Hypertension and Related Morbidity among Geriatric Population of Eastern India

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SUMMARY

Objectives: To assess the prevalence of hypertension among geriatric population and to find out its association with socio demographic parameters, non communicable diseases and level of daily activities. **Methodology:** Community based cross sectional study was conducted among geriatric population of Tarakeswar town, India. 402 persons were selected from total 2258 elderly persons by systematic random sampling and data was collected using pretested questionnaire followed by physical examination. Data was analyzed using SPSS Version 16.0. **Results:** 53.5% respondents were hypertensive. Prevalence of hypertension was significantly more among higher age group (p=0.031). Hypertension was also associated with Diabetes mellitus (p<0.001), cardiovascular diseases (p<0.001), cerebrovascular accidents (p<0.001) and obesity (p<0.001). 38.46% hypertensives were not under medication. Practice of taking antihypertensive medicines was significantly lower in lower income group (30.8% versus 80.6%; p<0.001) and illiterates (34.0% versus 74.8%; p<0.001). Activities of daily living for self-maintenance and level of satisfaction over life were significantly lower among hypertensives. **Conclusion:** More than half of the elderly are suffering from hypertension. Most of the hypertensives are suffering also from other diseases, resulting in significant reduction of daily activities and compromised satisfaction over life. Hypertension, being a treatable ailment, leaves a space for intervention to reduce these geriatric morbidities.
Key words: Hypertension, Geriatric, Elderly, Activities of daily living

1. INTRODUCTION

Aging is a process of gradual and spontaneous change resulting in maturation through childhood, puberty and young adulthood and then decline through middle and late age Average life span of people around the world has been increasing dramatically (1). Recent increases in the proportion and number of elderly in many developing countries have drawn attention to issues concerning the morbidity profile of this potentially vulnerable age group. As per the 1991 census the elderly population in India was 57 million as compared with 20 million in 1951. It has been projected that by the year 2050, the number of elderly people would rise to about 324 million (2). India has already acquired the level of "An Aging Nation" with 7.7% of its population at or over the age of 60 years (Census 2001) and it currently ranks 2nd among the countries of the world for the size of elderly population, next to China since the year 2000.

More than half of the geriatric people are suffering from any sort of physical morbidity (3, 4, 5). Beside common ailments, certain unique health problems develop with increasing age like hypertension, diabetes mellitus, cardiovascular diseases, cerebrovascular accidents, obesity, dyslidaemia and various malignancies. Among these non communicable diseases hypertension, diabetes mellitus, obesity and dyslipidaemia form a quadrilateral which are closely inter dependent. Now India is considered to be the Diabetes

Capital of the World (6). It has already been documented that Indians are genetically more prone to cardiac diseases (7). Both of these are closely associated are hypertension (8). Almost half of the elderly population is hypertensive in India (3, 9, 10, 11). The adoption of western lifestyle is associated with the evolvement of various risk factors of non communicable diseases. This change in lifestyle as well as prevalence of hypertension is much more pronounced in urban society as compared to rural (12). Prevalence of hypertension among general population of India is 59.9 per 1000 in male and 69.9 per 1000 in females (13). But data regarding the national prevalence of hypertension among Indian geriatric population is not readily available. Several community based studies have been conducted in India; but they were mainly based on large cities (5, 9, 10, 11, 14). Some studies were conducted in rural areas also (15, 16). But there is paucity of data from smaller urban areas. With rapid development of communication and infrastructure the difference in lifestyle between larger cities and smaller towns are being blurred gradually. With this background a study on hypertension among the geriatric population was planned in a small town.

2.   OBJECTIVES

The prime objective of the study was to find out the prevalence of hypertension among the geriatric population in a smaller urban community. The association of hypertension with different socio-demographic parameters, level of daily activity and with other non-communicable diseases were also planned to be assessed.

3.   METHODOLOGY

3.1. Study site and population

This community based cross sectional study was conducted at municipal area of Tarakeswar town, Hooghly district, West Bengal, India. This town is situated outside the metropolitan area of Kolkata and is about 50 km away from the city of Kolkata. A large proportion of the residents of this area commute to Kolkata on daily basis for their livelihood. The town covers an area of 3.88 sq. km. and the population was 28178 according to 2001 Census. During the study period total population according to municipal authority was 33700 of which 2258 were at or above the age of 60 years. These geriatric people were the population frame of our study.

