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RESEARCH ARTICLE

A STUDY ON EFFECT OF LIFE STYLE RISK FACTORS ON PREVALENCE OF HYPERTENSION AMONG URBAN POPULATION OF UDAIPUR CITY

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ABSTRACT

Background: Hypertension is a leading cause of mortality in the world and is ranked third as a cause of disability-adjusted life years. Epidemiological studies have shown that sedentary life-style and stress are important risk factors for hypertension. The prevalence of hypertension is increasing rapidly in developing countries more in urban areas due to changing life style and increasing longevity.
Materials and Methods: Prevalence of hypertension among adults from the previous studies was found to be 35%. Sample size of 600 was calculated using the formula 4pq/L2 with 10% allowable error. Systematic random sampling was used and after taking informed consent, participants were interviewed using a pre tested questionnaire. Diagnostic criteria were based on JNC VII guidelines, SBP ≥140mmHg and/or DBP ≥90mmHg. Data was analysed using Epi-info and SPSS proportions and chi square test were used.
Results: Prevalence of hypertension was found to be 36.6%; significantly associated with smoking, salt intake, stress, family history of hypertension and obesity. There is no significant association with type of diet (vegetarian or non vegetarian) alcohol and physical activity.
Conclusion: prevalence of hypertension among urban population is high. Life style factors are significantly associated with hypertension. So there is an urgent need for life style modification among urban especially among those with stress and positive family history

INTRODUCTION

Hypertension is a modern day's epidemic and it is becoming a public health emergency worldwide, especially in the developing countries. It has been observed that cardiovascular diseases are increasing in developing countries (Reddy and Prabhu, 2005; International Society of Hypertension, 2005) and it has been estimated that CVD will be the major cause of morbidity and mortality in these countries by the year 2020. (World Health Organization, 1992) They account for nearly a third of all deaths worldwide. (Deepa *et al.,* 2003) It is seen that majority of the hypertensive patients remain asymptomatic, only few of them develop some symptoms like headache, giddiness and irritability. That's why hypertension is known as silent killer. When symptomatic, its diagnosis is easy but in asymptomatic cases search of hypertensive is possible only through routine health check-ups, active surveys or screening programmes. If majority of the hypertensive are asymptomatic, it is a matter of concern, because such patients are unaware of the disease and are at equal risk for developing complications. Further more, if hypertension is not controlled or prevented chances of heart attack, heart failure, stroke and kidney diseases increases. The relationship between blood pressure and risk of CVD events is continuous, consistent, and independent of other risk factors. (Gupta, 2004; Avadaiammal Vimala *et al.,* 2009) According to Indian studies it is noted that the prevalence of hypertension has increased by 30 times among the urban population over a period of 55 years and about 10 times among the rural population over a period of 36 years (M.M. H. *et al.,* 2011).

It is further more common amongst people from upper social class because of the presence of multiple factors such as sedentary jobs, lack of physical activity, rich diet, alcohol intake, smoking, obesity and disease like diabetes mellitus. People in this group often experience the mental stress. Increasing urbanization, small or nuclear family norms, working couples and problems of affluence also contribute to mental stress.

The problem which lies with the hypertension is that it cannot be cured completely. And its management requires lifelong medication with some life-style modifications. The only way to curb the problem of hypertension is by its prevention. Decreased physical activities coupled with increased mental tension are important contributors of hypertension. They are commonly seen amongst employees of the profession where

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working is mostly sedentary. Therefore, higher prevalence of hypertension is reported from employees of such profession. Bank employees fit in this picture and that's why present study was carried out among bank employees.

Objectives

1. To estimate the prevalence of hypertension among subjects aged 18 and above.
2. To study the association between the hypertension and its risk factors.

Materials and Methods

Study Design: Community based cross sectional study.

Duration of study: August 2013–December2013.

Study Population: people aged 20 years and above residing in the urban field of Udaipur City.

