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PREVALENCE OF HYPERTENSION AMONG RURAL AND URBAN POPULATION IN SOUTHERN RAJASTHAN

Antima Galav[1], Rekha Bhatanagar[2], Suresh Chandra Meghwal[3], Manish Jain[4]

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Author's Affiliation:
[1]Assistant Professor; [2]Professor, Dept. of Community Medicine, RNT Medical College, Udaipur, Rajasthan, [3]SMO, W. H. O. , Jalaun, UP, [4]Resident, Dept. of Community Medicine, RNT Medical College, Udaipur, Rajasthan

Correspondence:
Dr. Antima Galav
E-mail: drantima14@gmail.com

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ABSTRACT

Introduction: Hypertension (HTN) is one of the most common cardiovascular diseases and an important cause of morbidity and mortality worldwide**.** Estimating the prevalence of hypertension in both the urban and rural populations is very crucial as this forms the basis for planning of primary and secondary prevention of hypertension. Objective of the study was to estimate and compare the prevalence of hypertension in urban and rural adult population.

Method: A cross-sectional study was carried out from March-2013 to August-2013 in Udaipur, Rajasthan to compare the prevalence of hypertension in urban and rural adult population**.** Hypertension was defined according to JNC VII criteria.

Results: Hypertension was present in 32. 67% subjects in urban and 18. 67% in rural area. The prevalence was found to steadily increase with age. There was no significant difference in the prevalence of hypertension between males and females in both areas. Among urban hypertensives 87. 76% led a sedentary lifestyle, 45. 92% were overweight and 14. 28% were obese**.**

Conclusion: Significantly higher prevalence of hypertension was found in urban area. Majority of hypertensive had a sedentary life-style in both rural and urban areas. Adopting a healthy lifestyle is critical for the prevention of hypertension and an indispensable part of managing it.

Key Words: Hypertension, Southern Rajasthan, Cross-sectional study, Prevalence

INTRODUCTION

Hypertension (HTN) is one of the most common cardiovascular diseases and an important cause of morbidity and mortality worldwide[1]. People with hypertension possess two fold higher risk of developing coronary artery disease, four times higher risk of congestive heart failure and seven times higher risk of cerebrovascular disease compared to normotensive people [2 3].

India is going through a demographic transition and its population has crossed one billion marks. Due to increase in the life expectancy, non-communicable diseases are likely to overshadow infectious diseases in the new millennium and thus pose a heavy strain on health budgets in our country, particularly CVD & CAD [4]. Hypertension is a significant public health problem in both urban and rural areas of India. According to WHO Statistics 2013 the prevalence of hyperten-

sion in India is 23 % (urban 23. 1%, rural 22. 6%) [5].

There are various risk factors associated with hypertension; some of the known risk factors for primary hypertension like age, heredity, and gender are non-modifiable. However, the majority of the other risk factors like tobacco use, alcohol use, unhealthy diet, physical inactivity, overweight and obesity can be effectively prevented [6].

Estimating the prevalence of hypertension in both the urban and rural populations is very crucial as this forms the basis for planning of primary and secondary prevention of hypertension. Against this background this community based cross-sectional study was undertaken in rural and urban area of southern Rajasthan.

METHOD

A Cross-sectional study was carried out in Udaipur district, Rajasthan from March- 2013 to August- 2013 to compare the prevalence of hypertension in urban and rural adult populations of Udaipur district. The rural area Vallabhnagar and urban area Dhanmandi, which are the field practicing areas under Dept. of Community Medicine, RNT Medical College, Udaipur, Rajasthan, were selected for the study. Study population comprised of persons aged 18 years and above residing in urban and rural areas of Udaipur district.

As evident from various studies, prevalence of hypertension in urban and rural areas in India ranges from 20% to 40%and 7% to 17% respectively[4], [11-18]. Based on this, a prevalence of hypertension of 25% in urban areas and 15% in rural areas was assumed for calculation of sample size. The calculated sample size was 300 for urban population and 300 for rural population based on 5% significant level and 80% power. Then 300 adults were randomly selected from each of these urban and rural field practicing areas by multiphase cluster random sampling.

