Screening of Prehypertension and Hypertension and Associated Risk Factors among Woman at Taif City. KSA

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Abstract

Introduction: Prehypertension or hypertension affects about half of all adults over the age of 18, as determined by two or more average readings obtained from two or more doctors visitsUncontrolled or undiagnosed high blood pressure can result in: Heart attack – High blood pressure affects arteries that can narrow and restrict the passage of blood to the heart muscle, resulting in a heart attack. Stroke - High blood pressure can lead to the blockage or rupture of blood arteries that provide oxygen and nutrients to the brain.

Aim: To assess the distribution of prehypertension and hypertension and its associated risk factors among a symptomatic woman

Method: Descriptive screening community-based study design .conducted between July2022 to September 2022. Before data collection, the study had received approval from the Al-Taif University ethical committee (HAO-02-T-105), 611 women between the ages of 20 and 51 made up the study population. The sampling method was multi-stage. A randomized sample of clusters was selected from a list of all clusters by the researcher. A cluster sampling strategy was used to select samples from two institutions (Khadija Bint Khuwaylid Center, Fatima Bint Al-Rasoul Center for Quran Memorization, and shopping mall (Jouri Mall)). Simple random sampling was used to choose samples of the respondent from each group (cluster). Participants in the study were Saudi nationals aged 18 years or older who expressed an interest in participating.

Result: The majority of the study population was between the ages of 20 and 30. Their average age was 1.12782, and they had a statistically significant relationship between age and the prevalence of both prehypertension and hypertension (p = 001).

There was a statistically significant correlation between education level and the prevalence of prehypertension and hypertension, with nearly one-third of them (44.4%) having undergraduate or graduate degrees. (p value.000). Additionally, more than two-thirds (76.2%) of the respondents had no history of chronic disease, nearly half (43.3%) of the respondents had normal blood pressure, and more than one-third (37.3%) had prehypertension or hypertension. 121/80 to 140/90 and only 20.6% of people have prehypertension. High blood pressure: >141/91.

Conclusions: Prevalence of prehypertension was high, overweight, eating a unhealthy diet, and Lack of exercise have all been demonstrated to be statistically significant risk factors for prehypertension and hypertension

Keywords: Prevalence of prehypertension and hypertension , prehypertension and hypertension risk factors and Taif university

Introduction

The most commonly acknowledged modifiable risk factor for cardiovascular disease (CVD), cerebrovascular disease (stroke), and end-stage renal disease, hypertension (HT) is a significant public health issue on a global scale. High blood pressure cannot be cured, but it can be managed with diet, lifestyle changes, and medications .(Erem et al., 2019)

For individuals between the ages of 40 and 70, it is well known that the risk of heart attack and stroke doubles starting at 20 systolic or 10 diastolic point increases result in a blood pressure of 115/75 mmHg. (Singh et al. 2017).10.4 million fatalities worldwide were attributed to hypertension, which also contributed The burden of cardiovascular disease in the population is up to 22.3%.In various populations around the world, between 30 and 50% of adults have excessive blood pressure (BP). The World Health Organization's (WHO) Global Action Plan for the Prevention and Control of Noncommunicable Diseases (NCDs) outlines cost-effective interventions to lessen the burden of raised blood pressure at both the population and individual levels, with a target to reduce its prevalence by 25% between 2010 and 2025.(Plumettaz et al., 2020) .Prehypertension is a precursor to the long-term hypertension is the name for a high blood pressure condition. which raises the risk of heart attack, stroke, and other potentially fatal heart health issues in the future. Prehypertension may be reversed with early detection and treatment. Prehypertension or hypertension affects about half of all persons older than 18 as determined by an average of at least two values from at least two different doctor visits(Al-Majed & Sadek, 2019)

according to the American Heart Association.have prehypertension. High blood pressure is responsible for around 7.5 million deaths worldwide each year, or 12.8% of all fatalities. projects that by 2025, there will be 1.56 billion persons worldwide who have hypertension. (Singh et al., 2017).

According to numerous research, HTN and pre-hypertension (pre-HTN) can begin in adolescent or even earlier in life and last into adulthood. (Al-Majed & Sadek, 2012)

The American Heart Association defines hypertension (or HTN), Atypically high arterial blood pressure is also sometimes referred to as high blood pressure. Normal blood pressure is defined by the Joint National Committee 7 (JNC7) as having a systolic pressure less than 120mmHg and a diastolic pressure less than 80mmHg. Hypertension is defined as a systolic blood pressure of at least 140 millimeters of mercury and/or a diastolic blood pressure of at least 90 millimeters of mercury. The range between 80-89 mmHg diastolic and 120-139 mmHg systolic blood pressure is known as prehypertension. (Singh et al., 2017). Prehypertension is not a medical ailment in and of itself, but those who have it are more susceptible to developing HTN. Since there are so few early indicators before a catastrophic medical emergency like a heart attack, stroke, or chronic renal failure happens, it is known as the silent killer. (Singh et al., 2020) . Only through measures can elevated blood pressure be detected since people are not aware of it. Although the majority of hypertension patients show no symptoms, some HTN sufferers describe headaches, dizziness, vertigo, blurred vision, or fainting episodes.

