Socio-demographic Characteristics, Risk Factors and Awareness of Adults Hypertensive Population in Khartoum Locality, 2014

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Authors' contribution

This work was carried out in collaboration between all authors. Authors AAA and MEAA designed the study. Author MEAA trained the data collectors and supervised the data collection. Author SAB performed the statistical analysis. Author AAA managed the literature search and wrote the first draft of the manuscript. Author SAB revised the manuscript for the scientific and intellectual content. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To identify the prevalence of hypertensions, socio demographic characteristics, risk factor and awareness of the study population about hypertension in Khartoum Locality.
Study Design: A descriptive community-based cross-sectional study.
Place of Study: Khartoum locality, Sudan.
Methodology: A total of 587 adult participants were interviewed using structured close ended questionnaire. Blood pressure was measured considering hypertension as ≥ 140 mmHg and ≥ 90 mmHg for systole and diastole blood pressure respectively. Body Mass Index (BMI) was calculated and the cutoff points were derived from World Health Organization (WHO) reference criteria to

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classify BMI as normal, overweight and obese. Chi square test was used to assess the association of socio demographic characteristics and risk factors with hypertensive population.

Results: The prevalence of hypertensive accounted to 216 (36.8%). Thirty seven hypertensive participants (17%) were not aware about having hypertension, 86 (40%) were not aware about at least one complication of HTN and 117(54%) were not aware about the normal measures of blood pressure. The hypertensive participants were significantly high in the age group 25- 64 years of age and above. Females were significantly having hypertension more than males, 155 (72%) versus 61 (28%). Married participants were significantly having hypertension more than non-married, 169(78%) and 47(22%) respectively. Unemployed participants were significantly having hypertension more than employed ones, 168 (77.8%) and 48 (22.2%) respectively.

Risk factors among hypertensive participants were significantly found among overweight 67 (31%) and obese 115 (53%), positive family history of hypertension 139 (65%), increase salt in food149 (69.3%) and physical inactivity 166 (77%).

Conclusion: The prevalence of hypertension among Khartoum locality was high. Hypertensive population awareness was low. Age, sex, marital status, education and employment were significantly associated with hypertensive population. Obesity and overweight, family history of hypertension, increase salt in food and physical inactivity were risk factors among hypertensive study population.

1. INTRODUCTION

Hypertension is positioning the first rank of causes of deaths worldwide [1]. It is a public health problem with an increasing global prevalence, especially in low and middle income countries [2,3]. Attributable factors related to the increasing prevalence of hypertension include fast population growth and ageing, consumption of unhealthy diets, lack of physical exercise, obesity and increasing life stresses [2]. In sub-Saharan Africa, the burden of hypertension has been increasing continuously with prevalence varying widely between 15% and 70 % [4-6]. Sudan witnessed rising prevalence of hypertension during the past few years [7,8]. Hypertension is the silent killer that screening and early detection could prevent or reduce its serious complications, including stroke, ischemic heart disease, congestive cardiac failure, sudden cardiac death, peripheral vascular disease and renal insufficiency [9].

Most persons with hypertension are not aware of their hypertensive disease, which increase the chance of being presented for the first time to health institution by complications [10,11]. Awareness of population about hypertension is high in developed countries compared to developing nations. Awareness of population about their hypertensive status is an important determinant of adherence to anti-hypertensive medication as well as increasing the knowledge regarding the risk factors and modifying the negative lifestyle habits [11-13].

The increase prevalence of hypertension in Sub-Saharan Africa could be related to inadequate information about the disease that contributes to low awareness of population about their hypertensive status [14]. It was found that awareness about hypertensive status was low among hypertensive population with low socio-demographic characteristics [15]. Few recent studies in Sudan were carried and did not emphasize the association of socio demographic characteristics to hypertensive status and the awareness of hypertensive adults about their hypertension disease.

The aim of the study was to identify the prevalence of hypertension, socio demographic characteristics, risk factor and awareness of the study population about hypertension in Khartoum Locality.

2. POPULATION AND METHODS

2.1 Study Design

This was a descriptive community-based cross-sectional study.

2.2 Study Area

The study was carried out in Khartoum locality which spread approximately across 176 square kilometers area and inhibited by 639,598 of the population. Khartoum locality is one of the seven localities in Khartoum State. It consists of six local administrative units and 157 blocks.

2.3 Study Population

The target population was the adult males and females aged 18 years and above. The study unit was the household with at least one adult resident male or female in Khartoum locality at the time of study.