Diagnostic criteria

Based on JNC VII criteria, a person was considered hypertensive if-

1. SBP ≥140 and/or DBP ≥90 mmHg
2. Persons with history of hypertension and on anti-hypertensives.

Sample Size

Prevalence of hypertension among adults from the previous studies was found to be 35% Sample size of 600 was calculated using the formula $4pq/L^2$ with 10 % allow able error

Sampling method: Systematic random sampling. House was taken as the sampling unit.

After taking informed consent, the participants were interviewed and examined.

Collection of data: Data was collected by interviewing the study subjects using a pre-tested questionnaire based on WHO STEPS approach for chronic disease risk factor surveillance.

Measurement of blood pressure: The study participants were made to sit comfortably for 5 minutes before BP was measured. Blood pressure was measured using the auscultatory method with a standardized calibrated mercury column type sphygmomanometer and an appropriate sized cuff encircling at least 80% of the arm in the seated posture, with feet on the floor and arm supported at heart level. The first blood pressure measurement was recorded after obtaining socio-demographic information from the study subject, while the second was recorded after a brief clinical examination. The reading at which korotkoff sound is first heard will be considered as systolic blood pressure and at which the korotkoff sound disappears will be taken as diastolic blood pressure. We used the average of two readings of SBP and DBP to describe the blood pressure of the participant. In cases where the two readings differed by over 10 mm of Hg, a third reading was taken and average of the three measurements was taken.

Statistical analysis: Data was analysed using Epi info and SPSS version-17.0. Proportions, was used to find out the Prevalence and Chi–square test was used to find the association between categorical variables.

RESULTS

Prevalence

The prevalence of hypertension was found to be 36.6%; 30.2% were in stage I hypertension. Whereas 6.4% of the subjects were in stage II hypertension. Among them 50.7% of hypertensives were already diagnosed to have HTN while 49.3% were newly detected hypertensives; this proves that hypertension is an iceberg disease.

Table 1. Age and sex wise prevalence of hypertension

Age in years		Normal	Hypertensive	Total
20-29	Male	40	4	44
	Female	32	0	32
30-39	Male	46	18	64
	Female	48	12	60
40-49	Male	66	48	114
	Female	48	28	76
>50	Male	72	62	132
	Female	56	44	100
Total		380 (63.4)	220 (36.6)	600(100)

Association with Risk factors

This study revealed that hypertension was significantly associated with body mass index, maximum in obese patients when compared to normal and underweight; ($p<0.0001$); significantly associated with central obesity ($p=0.0001$; $p=0.006$) in males and females respectively); There is significant association between smoking and hypertension; highest among past smokers (82.7%) followed by current smokers (51.5%) when compared to non smokers(27.6%), There is significant association with alcohol consumption ($p<0.013$). There is no significant association with physical activity, vegetarian or non vegetarian diet, junk food consumption. However, salt intake > 6 grams/day and family history of hypertension were found to be significantly associated with hypertension. ($p=0.009$; $p=0.003$ respectively).

DISCUSSION

Prevalence of hypertension was found to be 36.6%. 30.2% were in stage I and 6.4% in stage II hypertension (SBP 140-159 mmHg and/or DBP 90-99 mm Hg and SBP >160 mmHg and/or DBP > 100 mm Hg) respectively; 50.7% of hypertensives were already diagnosed to have HTN while 49.3% were newly detected hypertensives. This shows the submerged portion of the iceberg. Findings of our study are similar to Gupta, R in Jaipur, in urban adults in 2002 which showed prevalence of hypertension as 36% in men and 37% in women (Gupta, 2004) and a study conducted by Avadaiammal *et al.* (2009) in

Trivandrum city, Kerala, south India in 2006 which showed the prevalence as 47% Significant association of hypertension was found with smoking. studies done by Patnaik *et al.* (2005), Reddy in Tirupati (2005), Yadav *et al.* (2008), HareshChandwani *et al.* in Gujarat in 2010 also showed similar results. A recent case-control study from Bangalore also showed that smoking was an independent risk factor for hypertension (WHO, 2002) (odds ratio 2.25, p=0.014).

