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RISK FACTORS OF HYPERTENSION AMONG 50 YEARS AND ABOVE AGE GROUP POPULATION OF BURAIDAH CITY

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ABSTRACT

Background: Hypertension has become major public health problem throughout the world. Identification of risk factors including modifiable and non modifiable risk factors plays crucial role in the reduction of the problem and also must pay attention to primordial prevention of hypertension at the earliest. **Objectives:** To identify the risk factors and demographic factors association with Hypertension in the study population. **Materials & Methods:** A cross sectional institutional based record review study conducted at primary health centers of Buraidah City from January 2018 to June 2018 among persons whose records 50 years old and above after getting institutional ethical committee clearance. Data entered in Statistical package for Social Sciences (SPSS) and necessary statistical tests like simple proportions, chi square tests were applied. **Results:** In the study population, about 32.9% were in the age group of 50-54 years of age group and 17.6% were in the age group of >65 years of age. Out of 170 study population, 86.5% were married people. About 9.4% were widowed and only 2.4% were unmarried people. About 35.9% were from house wives occupation. In the hypertensive study population, about 50.6% were having hypertension as the family history in their families. In the study population, about 12.5% were having smoking habit. In the study population, about 88.8% (151/170) people were having BMI more than 25. **Conclusions:** Based on the results, increasing age, male sex, smoking, family history of hypertension, BMI≥25 in both males and females were identified as risk factors for hypertension based on high percentages. There is need to start as a primordial measure for the prevention of hypertension to be started from the adolescent age group people, high risk screening strategies to be strengthened.

KEYWORDS: Age, Marital Status, occupation, Smoking, Family history, BMI.

INTRODUCTION

Hypertension is progressively becoming a health challenge not only in Saudi Arabia but also globally. Hypertension which also known as high or elevated blood pressure is a condition in which the blood pressure remains persistently high or raised above the normal reference values for age where there is increased risk of significant morbidity as well as mortality if left untreated. The heart normally pumps blood to all the body organs through blood vessels (arteries) which offer resistance to blood flow at the same time. According to the World Health Organization global fact sheet on global burden of diseases, increased blood pressure was one of the leading causes of death and disabilities globally in 2014.[1] There are expectations that the population of persons affected with hypertension is likely to increase by about 24% in the developed nations and by approximately 80% among the developing nations by 2025.[1]

It disproportionately affects people in low and middle income countries where health systems are weak. The rampant increase of hypertension in the society is due to undergoing socioeconomic and epidemiological transition, is burdened with increasing prevalence of hypertension in urban areas, due to urbanization, less physical activity, unhealthy life style, stress full life. Hypertension is one of the leading causes of morbidity, mortality and socioeconomic burdens worldwide particularly among persons above 55 years where its prevalence is between 51-70% in Saudi Arabia. Hypertension caused about 9.4 million deaths together with the loss of about 162 million years of life. The World Health organization commonly describe at as the global silent killer and a crisis in the public health sector.

The National Surveys on awareness, control, treatment and prevalence shows that many of the hypertensive patients were not even aware of their disease, a large

number of those who were aware of their disease were not on treatment and still a large proportion of the individuals who were on treatment had not achieved adequate control levels.[3]

In relation to the above study results and situations, the following research was carried out to determine the risk factors of hypertension and magnitude of the problem in Buraidah city, Saudi Arabia to look into the early identification of modifiable risk factors can indirectly reduce the burden of hypertension in the community in long run.

Objectives

1. To identify the demographic variables among the 50 years and above hypertensive population.
2. To identify the risk factors of hypertension in the study population.

MATERIALS AND METHODS

Study Design and Setting

This was a Primary health care centre based cross sectional study carried out in the primary health care centres in Buraydah city.

Study period

This study was conducted from 1st January 2018 to 30th June 2018.

Target Population

All patients above 50 years old visited to the Primary health centre and availability of the records in the primary health care centres.

Sample size calculation

Meta-analysis of prevalence of hypertension in Saudi Arabia among above 50 years age group was reported as 51% per cent. This prevalence was considered to find out the sample size in my study.