2.4 Sampling and Sample Size

2.4.1 Sample size

Sample size was calculated according to the following binomial equation:

$$n= \frac{Z^2 pq}{d^2} * de$$

Where;

  n is the desired sample size
  z is standard normal deviate=1.96
  p is the prevalence of occurrence = 0.25% (7)
  q is (1- p) = 0.76
  d is the desired margin of error = 0.05
  de is the design effect for multistage cluster sample = 2

Therefore; the target sample size is 288* 2 = 576 individuals.

To avoid the replacement in case of missing data, the sample size was increased by 7 % to give a total of 616 individuals. Non-response rate was 5%, so the participants in this study were 587. The average adult individuals in each household were three that covered 205 households.

2.4.2 Sampling technique

The sample size was divided proportional to population size of the six administrative units in Khartoum locality. Thereafter; one block was selected by simple random sampling from each of the six administrative units. The first household was randomly selected from the center of the block and thereafter every second house was visited. Neighboring house was chosen if the household participants were absent or refuse to participate.

2.5 Tools and Data Collectors

Data collection tool was structured close ended questionnaire composed of 4 parts. Part one contained the variables of population socio demographic characteristics. Part two was about the individuals` awareness of hypertension using three questions for hypertensive participants: Are you aware of having hypertension? Are you aware about the normal blood pressure (BP)? Are you aware about complications of hypertension? Mention at least one complication.

Part three was about the risk factors among the study population: first degree family history of hypertension, salt consumption, doing physical exercise and BMI.

Part four was about recording the two measures of BP, weight and height. BP was measured by calibrated mercury sphygmomanometers. Two measurements were taken with 5 minutes interval in-between. The first measurement was taken after 5 minutes rest while the participant was seated in a comfortable seat and the arm at the level of the heart. Systolic blood pressure (SBP) taken upon hearing the first sound, and diastolic blood pressure (DBP) upon complete disappearance of Korotk off sounds.

Portable calibrated non electronic weighing scales were used to measure the body weight. The participants asked to wear light clothes and bare footed. The height was measured using elastic non stretchable measuring tapes. BMI was calculated using the computer software and the cutoff points was derived from WHO reference criteria. BMI from18.5-25was considered normal, above 25 and < 30 kg/m^2 as overweight and 30 or more as obese [16].

Data collectors were qualified social researchers of the research unit in Khartoum State Ministry of Health. They were trained on the data collection, calibration of sphygmomanometers and the skills of measuring BP. They were also trained on calibration of the weighing scales and how to measure weight and height perfectly. Data collection took three month from September to November 2014.

2.6 Data Management and Analysis

Data was entered in SPSS software version 20, reviewed for the missed values and cleaned. Prevalence of hypertension and awareness of hypertensive population about hypertension were calculated by frequency distribution. Chi square test was used to assess the association of socio demographic characteristics and risk factors with hypertensive population.

Authorization was obtained from the ethical committee of Sudan Medical Specialization

Board (SMSB). Permission was taken from each administrative unit before the start of the study.

An informed consent was signed by the selected individuals before the interview and all personal information and measurements were kept confidential.

3. RESULTS

The non-response rate was 5% giving up a total sample of 578 participants. The population who were hypertensive accounted to 216 (36.8%) [Fig. 1]. Thirty seven hypertensive participants (17%) were not aware about having hypertension, 86 (40%) were not aware about at least one complication of hypertension and 117(54%) were not aware about the normal measures of BP [Fig. 2].

The hypertensive participants were significantly high in the age group 25- 64 years of age and above [Table 1]. Females were significantly having hypertension more than males, 155

(72%) versus 61 (28%) [Table 1]. Married participants were significantly having hypertension more than non-married, 169(78%) and 47(22%) respectively [Table 1]. Educated participants were significantly prone to be hypertensive than illiterate ones, 182 (85%) compared to 34 (16%) respectively [Table 1]. Unemployed participants were significantly having hypertension more than employed ones, 168(77.8%) and 48 (22.2%) respectively [Table 1].