Individuals who were not available at the time of visits, pregnant women, patient with severe psychiatric diseases or mental disability and bedridden individuals were excluded from the study.

Based on JNC VII [7] & WHO criteria [5], a person was considered hypertensive if SBP ≥140 and/or DBP ≥90 mmHg; or persons already on antihypertensive treatment.

In the selected clusters, streets/lanes were arranged in some order and then randomly selected using random number table. All consecutive houses on the selected street were visited till required numbers of study subjects are obtained. All the subjects were personally contacted in their house, and interviewed using the pre-tested performa. Blood pressure was measured by standard sphygmomanometer. Average of the two readings of blood pressure was considered. If the difference was >5mmHg between this 2 reading OF blood pressure then additional third reading was taken and the average of these three reading of blood pressure was considered for diagnosis (according to JNC VII criteria) [7]. Extra Salt intake was assessed by enquiring whether they had the habit of consuming pickle, papad or adding extra table salt frequently. A person who at the time of survey smokes any tobacco product either daily or occasionally was considered as smoker. A non-smoker is someone who at the time survey does not smoke at all [8].

Physical activity was assessed based on the occupation of subjects, and leisure time activity was not considered[9].

(A) Sedentary: (1) Male: Teacher, Tailor, Barber, Executive, Shoe-maker, Priest, Retired person, Land-lord, Peon, Postmaster. (2) Female: Teacher, Tailor, Executive, House-wife, Nurse.

(B) Moderate: (1) Male: Fisherman, Basket-maker, Potter, Goldsmith, Agriculture labour, Carpenter, Mason, Rickshaw puller, Electrician, Fitter, Turner, Welder, Industrial labour, Coolie, Weaver, Driver. (2) Female: Maid servant, Coolie, Basket-maker, Weaver, Agriculture labour, Beedi-maker.

(C) Heavy: (1) Male: Wood cutter, Blacksmith, Mine worker, Gangman. (2)Female:Stone cutter.

Modified B. G. Prasad's socio-economic status classification [10] was adopted and modified as per All India Consumer Price Index (AICPI) for the year 2013. Collected data was analyzed by Microsoft excel and epi-info 7 software.

RESULTS

Total 300 subjects from urban and 300 from rural area were assessed. The study population comprised of 42% male and 55% females in urban area while 45% males and 58% females in urban area in rural area. Hypertension was present in 32.67% subjects in urban area and 18.67% in rural area (Table 1). The prevalence of hypertension was found to steadily increase with age. In the 18-29 years age group the prevalence was 5.62%