The formula used for the calculation of the sample size

$N = 4PQ / L^2$

Where, N is the required sample size
P is the prevalence of hypertension = 51%
Q is equal to 100 - P
Allowable error is = 15% of Prevalence

So, we calculate the sample size based on the formulae

$$N = \frac{4\,PQ}{L^2}$$

= 170

Using the above formula, the sample size estimate was 170.

Sampling method

Simple random sampling method was used for the identification of Primary Health care centres.

Sampling procedure

Out of 44 primary health care centers in Buraydah City, 10 PHCC were selected randomly. As per the requirement, 17 patients records to be collected from each PHC. The selection of the records also used by simple random method. After selection of the record, verified all my study variables and filled in my questionnaire. Same process was used to complete the requirement of the sample size of 170.

Exclusion criteria

Hypertensive patients less than 50 years.

Method of Data Collection

An questionnaire was prepared based on the availability of information in the records of hypertension files in PHCs and also taken consultation and discussion with the experts in the department and under supervision of the guide. One day before visited to the concerned PHC and met the director of PHC and file room manager and taken appointment and explained in detail about the purpose and methodology of the present study and assured strict confidentiality of information. Informed oral consent was obtained from the administrators. First 10 PHC selected randomly to initiate the study. From the each PHC, 17 files were selected by simple random method. The pilot study conducted among 34 samples from 2 PHCs.

The Questionnaire was structured in the following parts**:** demographic profile and risk factors information.

Anthropometric measurements

Weight and height were available in the records. From height and weight, Body Mass Index was calculated using the formula = weight (in kgs) / (Height in meters).[2] (Quetelet's Index). Generalized overweight and obesity were defined using the WHO guidelines that is BMI $\geq$ 25.0 and $\geq$ 30.0 kg/m2 were taken as cut-offs respectively.

Ethical clearance

Regional Research Ethics Committee -Qassim Province, issued the ethical clearance certificate to initiate for this study.

Data analysis

Statistical analysis was done by using the statistical software spss -21.0 version. The frequency distributions of age, sex, nationality, Marital Status, Family Size, occupation, type of family, Family history were derived and presented. Necessary statistical tests like simple proportions, chi square tests were applied for inferential statistical interpretation.

RESULTS

Table 1: Socio demographic variables in relation to Hypertension individuals in the study population.

Age	Number	Percentage
50-54 yrs	56	32.9%
55-59 yrs	48	28.2%
60-64 yrs	35	20.6%
> 65 yrs	30	17.6%
Sex		
Males	90	52.9%
Females	80	47.1%
Nationality		
Saudi	159	93.5%
Non Saudi	11	6.5%
Marital Status		
Married	147	86.5%
Unmarried	4	2.4%
Divorced	3	1.7%
Widowed	16	9.4%
Occupation		
Office work	29	17.1%
Field work	25	14.7%
Business	11	6.5%
House wives	61	35.9%
Retired	39	22.9%
Unemployed	3	1.2%
Family Size		
Single	2	1.2%
2-5 members	65	38.2%
6-10 members	71	41.8%
> 10 members	32	18.8%

Table 1 shown that in the study population, about 32.9% were in the age group of 50-54 years of age group and 17.6% were in the age group of >65 years of age. In the present study, about 52.9% were males and 47.1% were females. Out of 170 study population, about 93.5% were Saudi nationality and 6.5% were non Saudi nationality. In the study population, 86.5% were married people. About 9.4% were widowed and only 2.4% were unmarried people. About 35.9% were from house wives occupation, 22.9% were from retired from the occupation and unemployed people were about only 1.2%. About 41.8% of families were having 6-10 members and about 38.2% of families were having 2-5 members in the family.

Table 2: Family history status in Hypertension study population.

Family history	Number	Percentage
Diabetes	42	24.7%
Hypertension	86	50.6%
Bronchial asthma	2	1.2%
Other diseases	1	0.6%
No disease	39	22.9%
Total	170	100%
Family H/o HTN		
Father	29	17.1%
Mother	31	18.2%
Both Parents	24	14.1%
Total	86	50.6%

Table 2 revealed that in the hypertensive study population, about 50.6% were having hypertension as the family history in their families and 24.7% were having diabetes as family history. In the hypertensive study population, about 18.2% of mothers having as family history hypertension, 17.1% of fathers having as family history of hypertension and 14.1% were having hypertension among the both parents as family history.