Risk factors among hypertensive participants were significantly found among overweight 67 (31%) and obese 115 (53%), and those with positive family history of hypertension 139 (65%) [Table 2]. Participants who do not pay attention to salt in their food or use more salt were significantly having hypertension than those who avoided salt 149 (69.3%) and 66 (30.7%)respectively [Table 2]. Participants who never practiced physical exercise were significantly having hypertension, 166 (77%) [Table 2].
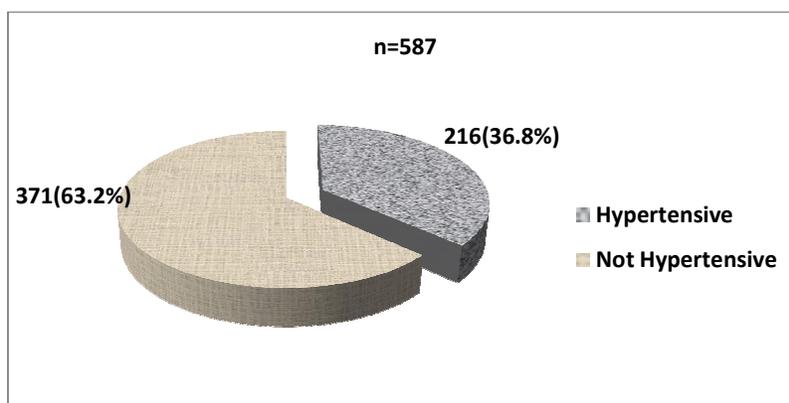

Fig. 1. Distribution of study population by hypertension status

Table1. Hypertension and socio demographic characteristics, Khartoum locality, 2014

Socio demographic characteristics		Hypertensive (n=216)	Not Hypertensive (n=371)	Sig[*]
Age	Less than 25 years	6 (2%)	95(25.6%)	0.001
	25 to 64 years	165(76.4%)	253(68.2%)	
	Above 64 years	45 (20.8%)	23(6.2%)	
Sex	Male	61 (28%)	137(37%)	0.032
	Female	155 (72%)	234(63%)	
Marital status	Married	169 (78%)	217 (59%)	0.001
	Un married	47(22%)	152 (41%)	
Education	Illiterate	34 (16%)	17 (4.6%)	0.001
	Some education[#]	130 (60.5%)	134(36.1%)	
	University and above	52 (24.5%)	220(59.3%	
Employment status	Employed	48 (22.2%)	102(27.5%)	0.001
	Not employed	168 (77.8%)	269(72.5%)	

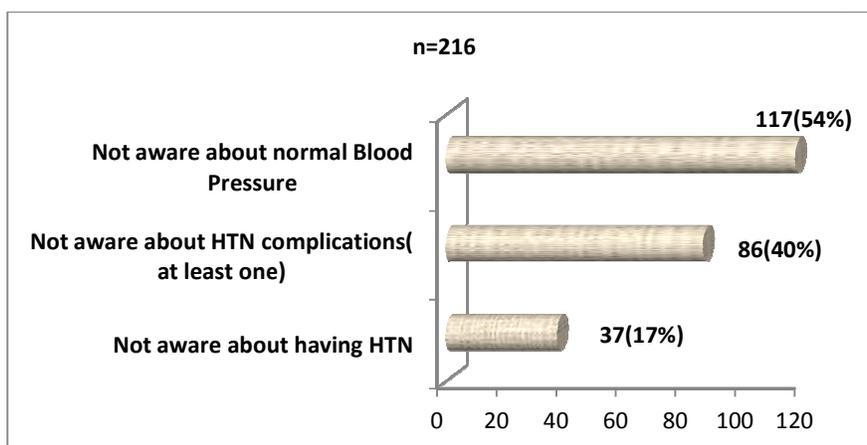** Chi square test at <0.05; # Primary and secondary education*

Fig. 2. Awareness of hypertensive population about HTN

Table 2. Hypertension and its risk factors, Khartoum locality, 2014

Risks of HTN		Hypertensive (n=216)	Not hypertensive (n=371)	Sig[*]
BMI	< 25	35 (16.2%)	174 (47%)	0.001
	25 to < 30	67 (31%)	101 (27.2%)	
	30 or more	115 (53%)	96 (25.8%)	
Family history	Yes	139 (65%)	182 (49%)	0.001
	No	75 (35%)	187 (51%)	
Salt Consumption	avoid foods rich in salt	66 (30.7%)	70 (19%)	0.003
	do not pay attention	113 (52.6%)	240 (65%)	
	eat a lot of salt	36 (16.7%)	60 (16%)	
Exercise Freq. per week	never	166 (77%)	251 (68%)	0.019
	1-3 days	19 (9%)	62 (17%)	
	4 days or more	31 (14%)	57 (15%)	