There are a number of things that might cause hypertension. Even within the same nation, there are differences between urban and rural areas due to these causes. According to data from the National Family Health Survey (NFHS-4), urban areas of Uttar Pradesh had prevalence

rates of 10.5%, 23.9, and 9.9% for hypertension, obesity, and blood glucose, respectively. However, in rural areas, the prevalence of the same condition was 8.3%, 10.8%, and 8.2%, respectively. (Singh et al., 2017). It is obvious that all of the factors are more prevalent in urban than rural areas. Rapid urbanization, an aging population on the rise, automation, sedentary Changes in food patterns and lifestyle choices all add to a web of risk factors that traps people. and causes a number of chronic diseases. The identification of risk variables is a crucial requirement for the implementation of successful preventative strategies. Data on the prevalence of hypertension and its risk factors will be collected as part of this investigation. in Varanasi's urban region. Additionally, it will examine how to recognize and manage hypertension.(Singh et al., 2017)

According to the National Health and Nutrition Examination Survey from 1999 to 2006, healthy individuals globally had a prevalence of prehypertension of 36.3%. Prehypertension was reported to be prevalent in 31.6% of Korea and 31.8% of Japan. Israeli adults were found to have prehypertension in 50.6% of the males and 35.9% of the women. Compared to Asians, non-Asians appear to have a higher prevalence of pre hypertension.(Wang et al., 2015)

According to a recent study, pre-HTN prevalence rose with age. According to a regional survey, Saudi Arabian boys and girls' blood pressure levels progressively rose with age.(Al-Majed & Sadek, 2012)

Baseline obesity has been demonstrated in several studies to be a unique risk factor for HTN. HTN levels were revealed by a regional study that examined the ratios of HTN and obesity in the Arabian Gulf States. were extremely high and rose with age in Kuwait, Oman, Bahrain, Qatar, and Saudi Arabia. Additionally, research showed that Saudi Arabia and Kuwait had higher rates of obesity, particularly among young children (8–9%). Kuwait also had some of the highest rates of overweight and obesity among adolescents, with the worst estimates.(Al-Majed & Sadek, 2012)

The research will help and improve the database of prehypertension and hypertension prevalence and risk factors in taif city. It will contribute to the development of the policy regarding prehypertension and hypertension prevention and management plan and policy .

Material and Methods
The study had Descriptive a screening community-based study design .conducted between July2022 to September 2022., the study population consisted of 611 women, aged between 20 to 51 years, who were randomly selected from different community in Taif city KSA, and who agreed to participate by giving a written informed consent. to determine the hypertension and pre-hypertension prevalence and its associated risk factors.

Sampling
Convenance sampling technique was used to assuming that the prevalence of pre-HTN and HTN within an accepted difference in the target population. Out of a total of 611 women recruited for the study, who met the criteria for inclusion (aged 18 years or older, not diagnoses with hypertension and Saudi citizens) and the exclusion criteria was(age less then 18 years , diagnosis with hypertension or chronic disease and pregnant women)

Settings

The study was conducted in Taif , is a city and governorate in the Makkah Province of Saudi Arabia. Located at an elevation of 1,879 m (6,165 ft) in the slopes of the Hejaz Mountains, which themselves are part of the Sarawat Mountains,[1] the city has a 2020 estimated population of 688,693 people, making it the 6th most populous city in the kingdom (Ta'if City. Retrieved April 26,2016.)

Sample size/sampling

Amulti-stage sampling method was used. List of all clusters were made, and a random number of clusters was drawn by the investigator to be included in the study. Samples from 2 institutes (Khadija Bint Khuwaylid Center , Fatima Bint Al-Rasoul Center for Quran Memorizatio and shopping mall (Jouri Mall), were selected through a cluster sampling technique. Samples of the respondent were selected using simple random sampling from each of the group (cluster).Eligible study subjects included Saudi citizens 18 years and older who showed willingness to participate in the study.