Table 3: Smoking habit, frequency and duration with Hypertension patients in study population.

Smoking	Hypertension without complications	Hypertension with complications	Total	P value
Yes	14 (66.7%)	7 (33.3%)	21 (100%)	X^2-1.76, 1df, P-0.18
No	98 (79.6%)	25 (20.4%)	123 (100%)	
Total	112 (77.7%)	32 (22.3%)	144 (100%)	
Frequency				P value
6-10 cigars/day	5 (62.5%)	3 (37.5%)	8 (100%)	* X^2-0.1, 1df, P-0.75
> 10 cigars/day	9 (69.2%)	4 (30.8%)	13 (100%)	
Duration				P value
6-10 yrs	0 (0%)	1 (100%)	1 (100%)	* X^2-0.52, 1df, P-0.46.
> 10 yrs	7 (35%)	13 (65%)	20 (100%)	
Total	7 (33.3%)	14 (66.7%)	21 (100%)	

* - Fisher Exact Test

Table 3 shown that in the study population, smokers were only 12.3%. Among the smokers, the prevalence of hypertension complications was 33.3% and where as non smokers study population, there was prevalence of hypertension with complications was 20.4%. In the study population, among the smokers those who were smoking more than 10 cigars/day, 30.8% were having hypertension with complications. Those who consumed 6-10 cigars/day, 37.5% were having hypertension with complications. In the study population, those who were smoking 6-10 years duration, the prevalence of hypertension complications was 100% and where as those were smoking > 10 years duration of smoking, the prevalence of complications was 65%.

Table 4: BMI status among Hypertension population.

BMI	Hypertension without complications	Hypertension with complications	Total
< or =25	16 (84.2%)	3 (15.8%)	19 (100%)
> 25	119 (78.8%)	32 (21.2%)	151(100%)
Total	135 (79.4%)	35 (20.6%)	170 (100%)

Fisher Exact Test (X^2-0.475, 1df, P-0.49).

Table 4 revealed that in the study population, those who were having < or = 25 body mass index, the prevalence of hypertension complications was 15.8% and those who were having body mass index > 25, the prevalence of complications was 21.2%.

DISCUSSION

The present cross sectional record review study was conducted at different primary health care centres to study the demographic variables association with hypertension, risk factors identification among hypertensive individuals in Buraidah city, Al Qassim region during the period from the January 2018 to June 2018.

In the study population, about 32.9% were in the age group of 50-54 years of age group and 17.6% were in the age group of >65 years of age. Early onset of hypertension in urban population may be as a result of leading a stressful and fast urban life-style, without sufficient rest to mind and body. Study done in Delhi and adjoining rural areas of Haryana showed the prevalence to be 4.1% (Males) and 2.84% (Females) in the age group 25-34 yrs which increased to 22.9% (Males) and 32.9% (Females) in the age group 55-64 yrs. The Jaipur urban study[4] reported a prevalence of 15.4% amongst <40 yrs age group, 34.7% between 40-49 yrs and 58% in the age group ≥50 yrs. Increase of prevalence with age is well documented, and this could be attributed to the accumulated effects of various risk factors. In the study population, about 52.9% were males and 47.1% were females hypertension people. Our findings were comparable to the studies by Hazarika et al in Assam.[3] Hussain S.A in North-West Rajasthan, Anand M.P[4] in Mumbai and Zachariah[5] in the Urban population of Kerala, who found no difference in the prevalence between males & females. Study done by shyamal kumar das et al in madala district kolkota shown high prevalence rate among males compare to females.

In the present study, about 35.9% were from house wives occupation, 22.9% were from retired from the occupation and unemployed people were about only 1.2%. study conducted by Ghosh BN et al[6] in Shimla found the prevalence of hypertension to be more among professionals, executives and traders as compared to occupation involving semi skilled persons. During the course in search of literature, I did not find the similar finding. In the study population, 86.5% were married people. About 9.4% were widowed and only 2.4% were unmarried people. In a study done by Deswal BS[7] among residents of Pune, found no significant association between marital status and subsequent development of hypertension.