3.2. Sample size and study design

The study was conducted from June, 2009 to March 2010. Line listing of the geriatric population was available from the municipal authority of Tarakeswar. Total number of elderly persons residing in this area was 2258. Literature review shows that prevalence of hypertension in India among geriatric population is more than 50% in urban region. Taking the prevalence of hypertension as 50%, the sample size was calculated using $4pq/L^2$ method. The calculated sample size was 400. Considering non respondents and absentees to be 5%, we planned to include 420 geriatric people. From the line list, 420 people were selected by systematic random sampling. 12 persons were absent even after three repeated home visits and 6 persons did not wish to participate in the study. Rest 402 geriatric

people took part in the study and informed consent was taken from them.

3.3. Study parameters and study tools

Data was collected by interviewing study subjects using pre designed pre tested semi structured schedule. Histories of diabetes mellitus, cardiovascular diseases and cerebro-vascular accident as well as usage of medications were enquired. Blood pressure was measured using stethoscope and sphygmomanometer. Case definition of hypertension was taken as "Systolic blood pressure 140 mm of Hg or more and/or diastolic blood pressure 90 mm of Hg or more". Height and weight was taken to calculate the Body mass index (BMI). BMI of 25 or more was considered as obese using Indian standard (17). The Lawton Instrumental Activities of Daily Living Scale was used to assess the level of ability of the respondents to do normal day to day work (18). It has 8 questions; each question is directed to the ability of the person to do normal household work. Maximum and minimum possible scores are 8 and 0 respectively. Subjects were categorized into groups of either score greater than 4 or up to 4.

3.4. Statistical analysis

After collection of data it was double entered in Microsoft Excel sheet and validated. A clean Database was generated and copied into SPSS sheet (version 16·0). Then the whole data was analyzed in SPSS (version 16·0). Cross tabulations were done to get the association between hypertension and other non-communicable diseases and their risk factors. Analysis was also done to find the association of hypertension and activity of daily living score. Chi square tests were performed to find out the significance of association.

4.   RESULTS

Out of total 402 respondents 226 (56.2%) were female. Majority were between 60-69 years (307, 76.4%) and only 16 respondents (4.0%) were at or above the age of 80 years.

More than half (215, 53.5%) of the respondents were hypertensive. Prevalence of hypertension increased significantly with increasing age (Chi square=4.681, d.f.=1, p=0.031). Analysis excluding persons aged 80 years and above showed much more significant difference of prevalence of hypertension between sexagenarian and septuagenarian (Chi square=6.968, d.f.=1, p=0.008). The table also shows that there was no significant variation in prevalence of hypertension according to sex (Chi square=0.142, d.f.=1, p=0.706).

The difference of prevalence of hypertension among illiterate with that of literate was not significant (Chi square=1.390, d.f.=1, p=0.238). But the use of medication among hypertensives was significantly higher among literate persons as compared with their illiterate counterpart (Chi square=36.073, d.f.=1, p<0.001).

Median per capita monthly income of the group was Rs.1200/. There was no significant difference in hypertension prevalence between people living below and above per capita monthly income of Rs. 1200/. But here also the practice of taking anti-hypertensive medicine was significantly less among lower income group (Chi square=53.865, d.f.=1, p<0.001).

Study variables		Hypertension		
		Hypertensive	Normotensive	Total
		No. (%)	No. (%)	No. (%)
Age	60-69 years	155 (50.5)	152 (49.5)	307 (100)
	70 years & above	60 (63.2)	35 (36.8)	95 (100)
	chi square=4.681, d.f.=1, p=0.031			
Sex	Male	96 (54.5)	80 (45.5)	176 (100)
	Female	119 (52.7)	107 (47.3)	226 (100)
	chi square=0.142, d.f.=1, p=0.706			
Literacy	Illiterate	100 (50.5)	98 (49.5)	198 (100)
	Literate	115 (56.4)	89 (43.6)	204 (100)
	chi square=1.390, d.f.=1, p=0.238			
Per capita monthly income	Less than or equal to Rs.1200/_	107 (49.5)	109 (50.5)	216 (100)
	More than Rs. 1200/_	108 (58.1)	78 (41.9)	186 (100)
	chi square=2.921, d.f.=1, p=0.087			