Our study showed a significant association between HTN and alcohol consumption (p=0.013). A study done by NC Hazarika *et al.* in Assam in 2003 in elderly population found that Alcohol consumption increased the risk of hypertension in the study population. Reddy in Tirupati in 2005, Patnaik in Orissa in 2005, Haresh Chandwani *et al.* in Gujarat in 2005 also revealed higher prevalence of hypertension among those who consume alcohol. Study conducted by M.M.H, Desai *et al.* in Surat found that prevalence of hypertension was higher (40.1%) among alcohol consumer than non- drinker (27.2%).

Study by Saunders *et al*. (1961) found a significant positive association between hypertension and alcohol consumption. In their study, in most cases the BP level fell to normal levels after abstinence and remained so in those who continued to abstain but returned to the hypertensive state in those who resumed consumption of alcohol, thus indicating that alcohol is an important risk factor for hypertension. The Chennai urban population study in 2003 showed BMI was more in hypertensives compared to non hypertensive individuals (Shanthirani *et al*., 2003). A multi-centric study conducted by Hypertension study group in 2001 among the elderly in Bangladesh and India found that High body mass index was an importantcorrelate of hypertension (IftekharQuasem *et al*., 2001). Studies done by Zachariah *et al.* Reddy in Tirupati *et al.* (2005), Patnaik in Orissa (2005), Yadav *et al.* (2008) and Haresh Chandwani *et al*. in Gujarat also revealed the similar findings.

There is significant association with increased waist hip ratio similar to Chennai Urban Population Study (CUPS) (Shanthirani *et al.,* 2003) in 2003. Studies by Mehan in urban Indian population showed similar findings. Our study can be compared to study by Mehan *et al.* which revealed that hypertension was found in all subjects who consume < 500 gm of vegetables and fruits per day (Mehan *et al.,* 2006). The INTERHEART STUDY in 2003 by Salim Yusuf *et al.* found that low consumption of fruits, vegetables constitute a major risk for myocardial infarction worldwide in both sexes and at all ages in all regions

In our study, there is no significant association between Hypertension and physical activity. (p=0.586).Our study can be compared to a study done by Patnaik *et al.* in Orissa in 2005 where there is no statistical significance between HTN and physical activity (p>0.05). But studies conducted by Reddy in Tirupati and Shantirani *et al*. in Chennai (Chennai Urban Population Study) found significant association with hypertension and physical activity in contrast to our study. Our results can be compared with a study done by Avadaiammal Vimala (2009) which showed that the prevalence of hypertension among subjects on vegetarian diet vs. mixed diet was 41% vs. 49%, respectively but the difference was not statistically significant. (p= 0.09). A study done by Gilberts E *et al.* in a south Indian population also did not find significant association between diet and hypertension.

Conclusion

Prevalence of hypertension was found to be 36.6%. pre hypertension is also high with 40.4%. There is significant association of hypertension with smoking, alcohol, junk foods, salt intake and positive family history. Body mass index and waist hip ratio also showed significant association. However, there is no association with physical activity and type of diet. So, life style factors certainly influence the occurrence of hypertension especially among urban population.

Almost half the hypertensives were newly detected during the course of the study. So screening of the population for BP is the only effective method for to diagnose this silent killer and treat adequately for prevention of further complications like stroke, coronary artery disease and renal failure. IEC activities has to be undertaken at the community level which should focus on weight reduction, cessation of smoking and alcohol, increased physical activity and restriction of dietary salt intake. Schools must provide opportunities for promotion of healthy life style in children and the youth. Mental relaxation techniques like yoga and meditation has to be promoted. Public education has to be the cornerstone for successful national campaign to detect, evaluate and treat high BP.

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