in urban area and 5.56% in rural area, which gradually increased to 69.57% and 37.5% respectively, among those aged ≥70 yrs. A sharp increase in hypertension prevalence was observed in the fourth decade among urban subjects as compared to the fifth decade among rural subjects (Table-2). The prevalence of hypertension among males was 32.5% in urban and 18.52% in rural area while for females; it was 32.7% in urban and 18.79% in rural area (Table 3). In both the areas, a greater prevalence of hypertension was observed in higher socio-economic groups. Also a successive gradation in hypertension prevalence was observed in lower socioeconomic classes (Table 4). Among hypertensive, majority of them had no presenting complaints. Most common complaint was headache in hypertensives of both population (22.45% in urban and 21.43% in rural hypertensive) followed by giddiness (10.20% in urban and 19.64% in rural hypertensives) and palpitation (5.10% in urban and 5.36% in rural hypertensives). Among urban hypertensives 54.08% had family history of hypertension, whereas only 12.50% had family history of hypertension in rural area. Among 58 urban hypertensives who were aware of their hypertensive status, 49 (84.48%) were on treatment. Among 8 rural hypertensives, who were aware of their hypertensive status, 4 (50%) were on anti-hypertensive treatment. Out of 49 urban hypertensives who were on treatment, 27 (55.1%) had their B. P. level under control and out of 4 rural hypertensives who were on treatment, 1 (25%) had their B. P. level under control. Extra salt consumption was prevalent in 61.22% of urban and 57.14% of rural hypertensives. Among urban hypertensives 87.76% led a sedentary lifestyle, while 11. 22% were moderate workers and 1.02% subjects were heavy workers (Table 5). Among rural hypertensives, 64.29% led a sedentary lifestyle while 30.36% were moderate workers and 5.35% subjects were heavy workers (Table 4). Prevalence of smoking among urban hypertensives was 11.22% and in rural hypertensives were 14.29%. Among urban hypertensives, 14.3% consumed smokeless tobacco whereas among rural hypertensives proportion was 30.4%. Out of 98 urban hypertensives, 13 (13.27%) consumed alcohol whereas out of 56 rural hypertensives, 8 (14.29%) consumed alcohol. Stress was present in 27.6% of urban and 7.1% of rural hypertensives. Among urban hypertensive, 45.92% were overweight (BMI 25-29.99) and 14.28% were obese (BMI ≥30.00). Among rural hypertensives, 17.86% were overweight and 3.57% were obese.

Table 1: Prevalence of hypertension in urban and rural study population

Residence	Total	Hypertensive(%)	Normotensive(%)
Urban	300	98 (32.67%)	202 (67.33)
Rural	300	56 (18.67)	244 (81.33)
Total	600	154 (25.67%)	446 (74.33)

Table 2: Urban & Rural distribution of subjects by blood pressure status & age groups

Age Group	Urban		Rural		P value
	Total	Hypertensive (%)	Total	Hypertensive (%)	
18-29	89	5(5.62)	90	5(5.56)	1
30-39	62	12(19.35)	67	9(13.43)	0. 363
40-49	53	21(39.62)	47	7(14.89)	0. 006
50-59	44	24(54.54)	43	15(34.88)	0. 065
60-69	29	20(68.97)	29	9(37.93)	0. 004
≥70	23	16(69.57)	24	11(37.5)	0. 1
Total	300	98(32.67)	300	56(18.67)	0. 001

Table 3: Urban & Rural distribution of subjects by blood pressure status and gender

Sex	Urban (%)		Rural (%)		P value
	Total	Hypertensive	Total	Hypertensive	
Male	126	41 (32.5)	135	25 (18.52)	0. 009
Female	174	57 (32.7)	165	31 (18.79)	0. 003
Total	300	98 (32.67)	300	56 (18.67)	0. 001

Table 4: Urban & Rural distribution of subjects by blood pressure status & socioeconomic class

SE Status*	Urban		Rural		P value
	Total	Hypertensive (%)	Total	Hypertensive (%)	
Class1	90	37 (41.1)	12	4 (33.3)	0.758
Class 2	85	28 (32.9)	30	9 (30)	0.767
Class 3	65	21 (32.3)	80	17 (21.2)	0.132
Class 4	51	11 (21.6)	135	20 (14.8)	0.270
Class 5	9	1 (11.1)	43	6 (14)	1.000
Total	300	98 (32.67)	300	56 (18.67)	

***Socio-economic status**

Table 5: Urban & Rural distribution of hypertensive according to physical activity

Physical activity	Urban (n=98) (%)	Rural (n=56) (%)	Total (n=154) (%)	P value
Sedentary	86(87.76)	36(64.29)	122(79.22)	0. 001
Moderate	11(11.22)	17(30.36)	28(18.18)	
Heavy	1(1.02)	3(5.35)	4(2.60)	

DISCUSSION

In our study, significantly higher prevalence of hypertension was found in urban area (32.67%)

than rural area (18.67%). These results were comparable to the rates obtained by Gupta R et al [11]. In his study titled 'trends in hypertension epidemiology in India', where the prevalence of hypertension has been reported to range between 20-40% in urban adults and 12-17% among rural adults.