Table 1. Relation of hypertension with socio-demographic parameters (n= 402)

26.1% of the study population were either taking anti-diabetic medication at the time of visit or had positive history of diabetes mellitus. Analysis indicates that 34.9% hypertensive respondents also had diabetes mellitus and among normotensive respondents the prevalence of diabetes mellitus was only 16%. Table3 shows that hypertension and diabetes mellitus are co-morbid conditions; (chi square=18.398, d.f.=1, p<0.001) Strong association of hypertension with cardiovascular diseases (chi square=19.972, d.f.=1, p<0.001) and with cerebrovascular accident (chi square=17.096, d.f.=1, p<0.001) were also re-documented in this study. Prevalence of hypertension was significantly more common among obese elderly (chi square=14.684, p<0.001).

The Lawton Instrumental Activities of Daily Living Scale is a scale to assess self maintaining capacity of an elderly person. 48.8% of hypertensive respondents scored less than or equal to 4 in contrast to 31.6% among normotensive respondents; this difference was statistically significant (chi square=12.374, d.f.=1, p<0.001). Subjective feeling of satisfaction over life was significantly (chi square=6.624, d.f.=1, p=0.01) higher among normotensives (65.2%) than their hypertensive counterpart (52.6%).

5. DISCUSSION

Ageing is a medical as well as social problem. It imparts a greater burden on the health care services. In rapidly greying world, healthy ageing is vital for every country. The explosion of non communicable diseases like hypertension, diabetes mellitus, cardiovascular diseases and cerebrovascular accidents among the increasing number of elderly persons, will cause enormous financial loss and social burden unless timely preventive action is taken.

This study indicates high prevalence of hypertension

(53.5%) among elderly population. This is much higher than 16.34% as described by Gurav RB, Kartikeyan S. (19) and even higher than 37.5% found by Khokkar A.et al.(10). However our finding was corroborative with 58% by Parray et al (3) and Swami et al (9) and 48% by Prakash et al (14).

There was no significant male female difference in prevalence of hypertension. This is corroborated with the finding by Prakash et al (14). It is known that prevalence of hypertension increases with age (20). Our study also found the same result. During analysis excluding persons 80 years and above resulted in more significance of association. .This finding probably indicates that after attaining a certain age the rising tendency of prevalence of hypertension reaches a plateau. However this finding cannot be generalized due to small number of persons over 80 years.

Indians are genetically more prone to suffer from cardiovascular diseases and hypertension is already an established risk factor of it. Thus high prevalence of hypertension doubles the dilemma over aging population. Proper treatment of hypertension and keeping the blood pressure

Study variables		Usage of antihypertensive medication		Total
		On medication	Not taking medication	
		No. (%)	No. (%)	No. (%)
Literacy	Illiterate	34 (34.0)	66 (66.0)	100 (100)
	Literate	86 (74.8)	29 (25.2)	115 (100)
	Chi square=36.073, d.f.=1, p<0.001			
Per capita monthly income	Less than or equal to Rs.1200/	33 (30.8)	74 (69.2)	107 (100)
	More than Rs.1200/	87 (80.6)	21 (19.4)	108 (100)
	Chi square=53.865, d.f.=1, p<0.001			

Table 2. Factors related with usage of antihypertensive medication (n=215)

under control reduces the risk of cardiovascular diseases. But, the present study revealed that as high as 38.46% of hypertensives were not taking any sort of medications for hypertension. Most of the people not taking any medication thought that it would not pose any serious problem to them. The practice of taking medication was significantly higher among literate persons. Low awareness among illiterates indicates the need for behavioural change communication activity. However another revelation was that about 70% of persons from lower income group were not taking medication in contrast to 20% from higher income group. Thus not only lack of awareness, financial weakness is also hampering the treatment of hypertension particularly of dependent elderly population.

