than one condition	15	5

Table 2 distribution of responses among hypertensive patients about knowledge and awareness of hypertension shows that regarding

knowledge of normal BP most of the participants answer No were (52.0%) follow by the Yes (52.0%) , regarding knowledge of one self's BP the

majority of participant answer Yes were(65.0%) follow by No were (35.0%), regarding knowledge of hypertension being the commonest Non-communicable disease in Saudi Arabia the majority of participant answer Yes were(75.0%) while No were (25.0%), regarding most common symptoms of hypertension the majority of participant are answer No were(65.0%) while Yes were (35.0%), regarding severity of hypertension more in black than white the majority of participant answer No were (70.0%) while Yes were (30.0%), regarding the severity of hypertension more in male than female the majority of participant No were (87.0%) follow by Yes were(13.0%), regarding knowledge of the target organ's damage

the majority of participant answer No were(69.0%) while Yes were (31.0%), regarding hypertension treatment is for life the majority of participant answer Yes were(75.0%) while No were (25.0%) , regarding adequate control of BP the majority of participant answer Yes were(66.0%) while No were(34.0%), regarding family history of diabetes the majority of participant answer Yes were(78.0%) while No were (22.0%), regarding ccomorbidity the majority of participant answer Diabetes mellitus were(38.0%) while ccoronary artery disease were (23.0%) but No Comorbidity and chronic kidney disease were (12.0%) while stroke were(10.0%).

Table 3 Distribution of Knowledge and awareness among elderly Patients risk factors of the Hypertension.

level	N	%
Risk factors of HTN		
Too much salt intake	72	24
Tension	90	30
Lack of exercises	120	40
Inheritance	126	42
High cholesterol	96	32
Obesity	165	55
Smoking	63	21
Aging	51	17
Diabetes	39	13
Malnutrition	15	5
Calcium deficiency	57	19
Complications of HTN		
Stroke	93	31
Eye disease	63	21
Cardiovascular disease	126	42
Nephropathy	18	6
Awareness		
Being hypertensive	96	32
His own BP value	204	68
Behavior		
Regular medication	126	42
Regular BP measuring	174	58
Treatment categories		
Non-treatment	33	11
Lifestyle change	81	27
Medication treatment	120	40
Medication treatment plus lifestyle change	66	22

Table 3 distribution of Knowledge and awareness among elderly Patients risk factors of the Hypertension regarding risk factors of HTN most of the participants Obesity were (55.0%) follow by Inheritance were (42.0%) but Lack of exercises were(40.0%) follow by High cholesterol were (32.05) while Tension were (30.0%) but Too much salt intake were (24.0%) while smoking were (21.%) while Calcium deficiency were (19.0%) while aging were (17.0%) but the diabetes were (13.0%) while malnutrition were (9.0%), regarding Complications of HTN the majority of participant Cardiovascular disease were (42.0%) while stroke were (31.0%) but eye disease were (21.0%) while nephropathy were (6.0%), regarding Awareness the majority of participant His own BP value were (68.0%) while His own BP value were (32.0%), regarding Behavior the majority of participant regular BP measuring were (58.0%) while regular medication were (42.0%), regarding Treatment categories the majority of participant medication treatment were (40.0%) follow by Lifestyle change

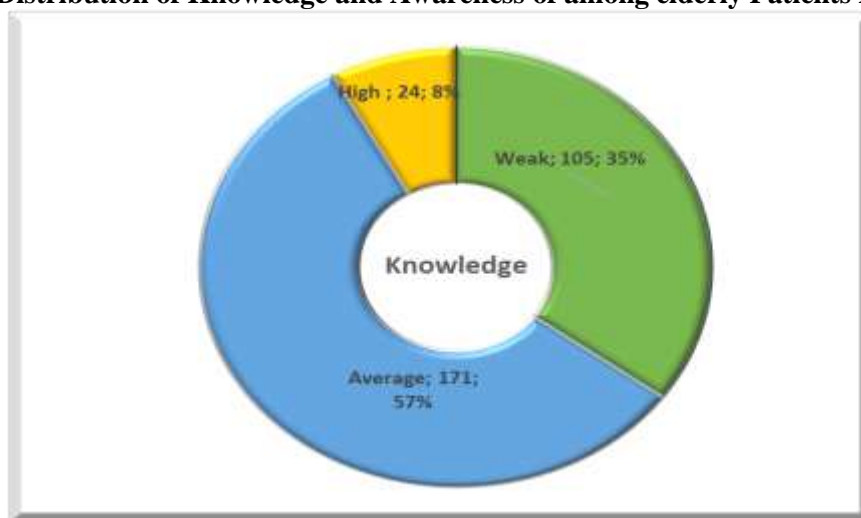
were (27.0%) but medication treatment plus lifestyle change were (22.0%) but Non-treatment were (11.0%) .