In the present study found increasing age to be an important non-modifiable risk factor for the development of hypertension. In both urban and rural areas the prevalence of hypertension was found to increase steadily with age. A sharp increase in hypertension prevalence was observed in the fourth decade among urban subjects as compared to the fifth decade among rural subjects. A statistically significant urban-rural difference in hypertension prevalence was found for the age groups 40-49 years and 60-69 year. Several studies have consistently demonstrated a positive relation between age and blood pressure.

In the present study, we did not found any significant difference in the prevalence of hypertension between males and females in both urban and rural areas. These findings were comparable to the studies done by Hussain S et al. in northwest Rajasthan [12] who found no difference in the prevalence between males & females.

In our study, the prevalence of hypertension among urban males was more than the rural males. Similarly the prevalence of hypertension among urban female was more than rural female. A large number of epidemiological studies have inferred that prevalence of hypertension is more in males as compared to females.

In our study it was found that some occupation (housewives, professionals, business, retired) have high risk of prevalence of hypertension in both urban and rural area. All these occupations have sedentary type of job and higher mental stress as a common factor which may a contributory factor in the development of hypertension. In the both urban and rural areas, the prevalence of hypertension was low in people involved in agricultural sector and labor because of high physical activity. Similar to our study Bhalla and Tandon et al [13] at Lucknow and Ghosh et al [14] at Shimla found the prevalence of Hypertension to be more among professionals, executives and traders as compared to the low occupation such as semi-skilled and unskilled persons.

In the present study, hypertension prevalence was found to be directly proportional to the socio-economic status in both urban and rural areas. The higher prevalence of hypertension in upper class is because of their lifestyle which usually involves a sedentary type of job, higher mental stress, lack of physical activity and high prevalence of obesity. Our study was comparable with a study done by Ericus cet al [15] which showed that the prevalence of hypertension in highest socioeconomic group (22.5%) was more than twice that in the lowest socioeconomic group (8.8%).

Our study shows that 87.76% urban and 64.29% rural hypertensives led a sedentary life-style. Higher prevalence of sedentary lifestyle among the urban hypertensives could be due to the fact that they work in advanced infrastructural setups, which involve more intellectual but less physical work. On the contrary, in the rural group most of them work in the fields, which involve more physical activity. In Study done by Blair[16], Physical fitness and incidence of hypertension in healthy normotensive men and women found that sedentary individuals have 20-50% increased risk of developing hypertension.

In present study, Stress was present in 27.6% of urban and 7.1% of rural hypertensives. Urban hypertensives were significantly more stressful when compared to their rural counterparts. On the contrary, Kamlesh Kumaret al[17] in his Jaipur study found that stress was present in 10.31% of urban and 14.56% of rural hypertensive subjects.

In our study, it was found that 60.20% urban hypertensives had a BMI of ≥25 kg/m^2 whereas only 21. 43% rural hypertensives had a BMI of ≥25 kg/m^2. Thus Urban hypertensives were significantly overweight (≥25 kg/m^2) as compared to their rural counterparts because of their sedentary life style. In most of the studies, being overweight was associated with a twofold to six-fold increase in the risk of developing HTN. For every 10% increase in weight a rise of 6. 5 mm Hg in systolic pressure was observed in the Framingham study[18].

CONCLUSION AND RECOMMENDATIONS

Findings of the study indicate that hypertension is a serious public health issue. Significantly higher prevalence of hypertension was found in urban area. Majority of hypertensive had a sedentary life-style in both rural and urban areas. Adopting a healthy lifestyle is critical for the prevention of hypertension and an indispensable part of managing it. Additional research in the

area of primary prevention of high BP should be encouraged. This should focus on the development of cost-effective programs for primary prevention of hypertension, which can be implemented in the general population(population strategy) and more intensive programs for those at special risk of developing hypertension (targeted strategy).

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