

Socio-demographic Variables of Hypertension Among Adult Punjabi Females

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ABSTRACT The study was conducted in 2000 adult Punjabi females ranging in age from 20 to 60 years during the period 1998-2001. The methodology comprised of interview and clinical examination. Blood pressure of all the study participants was measured using standardized technique. The overall prevalence of hypertension was 20.15%. Among socio-demographic variables studied, the age, income, education and caste were significantly related with hypertension. In Punjabi society, socio-economic transition is occurring very fast. Therefore, the identification of socio-demographic variables influencing hypertension is an important aspect for taking appropriate preventive measures to halt increase in the incidence rate of hypertension.

INTRODUCTION

WHO-ISH (1999) reported that death and disability from cardiovascular disease are increasing so rapidly in developing countries that they will rank number one as cause of the global burden of diseases by the year 2020. With modernization and changing demographic profile of the population, cardiovascular diseases are assuming an increasing importance in India (Reddy, 1993). The single largest independent risk factor for cardiovascular diseases has been found to be elevated blood pressure. Hypertension affects approximately one billion individuals worldwide. In India, hypertension is a major public health problem among the middle and high socio-economic class (Pai and Halani, 1980). The prevalence rate of hypertension varies from population due to known and unknown factors. There are no well-coordinated national surveys of prevalence of hypertension available from the Indian subcontinent. Several regional surveys (Sambasivarao, 1981; Gupta and Sharma, 1994; Gupta et al., 1995; Singh et al., 1998; Gupta and Gupta, 1999; Joseph et al., 2000; Sarma and Nagaraj, 2001; Ahlawat et al., 2002; Gupta et al., 2002; Hazarika et al., 2002; Sidhu et al., 2002; Swami et al., 2002; Banerji et al., 2003) with varying protocols and using casual blood pressure readings have shown the prevalence rate of hypertension as 10-60%. But as far as the studies on the Punjabi population are concerned, very few attempts have been made to screen out the frequency of hypertension. Therefore, in the

present study, an attempt has been made to report the prevalence of hypertension and factors associated with it among adult females of Punjab

MATERIALS AND METHODS

The data for the present study have been collected from 2000 adult Punjabi females (age 20-60 years) during the years 1998-2001. The majority of data were collected from residential colonies of Amritsar, Hoshiarpur, Ludhiana and Pathankot cities of Punjab. The information regarding age, occupation, income, education, caste and family history was collected through the pre-tested interview schedules from each individual. Blood pressure was measured after the subject had rested at least 15 minutes with the help of mercury sphygmomanometer and stethoscope by auscultatory method (Rose and Blackburn, 1968). Three measurements were recorded from each individual on three separate visits and their mean values were used in the subsequent analysis. The hypertension status of the study sample was assessed using standard criteria formulated by WHO International Society of Hypertension (WHO-ISH, 1999). Hypertension was defined as systolic blood pressure ≥ 140 mm Hg and/or diastolic blood pressure ≥ 90 mm Hg. These criteria were used for the individuals, who were not taking antihypertensive medication and who were not actually ill at the time of examination. Those subjects, who were found to be hypertensive as per the above criteria during the first visit, their blood pressure was again measured on two further

occasions at least three weeks apart. The final diagnosis of hypertension was made on the third visit.

The whole data has been classified on the basis of age, income, educational level and caste. The data was grouped into five age groups, each of 10-year duration. As per their educational status, the subjects were graded into two groups i.e. literates and illiterates. Total family income from all sources was inquired during interview. With reference to their income, three levels i.e. high-income group, middle-income group and low-income group were made. The collected data has been placed into four caste groups i.e. Bania, Arora, Jat Sikh and Sikh Harijans. Banias form the main commercial elements of the population of Northern and Northwestern India. They hold large business, earn a lot of money and are considered to be the rich. The females of this community in this sample lead a very sedentary and comfortable life. There is another class of business community of Punjab which is considered somewhat lower but of equal mercantile energy of Banias; they are called Aroras. Aroras are one of the most industrious communities. These people are now a part of the leading professions, services, intellectuals of India. The females of this community encountered during fieldwork were mainly housewives, teachers and

clerks. Jat Sikhs constitute a major portion of the total population of Punjab and include a great mass of the dominant landowners. Jat Sikhs are known for their strenuous and unremitting work under extreme weather conditions. The females of this community are also working very hard. Apart from their household duties, they lend a helping hand to their men-folk on the farms, take care of the products and look after the cattle, etc. Sikh Harijans are generally those Scheduled Caste people who claim Sikhism as their religion and are locally known as Majahbis. Most of the men-folk of Sikh Harijans work as agricultural labourers. Some of them are industrial workers, government employees, soldiers, rickshaw drivers and truck drivers. The females also work with the men-folk. They usually belong to low-income group.