Table 4: Distribution of Knowledge and Awareness of among elderly Patients Hypertension

	N	%
Weak	105	35
Average	171	57
High	24	8
Total	300	100
Chi-square	X²	108.42
	P-value	<0.001*

This table 4 distribution of knowledge and awareness of among elderly Patients Hypertension shows the majority of participant (57.0%) have average of the knowledge about Hypertension followed by (35.0%) of participant weak while high were (8.0%) while X² 108.42 and a significant relation were P=0.001

Figure (1): Distribution of Knowledge and Awareness of among elderly Patients Hypertension



Discussion

in our study among 300 older adults, we found shows that most of the participants (44.0%) were in the age group 60-70 years, gender the majority of participant male were(66.0%), nationality the majority of participant Saudi were(88.0%), level of education the majority of participant are elementary were (39.0%), occupation the majority of participant employed were (62.0%), years of Diagnosis/Duration of Hypertension the majority of participant duration from >10 years were(48.0%) (SeeTable1). Our hypertension participant demographic data was similar to the prevalence of among German older adults indicating that, hypertension burden among older adults in Kerala is close to the western world.[23]

Hypertension is a major independent risk factor for cardiovascular disease and stroke. It has been estimated that more than one quarter of the world elderly population had hypertension in the year 2000, and that this would increase to 29% by the year 2025 [17]. Zhejiang province has a rapidly aging population with the percentage of older people increasing each year, which is an important factor associated with hypertension, special attention should be given to the elderly patients.[26]

Hypertension responses among hypertensive patients about knowledge and awareness of hypertension and treatment rates in our study were higher than that of a nationally representative study among older adults in Saudi Arabia, in our study

shows that regarding knowledge of normal BP most of the participants answer No were (52.0%) follow by the Yes (52.0%) , regarding knowledge of one self's BP the majority of participant answer Yes were(65.0%) follow by No were (35.0%), regarding knowledge of hypertension being the commonest Non-communicable disease in Saudi Arabia the majority of participant answer Yes were(75.0%) while No were (25.0%), regarding most common symptoms of hypertension the majority of participant are answer No were(65.0%) while Yes were (35.0%), regarding severity of hypertension more in black than white the majority of participant answer No were (70.0%) while Yes were (30.0%), regarding the severity of hypertension more in male than female the majority of participant No were (87.0%) follow by Yes were(13.0%), regarding knowledge of the target organ's damage the majority of participant answer No were(69.0%) while Yes were (31.0%), regarding hypertension treatment is for life the majority of participant answer Yes were(75.0%) while No were (25.0%) (See table 2). Study in the India reported that reported an awareness rate of 56, 59% and a treatment rate of 43, 48% in the age group of 60, 75 plus years.[24] Although the control rate of hypertension also improved from 11% in late 1990s to 24%, the improvement didn't commensurate with the increase in hypertension prevalence. One of the reasons for better control among older adults could be due to better compliance as reported in an earlier study from India.[27] Hypertension was detected for the first time during our survey in 32% of the participants compared to the national average of 43%.[33] This indicates the need for enhancing the population-based screening and detection of hypertension.