In the hypertensive study population, about 50.6% were having hypertension as the family history in their families and 24.7% were having diabetes as family history. hypertension and diabetes were found to be the highest chronic disease affecting family members of our study participants (70%) for both followed by coronary heart disease, although Diabetes came first when asking our study participants about chronic diseases diagnosed by physicians followed by high cholesterol and then hypertension came last. This was in accordance with what was found by Al Nozah et.al 2004 study done in Saudi arabia.[8]

A family history of elevated Blood Pressure is one of the strongest risk factors for the future development of hypertension in individuals. Epidemiological studies suggest that 20-60% of essential hypertension is inherited and the remaining is acquired or environmental. It was observed from our study that >50% of hypertensives had a family history of hypertension when compare to the hypertensives without family history of hypertension.

A study done by Anand Mp et al[9] showed a positive association between hypertension prevalence and family history. Similar observation was made in the Bombay executive study. In a study done among residents in Pune, Deswal BS[7] found that the relative risk of developing hypertension in those individuals who had a positive family history among their first degree relatives, was 4.86 times more as compared to those who did not have family history. The Jamaican hypertension prevalence study conducted by Singh BR et al[10] found that respondents with known family history of hypertension had twice the risk of developing hypertension than those individuals with no family history of hypertension.

In the study population only about 12.3% were smoking. Among the smokers, the prevalence of hypertension complications was 33.3% and where as non smokers study population, there was prevalence of hypertension with complications was 20.4%. But, smoking can be compared with normal and hypertension individuals. Here in the present study, all the hypertensive individuals information taken that could as one of the limitation. Among the smokers those who were smoking more than 10 cigars/day, 30.8% were having hypertension with complications. Those who consumed 6-10 cigars/day, 37.5% were having hypertension with complications. Those participants were smoking > 10 years duration of smoking, the prevalence of complications was 65%. as the sample size is less and also smokers were very less and hence there was no statistically significant association was found between duration of smoking and hypertension complications (P>0.05). In other study conducted among 200 individuals in Jeddah, Saudi Arabia by Abeer Hazaa, MD et al revealed that smoking prevalence is less than the shisha prevalence among the hypertension population and smoking prevalence noticed as 6% and shisha prevalence noticed in their study as 12%.[11]

Many studies have found statistically significant association between smoking and hypertension. Nicotine and carbon-monoxide, the two major products of tobacco combustion are both potent vasoconstrictors. Tobacco smoking has been reported to cause acute rise of Blood Pressure, but whether prolonged smoking leads to sustained hypertension has not been well established.[3] Although tolerance develops to many of the effects of nicotine and other toxins in cigarette smoke, it apparently does not develop for the pressure effect. Indian studies have shown a significant correlation of smoking or tobacco use with hypertension prevalence. A case-control study from Bangalore[18] showed that smoking was an independent risk factor for HTN (OR 2.25, p=0.014) and in study conducted by NC Hazarika[3] in Assam shown the similar results.

In the study population, about 88.8% (151/170) people were having BMI more than 25. Those participants were having < or = 25 body mass index, the prevalence of hypertension complications was 15.8% and those participants were having body mass index > 25, the prevalence of complications was 21.2%. Framingham study[13] showed that for every 10% increase in weight there was a rise of 6.5 mmHg in systolic pressure. The Chennai urban population study[16] as well as Bombay executive study[17] have all shown a higher weight and BMI amongst hypertensive groups. Other study conducted among 200 individuals between the age group of 15 years to 64 years in Jeddah, Saudi Arabia by Al-Hamdan, N. et al in Saudi Arabia published in International journal of Hypertension 2010 revealed that BMI about 68% of hypertensive population were having more than 25 BMI in their study.[12] Obesity causes hypertension by activating the renin–angiotensin–aldosterone system, increasing sympathetic activity, promoting insulin resistance and leptin resistance, increased cholesterol levels, increased procoagulatory activity and by endothelial dysfunction.

Further mechanisms include increased renal sodium reabsorption, causing a shift to the right of the pressure natriuresis relationship and resulting in volume expansion.[14] S. Yadav, R. Boddula et al.[15] Study has found a high prevalence of pre-hypertension and hypertension were noted in affluent urban north Indians. Increasing age, body mass index, central obesity were significantly associated with hypertension. One of the limitation of the study is less sample size, information bias, record based study and for the better statistical tests application need normal individuals like non hypertensive individuals. Strength of the study is even record based studies sometimes it will give good information for the better planning of health services in our health care settings.