Questionnaires and data collection

The data were collected by means of questionnaire forms used interview survey tool which were filled in by investigator . A multiple-choice questionnaire was developed specifically for this study. consist of demographic data   information such as: age, Level of education and risk Factors of prehypertension and hypertension include (history of chronic disease [High cholesterol, Hypertension , Diabetes, and Insufficient kidney function], Diet ,Exercise and smoking were collected

The blood pressure screening was offered free to any volunteer adults women aged 18 years or more. Each participant was asked for their consent to use their anonymous data for research. BP was measured on individuals comfortably seated in a chair with their left arm laying on a table at the heart level, using a validated electronic device (Omron M6 Comfort®, Omron Healthcare Co., Ltd., Kyoto, Japan) . After a rest of ≥3 min, BP was measured 3 times at intervals of ≥1 min. The average of two readings of systolic and diastolic blood pressures was calculated using an electric sphygmomanometer. blood pressure (BP) categories were defined as normal blood pressure if the observed systolic blood pressure (SBP) was between 90 and 120 mm Hg or diastolic blood pressure (DBP) was between 60 and 80 mm Hg; pre-hypertension if the observed SBP was between 121 and 140 mmHg or DBP was between 81 and 90 mmHg; and considered as hypertension if the observed SBP was equal to or above 141 mmHg and DBP was equal to or above 91 mmHg; and finally hypotension was defined as SBP being equal to or less than 90 mm Hg or DBP being equal to or less than 60 mm Hg.

Height and body weight were also measured with individuals wearing light clothing or standing without shoes.Body weight was measured through a digital weighing scale. Prior to the measurement, the scale was calibrated to the zero level and was also verified for repeatability of the readings. Height was also measured, while the participants were in an upright position, by using a fixed stadiometer (seca 220®, seca GmbH & Co. KG, Hamburg, Germany) BMI was calculated using the formula [weight (kg) / [height (m)]. According to the definition by the

World Health Organization (WHO), a BMI ≥25 kg / m2 was overweight and a BMI ≥ 30 kg / m2 was obese.

A pilot study was carried out on 15 women. Its aim was to test the suitability of the questionnaire to be used regarding its phrasing, the culture of interviewees, estimated time of completing the questionnaire, testing the analytic procedure, and the overall response of the women. This study revealed that the questionnaire was on the whole suitable.

Ethical consideration:

The study had obtained the ethical clearance from ethical committee at Al -Taif University No (HAO-02-T-105) before data collection. No potential identifiers such as name, email or phone no. At the outset of the questionnaire, participants were questioned for their agreement.

Message for explaining the major aim of the research was written at the beginning of the survey in order to give the participants clarifications about the research. By agreeing to answer the survey, that has considered as approval of the participants to involving in the study. Additionally, all of the collected data were kept with the researchers in order to protect persons' confidentiality who involved in this study.

Conflict of Interest: The authors declare that there are no conflicts of interests

Resalts

Table (1): Demographics data include, Age, Level of education: n=(611)

Variables	Frequency	Percent	Mean	Std. Deviation	PV
Age:					
20 to 30	266	43.5%	2.0818	1.12782	.001
31 to 40	128	20.9%			
41 to 50	118	19.3%			
> 51	99	16.2%			
TOTAL	611	100.0%			
education levels					
illiterate	108	17.7%	2.9984	1.11546	.000
Some study (read and write)	56	9.2%			

Complete 10 years of regular school	176	28.8%			
University or postgraduate education	271	44.4%			
TOTAL	611	100.0%			

In study population the most of them was between 20 to 30 years old, the Std of age group was1.12782 and the was statistical significant relation between age and prevalence of prehypertension and hypertension p. value 001

Regarding their education level nearly one third of them 44.4%were University or postgraduate education and statistically significant relation between level of education and prevalence of prehypertension and hypertension p. value .000

Table (2): Risk Factors of prehypertension and hypertension: n=(611)

Variables	Frequency	Percent	Mean	Std. Deviation	PV
Smoking					
I never smoked	501	82.0%	1.1899	.41681	.046
I smoked and stopped	104	17.0%			
Yes, I currently smoke	6	1.0%			
Total	611	100.0%			
Family history of Chronic Disease					
Presence of Chronic disease	133	21.8%	6.0311	1.88628	.000
Hypertension	22	3.6%			
diabetes	32	5.2%			
High cholesterol	63	10.3%			
Insufficient kidney function	16	2.6%			
no chronic disease	478	78.2%			
Total	611	100.0%			
Diet					
Healthy diet	437	71.5%	1.2848	.45168	.002
Not healthy diet	174	28.5%	.6007	1.04846	
Total	611	100.0%			
BMI					
underweight	30	4.9%	2.6825	.82621	.000
normal	246	40.3%			

overweight	223	36.5%			
obese	112	18.3%			
Total	611	100.0%			
Exercise					
Do exercise	255	41.7%	1.1899	.41681	.000
Not do exercise	356	58.3%			
Total	611	100.0%			