Study conducted in rural Vietnam their results implied that the psycho-logical domain had the worst scores while the other domains were considered as a moderate [23]. The least domain scores were the physical do-main while the highest was social domain. However, our results were inconsistent with other studies that found that it was a weak correlation. Cote et al. considered the correlation between the compliance to treatment and quality of life in hypertensive patients as negligible [27]. Another study in hypertensive geriatric found the same results [25]. In addition, another study found that it is a reverse relationship and that the increase in the quality of life was associated with higher compliance to treatment [16].

in our study regarding the distribution of knowledge and awareness among elderly Patients

risk factors of the Hypertension show regarding risk factors of HTN most of the participants Obesity were (55.0%) follow by Inheritance were (42.0%) but Lack of exercises were(40.0%) follow by High cholesterol were (32.05) while Tension were (30.0%) but Too much salt intake were (24.0%) while smoking were (21.0%) while Calcium deficiency were (19.0%) while aging were (17.0%) but the diabetes were (13.0%) while malnutrition were (9.0%), regarding Complications of HTN the majority of participant Cardiovascular disease were (42.0%) while stroke were (31.0%) but eye disease were (21.0%) while nephropathy were (6.0%)(See table 3) Another obvious influencer on the risk factors in hypertensive patients is the presence of co-morbidity. Although their influence is inconsistent across the domains in our study . Comorbidities were generally associated with lower risk factors and lower scores [34]. Surprisingly, vision problems were not associated with low scores in our study. In a study that assessed the risk factors in hypertensive patients with co-morbidities of chronic kidney diseases and heart diseases [17]. They found that it significantly affected the quality of life in those patients. They also found that there were other cofactors in this relationship that includes age, combination of other comorbidities and anti-hypertensive treatment [27]. In contrast, another study found that diabetes did not have effect on the risk factors in hypertensive patients. However, other studies reported that both type 1 or 2 have a deleterious effect on the quality of life in those patients [26].

In our study regarding distribution of knowledge and awareness of among elderly Patients Hypertension shows the majority of participant (57.0%) have average of the knowledge about Hypertension followed by (35.0%) of participant weak while high were (8.0%) while X² 108.42 and a significant relation were P=0.001 (See table 4) . Our finding of higher hypertension prevalence among those who reported diabetes corroborate with the findings of other studies that hypertension and diabetes are among the common co-morbid NCDs.[31] Higher prevalence of hypertension among alcohol users in our study is in line with a previous study from India.[35]

Conclusion

This study has demonstrated inadequate knowledge of hypertension in elderly patients with hypertension in our study population. Elderly hypertension is prevalent in Saudi Arabia, especially among obese and overweight elderly with moderate family income. So, measuring blood

pressure is a necessity during elderly check-ups. In addition, awareness campaigns should be held to raise public awareness of this growing health problem and the importance of lifestyle modification for obese and overweight elderly to prevent the subsequent development of hypertension. We suggest measuring the elderly physical activity and fat diet intake in future research. Conscious efforts should be made and time set aside to health educates hypertensive elderly patients. Organization of "hypertensive club or society" could be encouraged. These will reduce dissemination of false or inaccurate information by hypertensive patients to the elderly public and its attendant dangers. This study has demonstrated inadequate awareness of hypertension and its determinants in patients with hypertension. Efforts should be made on the part of the medical team to health educate such elderly patients as is done for other chronic illnesses .