CONCLUSIONS

Based on the present study results, high body mass index was noticed among the hypertensive individuals. Smoking prevalence was less observed in the hypertensive population and more percentage of family history of hypertension was observed among the study population. Healthy life styles adoption definitely helpful for the reduction modifiable risk factors of hypertension. Need long term similar studies are required to substantiate the findings of this study.

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REFERENCES

1. WHO. (2013.). Raised blood pressure. Retrieved February 27, 2018, from http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/.
2. Saudi Hypertension Management Society (2018). Saudi Hypertension Guidelines 2018. doi:161020170004948.
3. Hazarika NC, Biswas D, Mahanta J. Hypertension in the elderly population of Assam. Journal of Associated Physician Of India, 2003; 51: 567-573.
4. Anand M.P, Bakhle D.S, Samyuktha A. Smoking and Hypertension: Indian scenario. Journal Association Physicians India, 1990; 38: 283-284. 65.
5. Zachariah *et al.* (2003)(47) conducted a cross sectional survey of 314 middle aged subjects (163 men; aged 40-60 yrs) in urban population of Thiruvanathapuram, Kerala.
6. Ghosh BN, Bansal RD, Bhardwaj UD, Joshi SC. A blood pressure survey in Shimla. Journal of Indian Medical Association, 1983; 80: 47-52.
7. Deswal BS, Satyamoorthy TS, Dutta PK, Ganguly SS. An epidemiological study of hypertension among residents in Pune. Indian journal of Community Medicine, 1991; 16(1): 21-28.
8. Al-Nozha, Mansour M., et al. "Diabetes mellitus in Saudi Arabia." Saudi medical journal, 2004; 25.11: 1603-1610.
9. Anand MP. Epidemiology of hypertension. Current concepts in hypertension. Sainani GS (Ed) ICP Mumbai, 1995; p.4-13.
10. Singh DR, McGrowder D, Morrison EY, Johnson P, Fuller EL, Fray J. The Jamaican hypertension prevalence study. Journal of the National Medica Associati, 2002; 94(7): 5616.
11. Abeer Hazaa, MD et al, Awareness of Hypertension, Risk Factors and Complications among Attendants of a Primary Health Care Centre In Jeddah, Saudi Arabia, IOSR Journal of Nursing and Health Science, Volume 6, Issue 1 Ver. VIII Jan. - Feb. 2017; PP 16-21.
12. Al-Hamdan, N., et al. "Characteristics, risk factors, and treatment practices of known adult hypertensive patients in Saudi Arabia." International Journal of Hypertension 2010 (2011).
13. The Framingham heart study. National Heart, Lunh, and Blood institute, 2004.
14. Beegom R, Niaz MA, Singh RB. Diet, central obesity and prevalence of hypertension in the urban population of South India. International Journal of Cardiology, 1995 September; 51(2): 183-91.
15. S. Yadav, R. Boddula, G. Genitta, V. Bhatia, B. Bansal, S. Kongara, S. Julka, A. Kumar, H.K. Singh, V. Ramesh & E. Bhatia, Prevalence & risk factors of pre-hypertension & hypertension in an affluent north Indian population; Departments of Endocrinology & Pathology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India; Indian J Med Res., 128, December 2008; pp 712-720.
16. Shanthirani CS, Pradeepa R, Deepa R, Premalatha G, Saroja R, Mohan V. Prevalence and risk factors of hypertension in a selected SouthIndian Population- the Chennai Urban Population study. Journal of Associated Physician of India, 2003; 51: 2027.
17. Yadav S, Boddula R, Genitta G, Bhatia V, Bansal B, Kongara S et al Prevalence and risk factors of pre-hypertension and hypertension in an affluent north Indian population. Indian J Med Res., 2008 Dec; 128: 712-20.
18. Pais P, Fay M.P, Yusuf S. Increased risk of acute myocardial infarction associate with beedi and cigarette smoking in Indians: final report on tobacco risks form a case-control study. Indian Heart Journal, 2001; 53: 731-735.