RESULTS

The prevalence of hypertension in Punjabi females on WHO-ISH cut-off points is given in Table 1. The overall frequency of hypertension in the present sample is 20.15%. Age-specific distribution of hypertensives suggests that the prevalence of hypertension rises steeply with increase in age. At age 20-29 years, the frequency of hypertension among Punjabi females is 2.70%

Table 1: Socio-demographic variables affecting hypertension

Age group (years)	Number of subjects	Hypertensive		Normotensive		Statistical significance
		No	%	No	%	
Age group(years)						
20-29	371	10	2.70	361	97.30	$\chi^2=337.6df=4p < 0.01$
30-39	386	21	5.44	365	94.56	
40-49	398	57	14.32	341	85.68	
50-59	420	114	27.14	306	72.86	
>60	425	201	47.29	244	52.71	
Total	2000	403	20.15	1597	79.85	
Income Group						
High	122	49	40.16	73	59.84	$\chi^2=63.9df=2p < 0.01$
Middle	1190	271	22.77	919	77.23	
Low	688	83	12.06	605	87.94	
Total	2000	403	20.15	1597	79.85	
Literacy						
Illiterate	1462	271	18.54	1191	81.46	$\chi^2=7.9df=1p < 0.01$
Literate	538	132	24.54	406	75.46	
Total	2000	403	20.15	1597	79.85	
Caste Group						
Bania	500	132	26.40	368	73.60	$\chi^2=34.3df=3p < 0.01$
Arora	500	108	21.60	392	78.40	
Jat Sikh	500	104	20.80	396	88.20	
Sikh Harijan	500	59	11.80	441	79.20	
Total	2000	403	20.15	1597	79.87	

which increases to 47.29% up to age group ≥ 60 . Maximum increase in the frequency of hypertension i.e. 20.15% is observed from age group 50-59 to ≥ 60 years. As per the economic status, the prevalence of hypertension is highest (40.16%) in high-income group, followed by middle-income group (22.77%) and low-income group (12.06%). Literacy-wise distribution of cases of hypertension suggests that the prevalence of hypertension is higher among literates (24.54%) than illiterates (18.54%). Caste-wise distribution of hypertension suggests that the prevalence of hypertension is found to be highest (26.40%) among Bania females, followed by Arora females (21.60%), Jat Sikh females (20.80%) and Sikh Harijan females (11.80%), respectively.

DISCUSSION

The studies that report prevalence of hypertension in Indian populations have been reviewed in this paper (Table 2). There are a limited number of studies, where the cut-off points for hypertension have been based on $\geq 140/90$ mm Hg. These studies have been carried out in different time periods and different geographical areas, but the criterion used in defining hypertension is the same in all these studies. The average prevalence of hypertension in the present sample is 20.15%. As is clear from Table 2, Ahlawat et al. (2002) reported hypertension in 45.80% women in Chandigarh whereas Sidhu et al. (2002) reported it in only 15.10% women of

Punjab and Gupta et al. (2002) reported its prevalence in 37.50% women in Jaipur. Hazarika et al. (2002) reported hypertension in 70.40% women in Assam. Joseph et al. (2000) reported it in 41% women in Trivandrum and Banerji et al. (2003) observed it in 32.50% women of Orissa. From this, it is evident that hypertension is a major health problem in India, though its prevalence varies from population to population.

Age-wise distribution of hypertension suggests that the prevalence of hypertension in the present sample is highest in age group ≥ 60 years, followed by 50-59 years, 40-49 years, 30-39 years and 20-29 years, respectively. The difference of prevalence of hypertension between the age groups is found to be statistically significant ($\chi^2 = 337.6$, $df = 4$, $p < 0.01$). Thus, it is apparent from the present study that the prevalence of hypertension increases significantly with increase in age of an individual. Age-related increase in blood pressure is a typical occurrence in most of the populations but not all populations. Accordingly, the prevalence of hypertension increases with increasing age, such that more than one of every two adults older than 60 years of age has hypertension (Whelton et al., 2002).