References

1. Al-Raddadi, R., Al-Ahmadi, J., Bahijri, S., Ajabnoor, G. M., Jambi, H., Enani, S., ... & Tuomilehto, J. (2021). Gender differences in the factors associated with hypertension in non-diabetic Saudi adults—a cross-sectional study. *International Journal of Environmental Research and Public Health*, *18*(21), 11371.
2. Tsao, C. W., Aday, A. W., Almarzooq, Z. I., Alonso, A., Beaton, A. Z., Bittencourt, M. S., ... & American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. (2022). Heart disease and stroke statistics—2022 update: a report from the American Heart Association. *Circulation*, *145*(8), e153-e639.
3. Muli, S., Meisinger, C., Heier, M., Thorand, B., Peters, A., & Amann, U. (2020). Prevalence, awareness, treatment, and control of hypertension in older people: results from the population-based KORA-age 1 study. *BMC Public Health*, *20*, 1-10.
4. Macek, P., Zak, M., Terek-Derszniak, M., Biskup, M., Ciepiela, P., Krol, H., ... & Gozdz, S. (2020). Age-dependent disparities in the prevalence of single and clustering cardiovascular risk factors: a cross-sectional cohort study in middle-aged and older adults. *Clinical Interventions in Aging*, 161-169.
5. Ostchega, Y., Fryar, C. D., Nwankwo, T., & Nguyen, D. T. (2020). Hypertension prevalence among adults aged 18 and over: United States, 2017–2018.
6. Zhou, B., Perel, P., Mensah, G. A., & Ezzati, M. (2021). Global epidemiology, health burden and effective interventions for elevated blood pressure and hypertension. *Nature Reviews Cardiology*, *18*(11), 785-802.
7. Karayiannis, C. C. (2022). Hypertension in the older person: is age just a number?. *Internal Medicine Journal*, *52*(11), 1877-1883.
8. Lee, J., Wilkens, J., Meijer, E., Sekher, T. V., Bloom, D. E., & Hu, P. (2022). Hypertension awareness, treatment, and control and their association with healthcare access in the middle-aged and older Indian population: A nationwide cohort study. *PLoS Medicine*, *19*(1), e1003855.
9. Dhungana, R. R., Pedisic, Z., Dhimal, M., Bista, B., & de Courten, M. (2022). Hypertension screening, awareness, treatment, and control: a study of their prevalence and associated factors in a nationally representative sample from Nepal. *Global Health Action*, *15* (1), 2000092.
10. Al Ghorani, H., Kulenthiran, S., Lauder, L., Böhm, M., & Mahfoud, F. (2021). Hypertension trials update. *Journal of Human Hypertension*, *35*(5), 398-409.
11. Londono Agudelo, E., Perez Ospina, V., Battaglioli, T., Tabora Perez, C., Gómez-Arias, R., & Van der Stuyft, P. (2021). Gaps in hypertension care and control: a population-based study in low-income urban Medellín, Colombia. *Tropical Medicine & International Health*, *26*(8), 895-907.
12. Oliveros, E., Patel, H., Kyung, S., Fugar, S., Goldberg, A., Madan, N., & Williams, K. A. (2020). Hypertension in older adults: Assessment, management, and challenges . *Clinical cardiology*, *43*(2), 99-107.
13. Hajat, C., & Stein, E. (2018). The global burden of multiple chronic conditions: a narrative review. *Preventive medicine reports*, *12*, 284-293.
14. Tyrovolas, S., El Bcheraoui, C., Alghnam, S. A., Alhabib, K. F., Almadi, M. A. H., Al-Raddadi, R. M., ... & Mokdad, A. H. (2020). The burden of disease in Saudi Arabia 1990–2017: results from the Global Burden of Disease Study 2017. *The Lancet Planetary Health*, *4*(5), e195-e208.
15. Morgan, S. A., Ali, M. M., Channon, A. A., Al-Sabahi, S., Al Suwaidi, H., Osman, N., ... & Tawfik, K. (2019). Prevalence and correlates of diabetes and its comorbidities in four Gulf Cooperation Council countries: evidence from the World Health Survey Plus. *J Epidemiol Community Health*.