In relation to smoking as a risk factor the majority of them 82% they never smoke while 17% they said start smoked and stopped and only 1% Said Yes, I currently smoke .they was no statistical association between smoking as risk factor to prehypertension and hypertension p. value .046

Regarding Family history of chronic disease more than two third 78.2%   have   no history of chronic disease ,21.8 % presence of chronic disease distributed as following (10.3% have high cholesterol, 5.2% have diabetes, 3.6% have Hypertension and only 2.6 have Insufficient kidney function.) and was highly statistical association as a risk factor p. value   .000

About   Healthy diet as risk factor more than two third 71.5% eat healthy diet while 28.5% Not eat healthy diet ,there was statistical association as risk factor p. value   .002

Less than have of the respondent 40.3% their BMI measure normal, more than one third 36.5% measure overweight ,18.3% their measure obese, while only 4.9% measure underweight. Diet and BMI show significant risk factors p. value   .000

More than have of the respondent 58.3% they don't do exercise while 41.7% do exercise, also exercise show statistically significant association as a risk factor p. value   .000

Table (3): Distribution of prehypertension and hypertension: n=(611)

Variables	Frequency	Percent	Mean	Std. Deviation
Normal: <120/80	257	43.0%	1.7954	.77187
Prehypertension: 121/80 to140/90	228	37.3%		
Hypertension: >141/91	126	20.6%		
TOTAL	611	100%		

Nearly have of the respondent 43% have normal Bp , while more than one third 37.3% Prehypertension: 121/80 to140/90 and only 20.6% of them Hypertension: >141/91 .

Table (4): The causes of eating un healthy diet: n=(611)

Variables	Frequency	Percent
I don't have a chance to choose	50	8.2%
Boredom from selected food	55	9.0%
I don't feel that I need to change the diet	69	11.3%
TOTAL	174	28.5

The causes of eating un health diet was following (11.3% They said
I don't feel that I need to change the diet , 9.0% said Boredom from selected food and only 8.2% they said I don't have a chance to choose

Discussion

Due to its role in causing artery complications, Significant health problems include high blood pressure, coronary heart disease (CHD), and stroke. The aging of the population, urbanization, an increase in the age-specific rates of many chronic conditions, and an epidemiological shift may all be factors in the increased overall burden of diseases linked to high blood pressure.(Aldiab et al., 2018) .The present study showed that the overall participants   was between 20 to 30 years old , the Std of age group was1.12782 and they was statistical significant relation between age prehypertension and hypertension prevalence, p. value 001, In a prior study, it was discovered that 41.23% of people in the 55–60 age range already had hypertension. Males were shown to have a higher prevalence of pre-hypertension (43.75%) than females (23.56%).(R. Wang et al., 2015)

While another study showed that Prehypertension risk was almost three times higher in subjects over the age of 55 compared to subjects under the age of 25. (R. Wang et al., 2015) . An key risk factor for hypertension was shown to be age. The prevalence of hypertension increased as people's ages increased in both sexes. A few additional studies that found that hypertension was positively correlated with advancing age also produced findings that were comparable.(Tabrizi et al., 2016). Age-related stiffening of the aorta and artery walls is a factor in the increased prevalence of hypertension in older age groups. (Singh et al., 2017)

The education level in the present study was nearly one third of them 44.4%were university or postgraduate education and in my study, they were statistically significant relation between level of education and prevalence of prehypertension and hypertension p. value   .000. previous study examined the effects of the level of formal education on the level of blood pressures, and on the prevalence of hypertension in a large Chinese population. Findings indicated that both systolic and diastolic blood pressures were inversely associated with the level of school education independent from all other risk factors .(Y. Wang et al., 2006). Growing evidence suggests that socioeconomic status, as best characterized by education and occupation, is strongly connected with the incidence and prevalence of hypertension. (Ordunez et al., 2005)