In Punjabi population, socio-economic status is a composite of caste, income and educational constituents. This has a bearing on demographic profile of the population also. When viewed from this angle, the results of this study present a significant conclusion. Socio-economic status as judged from income and education is one of the significant determinants of the incidence of hypertension. WHO (1996) also reported that the societies that are in transitional stage of economic and epidemiological change have higher prevalence of hypertension among upper socio-economic group. There are two types of observations in the available studies about the relationship between socio-economic conditions and incidence of hypertension; one of them suggests an inverse proportion between the two whereas the other views it in a direct proportion. As is clear from the present sample, the prevalence of hypertension is lowest among low-income group women whereas in high-income group, the prevalence of hypertension increases up to more than three times than that of low-income group. The difference between the three income groups is statistically significant ($\chi^2 = 63.9$, $df = 2$, $p < 0.01$). The results of the present study

Table 2: Prevalence of hypertension in various Indian populations (according to WHO-ISH 1999 criteria)

Area (City/State)	Age group (years)	Pre- valence (%)	Investigator
Bombay	20+	11.90	Pai and Halani (1980)
Visakhapatnam	15-75	9.80	Sambasivarao (1981)
Jaipur/Rajasthan	20-75	3.50	Gupta et al. (1995)
Thiruvananthapuram	20-64	30.70	Singh et al. (1998)
Mumbai	20-64	28.00	Singh et al. (1998)
Moradabad	20-64	22.60	Singh et al. (1998)
Nagpur	20-64	24.20	Singh et al. (1998)
Kolkata	20-64	19.10	Singh et al. (1998)
Mumbai	18-60	44.50	Gupta and Gupta (1999)
Trivandrum	20-89	41.20	Joseph et al. (2000)
Jaipur	20-75	37.50	Gupta et al. (2002)
Chandigarh	>35	45.80	Ahlawat et al. (2002)
Assam	30+	70.40	Hazarika et al. (2002)
Orissa	20+	32.50	Banerji et al. (2003)
Punjab	40-65	15.10	Sidhu et al. (2002)
Punjab	20-60+	20.15	Present study

corroborate the second type of opinion.

Literacy-wise distribution of hypertension suggests that the prevalence of hypertension is highest among literates than illiterates and the difference between the two groups is statistically significant ($\chi^2 = 7.9$, $df = 1$, $p < 0.01$). Therefore, it can easily be concluded that literacy is directly proportional to the group-specific hypertension. But Gupta et al. (1994) reported on the other hand that hypertension is more prevalent in uneducated and less-educated subjects of rural India than educated subjects. Some studies find that education level is inversely associated with hypertension while others suggest that there is a direct proportion between them. The present sample is in conformity with the latter studies.

The comparative profile (Table 1) of the incidence of hypertension among four caste groups indicates that the frequency of this silent killer i.e. hypertension is maximum in Bania females, followed by Arora females, Jat Sikh females and Sikh Harijan females, respectively. The difference between the four caste groups is statistically significant. ($\chi^2 = 34.3$, $df = 3$, $p < 0.01$). With large-scale socio-economic development, higher socio-economic groups have acquired all the modern gadgets, which not only made their life seemingly comfortable but also reduced the physical activity among them. Therefore, the possible reasons for higher rate of incidence among Bania females may include the resultant of their higher socio-economic status i.e. sedentary lifestyle, increased level of stress, changes in dietary practices and hereditary factors whereas the incidence rate of hypertension is slightly less among Arora females of Punjab. As compared to Banias, socio-economic status of Arora females is also slightly lower. Therefore, this accounts for relatively lower levels of rate of incidence of hypertension. On the other hand, Sikh Harijan females represents a population of lower socio-economic strata and the rate of incidence of hypertension among them is the lowest. They are primarily engaged in agricultural occupations which involve manual labour. This type of lifestyle generates fairly high levels of physical activity. As a result, the women of this group have less chances of exposure to overall factors which otherwise mark the lifestyles of urbanized and higher socio-economic groups. In contrast to this group, the females of Jat Sikh families in this sample show a slight increase in the rate of incidence of hypertension whereas these values

are at a lower level as compared to Bania and Arora women. Again, the reason is the same, as Jat Sikh women remain comparatively more actively involved in physical activity than those of Bania and Arora women. In the context of Sikh Harijans, the women, the earlier mentioned factor of higher socio-economic status, come into play here also. Jat Sikh women remain physically active and have better and higher dietary intake facilities than the Sikh Harijan women who are rigorously involved in physical activity and have poor and lower dietary intake.

It is clear from the above observations and results that the health of Punjabi population has been severely affected by socio-economic and demographic developments. The elevation in blood pressure is one of the significant indicators towards this deteriorating health status of this population. The individual groups involved in physical activities show a lower incidence of hypertension. Therefore, the adoption of healthy lifestyles by all individuals is critical for the prevention of high blood pressure and an indispensable part of the management of those with hypertension. We can have projections from the study that lifestyle modifications may lead to decrease in blood pressure of an individual or a group.

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