16. Fabbiano, S., Menacho-Márquez, M., Robles-Valero, J., Pericacho, M., Matesanz-Marín, A., García-Macías, C., ... & Bustelo, X. R. (2015). Immunosuppression-independent role of regulatory T cells against hypertension-driven renal dysfunctions. *Molecular and Cellular Biology*, *35*(20), 3528-3546.
17. Bennett, J. E., Stevens, G. A., Mathers, C. D., Bonita, R., Rehm, J., Kruk, M. E., ... & Ezzati, M. (2018). NCD Countdown 2030: worldwide trends in non-communicable disease mortality and progress towards Sustainable Development Goal target 3.4. *The Lancet*, *392*(10152), 1072-1088.
18. Zhou, B., Perel, P., Mensah, G. A., & Ezzati, M. (2021). Global epidemiology, health burden and effective interventions for elevated blood pressure and hypertension. *Nature Reviews Cardiology*, *18*(11), 785-802.
19. Ott, C., & Schmieder, R. E. (2022). Diagnosis and treatment of arterial hypertension 2021. *Kidney International*, *101*(1), 36-46.
20. Oraili, A., Shafiee, A., Jalali, A., Alaeddini, F., Saadat, S., Sadeghian, S., ... & Franco, O. H. (2022). Prevalence, awareness, treatment, and control of hypertension among adult residents of Tehran: the Tehran cohort study. *Global heart*, *17*(1).
21. Sierra, C. (2017). Hypertension in older adults. *Hipertension y riesgo vascular*, *34*, 26-29.
22. Muntner, P., Hardy, S. T., Fine, L. J., Jaeger, B. C., Wozniak, G., Levitan, E. B., & Colantonio, L. D. (2020). Trends in blood pressure control among US adults with hypertension, 1999-2000 to 2017-2018. *Jama*, *324*(12), 1190-1200.
23. Bintabara, D., & Mpondo, B. C. (2018). Preparedness of lower-level health facilities and the associated factors for the outpatient primary care of hypertension: Evidence from Tanzanian national survey. *PloS one*, *13*(2), e0192942.
24. Tay, J. C., Sule, A. A., Chew, E. K., Tey, J. S., Lau, T., Lee, S., ... & Yeo, L. S. (2018). Ministry of health clinical practice guidelines: Hypertension. *Singapore Med J*, *59*(1), 17-27.
25. Romano, E., Ma, R., Vancampfort, D., Firth, J., Felez-Nobrega, M., Haro, J. M., ... & Koyanagi, A. (2021). Multimorbidity and obesity in older adults from six low-and middle-income countries. *Preventive Medicine*, *153*, 106816.
26. Wang, Z., Chen, Z., Zhang, L., Wang, X., Hao, G., Zhang, Z., ... & China Hypertension Survey Investigators*. (2018). Status of hypertension in China: results from the China hypertension survey, 2012–2015. *Circulation*, *137*(22), 2344-2356.
27. Bhattacharya, P. (2005). Implications of an aging population in India: challenges and opportunities. *Living to*, *100*(1), 12-14.
28. Yang, L., Xu, X., Yan, J., Yu, W., Tang, X., Wu, H., & Parkin, C. L. (2014). Analysis on associated factors of uncontrolled hypertension among elderly hypertensive patients in Southern China: a community-based, cross-sectional survey. *BMC public health*, *14*(1), 1-8.
29. Neuhauser, H. K., Adler, C., Rosario, A. S., Diederichs, C., & Ellert, U. (2015). Hypertension prevalence, awareness, treatment and control in Germany 1998 and 2008–11. *Journal of human hypertension*, *29*(4), 247-253.
30. Burnier, M., & Egan, B. M. (2019). Adherence in hypertension: a review of prevalence, risk factors, impact, and management. *Circulation research*, *124*(7), 1124-1140.
31. Iloh, G. P., Amadi, A. N., Iro, O. K., Agboola, S. M., Aguocha, G. U., & Chukwuonye, M. E. (2020). Attitude, practice orientation, benefits and barriers towards health research and publications among medical practitioners in Abia state, Nigeria: a cross-sectional study. *Niger J Clin Pract*, *23*(2), 129.
32. AlTamimi, J. Z., Alshwaiyat, N. M., AlFaris, N. A., AlKehayez, N. M., Ahmad, A., & Alagal, R. I. (2022). Differences in overweight and obesity prevalence in middle-aged men from twelve middle eastern and Asian countries living in Saudi Arabia. *International Journal of General Medicine*, *3333*-3343.
33. Okati-Aliabad, H., Ansari-Moghaddam, A., Kargar, S., & Mohammadi, M. (2022). Prevalence of hypertension and pre-hypertension in the Middle East region: a systematic review & meta-analysis. *Journal of Human Hypertension*, *36*(9), 794-804.
34. Sayed, S. A. (2022). Screening of Prehypertension and Hypertension and Associated Risk Factors among Woman at Taif City. KSA. *Journal of Coastal Life Medicine*, *10*, 22-33.
35. Khanal, M. K., Dhungana, R. R., Bhandari, P., Gurung, Y., & Paudel, K. N. (2017). Prevalence, associated factors, awareness, treatment, and control of hypertension: Findings from a cross sectional study conducted as a part of a community based intervention trial in Surkhet, Mid-western region of Nepal. *PloS one*, *12*(10), e0185806.