There is no connection between education and blood pressure, according to a previous Chinese study6 that only included people from rural areas with low levels of education. In following

studies, it was reported how important education is in determining whether hypertension occurs.(Yu et al., 2000) as well as heart problems. (Y. Wang et al 2006) . Sadly, a lot of these studies either had very tiny sample sizes or were only allowed to include urban areas. populations. The current study identifies key risk variables for prehypertension and hypertension in general healthy women in Taif city in Saudi Arabia. Regarding smoking as a risk factor, the majority of them (82%) claimed they never smoke, 17% said they started smoking but stopped, and only 1% indicated they do. Smoking was not found to be a statistically significant risk factor for prehypertension or hypertension in my study. 046 . Smoking has negative impacts on blood pressure, however epidemiological research has shown mixed results. a few cross sectional studies have shown that smokers have lower BP than nonsmokers.(Halperin et al., 2008). but a different study of Japanese males discovered that current smokers' blood pressure was lower than that of non- or former smokers.(Okubo et al., 2004) Smokers' serum cotinine, a nicotine metabolite and a measure of tobacco usage, has been demonstrated to be negatively correlated with SBP and DBP.(Murphy et al., 2016) In contrast, older smoking men in comparable age groups in the annual Health Survey for England had greater SBP than non-smokers.(Primatesta et al., 2001)

In contrast to women, smoking was revealed to be a major risk factor for hypertension in a French cohort research. (Radi et al., 2004) Additionally, a different study discovered that current smokers are at risk for systolic hypertension regardless of BMI.(Gumus, 2013)

 Family history of chronic disease it was the second risk factor measured in this study. The results showed that more than two third 78.2%   have   no family history of chronic disease, while 21.8 % presence had family history of chronic disease distributed as following (10.3% have high cholesterol, 5.2% have diabetes, 3.6% have hypertension and only 2.6 have Insufficient kidney function.) and It also I found a highly statistical association   as a risk factor for pre hypertension and hypertension p. value   .000. In contrast to prior studies, they had discovered no significant link between first-degree relatives who had a family history of hypertension and hypertension. (AlWabel et al., 2018). According to several research, having first-degree relatives with hypertension is an independent predictor of developing hypertension. These studies all featured significantly older populations, with a mean age of about 45 years old.(Franklin et al., 2001). Retrospective research discovered A family history of hypertension and a younger age at type 2 diabetes diagnosis were found to be significantly correlated by a multivariate linear regression analysis.(Yamamoto-Honda et al., 2017), Additionally, a different study discovered that having a strong family history of high blood pressure, diabetes, and hypercholesterolemia was related to having lower blood pressure. (Wandeler et al., 2010) To gauge overweight and obesity, anthropometric measurements like BMI were used. This study demonstrated that BMI-measured obesity and overweight were significant modifiable risk factors for developing pre hypertension. Also, hypertension When BMI increased, there was a correlation that was positiverate of hypertension p. value.000; this outcome was comparable to that of a research conducted in Saudi Arabia. The relationship between BMI and hypertension was very strong. (AlWabel et al., 2018). The relationship between obesity and hypertension was explained by a number of epidemiological and pathophysiology processes. The fact that obesity raises cardiac output and peripheral arterial

resistance is one of the likely causes of the positive relationship between obesity and hypertension. In addition, urbanization is a factor in dietary changes and a decline in physical activity, both of which contribute to obesity and the eventual development of hypertension.(Abebe et al., 2015)

Numerous pieces of evidence point to the health benefits of a healthy diet. In my survey, more than two thirds—more specifically, 71.5%—eat a nutritious diet, compared to 28.5% who do not.The causes of eating un health diet was following (11.3% They said I don't feel that I need to change the diet , 9.0% said Boredom from selected food and only 8.2% they said I don't have a chance to choose) .the study shod there was statistical association as risk factor for pre hypertension and hypertension p. value   .002. . In a prior work, we evaluated the dietary risk variables for incident hypertension using long-term follow-up cohort data from the Korean Genome Epidemiology Study (HTN). The study included 6792 individuals in total, aged 40–69 (3300 men and 3492 females). This study found that, even after controlling for recognized risk factors, a high intake of salted seafood and a low intake of eggs and meat were linked to an increased prevalence of HTN. (Lee & Park, 2018)

Your heart becomes stronger when you exercise frequently. More blood may be pumped more efficiently with a stronger heart. Your blood pressure will drop if your heart has to exert less effort to pump blood through your body. Exercise was assessed as a risk factor for prehypertension and hypertension in this study. The findings revealed that more respondents—58.3%—don't exercise compared to respondents who do—41.7%. Exercise also demonstrated a statistically significant link as a risk factor. p. value   .000 , According to their findings, moderate levels of sweat-inducing exercise had the lowest risk of myocardial infarction, stroke, hypertension, type 2 diabetes, stomach, lung, liver, and head and neck malignancies when compared to a prior study. health policies and way of life As a result, interventions should encourage modest amounts of sweat-producing exercise among a larger population of East Asians as a behavioral preventative strategy for non-communicable diseases. (Kim et al., 2019)

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