4. DISCUSSION

In this study, the prevalence of high BP is showing upward trend in Sudan that in lines with the trend from 2005 to 2016 [7,8]. Sudan is one of the developing countries which witnessed rural population movement during the last decades from devastating states to Khartoum. This urbanization style in developing countries had an effect on the prevalence of chronic diseases including coronary heart diseases and hypertension [17-19]. The trend of increase prevalence of hypertension was found to be a health problem in African countries as well as in South Asian [20-24]. Although a thorough comparison of various studies cannot be done as a result of differences in the definitions, methodology and populations used, the findings from this study indicate that Sudan is one of the countries that is passing through the epidemiological transition regarding hypertension. The shift is linked to the adoption of unhealthy lifestyle behaviour, poor dietary practices and poor engagement in physical activity related to urbanization which lead to obesity, and ultimately to hypertension.

Awareness of hypertensive population in this study was found to be low. More than half of the hypertensive population was not aware about the normal BP values, less than half were not aware about at least one complication of hypertension. This is supported by study carried out in four selected sub-Saharan countries where only half of population was aware about hypertension and its consequences [21]. In our study small proportion were not aware about themselves as hypertensive. This is supported by a study carried out in outpatient clinic [22] where most of the patients were aware about being hypertensive. The high awareness among the hypertensive population in this study is optimistic since that the study was community based and in line with awareness of the most selective population in the outpatient clinics [22]. High awareness of the hypertensive study population about their disease status in this study may be due to fact that 85% of them were

educated. Awareness about the normal BP as well as hypertension, its diagnosis and the accompanied complications is important. This helps to lower the disease and its' complications through life style modifications and compliance to treatment.

In the study, older age, females, married and educated population and unemployed ones were significantly hypertensive. This is supported by other studies where socio demographic characteristics had significant association with raised blood pressure [13,15,20].

The high prevalence of hypertension among older females could be due to obesity and the hormonal effect which is believed to be protective from hypertension in younger age, also old females used to be less educated in developing countries [25-28].

Unemployment was found to be strongly associated with hypertension and unemployed younger were found to have hypertension in older age [29,30] Unemployed hypertensive have limited access to healthy foods due to low income which usually increase their consumption of readily available, cheap and unhealthy foods that contribute to risk factors like obesity. Also psychological stress associated with unemployment could be strong determinant of high blood pressure and occurrence of hypertension [31,32].

Obesity and overweight are dominants among our study population with significant association with hypertensive. This finding is consistent with what has been documented by many other studies [33-36]. The reasons for the high prevalence of hypertension and obesity in the urban settings could be attributed to constant exposure to stress, lack of or inadequate exercise and consumption of unhealthy diets, such as fast foods, which are high in salt and fat [37,38]. The significant association with family history of hypertension in this study is supported by several studies. Family history is an important non-modifiable risk factor for hypertension as well as for the occurrence of type 2 diabetes [39-41].

In this study, most of hypertensive population were significantly did not pay attention to amount of salt in their food. The adverse impact of excessive salt consumption on health and particularly on blood pressure levels and cardiovascular diseases synthesized WHO to take action to reduce population salt intake to the recommended level of less than 5- 6 g/day. This reduction in salt intake will decrease the number of deaths from hypertension, cardiovascular disease and stroke [42,43].

Never doing physical activity was significantly associated with hypertension. Physical activity as a modifiable risk factor could be an effective intervention for reducing the burden of chronic diseases among families [44].

5. CONCLUSION

The prevalence of hypertension among Khartoum locality was high. Nearly half of the hypertensive population were aware about the normal blood pressure values, less than half were aware about at least one complication of hypertension and small proportion were not aware that they were hypertensive. Older age, females, married, educated population and unemployed ones were significantly hypertensive population. Obesity and overweight, family history of hypertension, increase salt in food and physical inactivity were risk factors among hypertensive study population. Raising the awareness and establishing national campaigns for life style modifications is needed to decrease the prevalence of hypertension among the locality population.

6. LIMITATIONS

The BP levels were based on the average of two measurements at a single visit, which might have overestimated the prevalence rates. Another limitation is the bias towards women, as far as the majority of the respondents during the time of data collection were women, where most of the males were at work.

CONSENT

An informed consent was signed by the individuals who agreed to participate before filling in the questionnaire and all personal information and measurements were kept confidential.

ETHICAL APPROVAL

Ethical Clearance was obtained from the ethical committee of Sudan Medical Specialization Board (SMSB). Permission was taken from each administrative unit before the start of the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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