In the present study the prevalence of diabetes mellitus was 26.1%. Result shows that diabetes was significantly associated with hypertension. Significant association of hypertension with cardiovascular diseases, cerebro-vascular

Diseases	Hypertension		Total
	Present	Absent	
	No. (%)	No. (%)	No. (%)
Diabetes — Diabetic	75 (71.4)	30 (28.6)	105 (100)
Non diabetic	140 (47.1)	157 (52.9)	297 (100)
chi square=18.398, d.f.=1, p<0.001			
Cardiovascular diseases — Present	74 (72.5)	28 (27.5)	102 (100)
Absent	141 (47.0)	159 (53.0)	300 (100)
chi square=19.972, d.f.=1, p<0.001			
Cerebrovascular accident — History present	29 (87.9)	4 (12.1)	33 (100)
History absent	186 (50.4)	183 (49.6)	369 (100)
chi square=17.096, d.f.=1, p<0.001			
Obesity — Obese	168 (49.4)	172 (50.6)	340 (100)
Non obese	47 (75.8)	15 (24.2)	62 (100)
chi square=14.684, d.f.=1, p<0.001			

Table 3. Association of hypertension with different medical conditions (n= 402)

Study variables	Hypertension		Total
	Present	Absent	
Activity of Daily Living Score — Less than or equal to 4	105 (48.8)	59 (31.6)	164 (40.8)
More than 4	110 (51.2)	128 (61.4)	238 (59.2)
chi square=12.374, d.f.=1, p<0.001			
Feeling of satisfaction — Satisfied	113 (52.6)	122 (65.2)	235 (58.5)
Dissatisfied	102 (47.4)	65 (34.8)	167 (41.5)
Chi square=6.624, d.f.=1, p0.010			

Table 4. Association of hypertension with level of activity & satisfaction (n= 402)

accident and obesity was also documented. Actually hypertension, cardiovascular diseases, cerebrovascular accident, diabetes mellitus and obesity are under the same umbrella of modern non communicable diseases.

Association of hypertension with the social health is the new domain of the present study. Social health always remained a neglected part. Even the National Programme for the Health Care of the Elderly (NPHCE) has not given sufficient importance to this domain. But with the adoption of modern life style and rapid break down of traditional joint family culture of India the social health of elderly people is of immense importance in today's life. With change in lifestyle and evolvement of nuclear families, elderly people often have to live with their spouse only; the scenario becomes more critical if one of the partners passes away. The inability to do normal day to day work for self maintenance often indicates the inability of the person to live rest of his/her life with at least minimum comfort. The present study showed that the score of Lawton Instrumental Activities of Daily Living Scale was significantly lower among geri-

atric persons having hypertension as compared to their normotensive counterpart. Respondents were asked whether they were satisfied with their life or not. It revealed the level of dissatisfaction was significantly more among hypertensives. This subjective feeling indirectly reflects the quality of life of the respondents. Thus hypertension imparts a bigger impact on the quality of life. Increased morbidity associated with hypertension affects not only physical health but also the social health of the elderly persons.

Limitation

The population frame was not very large and it was based on a single town. While collecting data regarding diabetes mellitus, cardiovascular diseases and cerebrovascular accidents, only history and medical records were taken into consideration.

6. CONCLUSION

Old age is not a disease in itself, but it makes the aged person vulnerable to various long term medical problems of insidious onset. Hypertension is one such disease. Other are cardiovascular illness, cerebrovascular accidents, diabetes mellitus and obesity with all of which hypertension is strongly associated. With the advancement of modern medicine life expectancy has increased (21); but it has increased the number of elderly in the community. This has ultimately increased the burden of non communicable diseases in the society as a whole. These diseases pose immense economic burden on the nation. Hypertension is in the key position among all the non-communicable diseases. Early diagnosis and regular treatment of hypertension can cut down the prevalence of these diseases. But practice of taking medication for hypertension is not up to the mark as revealed in the present study. Here lies the room for behaviour change communication and create awareness among general people about the importance of proper treatment of hypertension. Ensuring cheap supply of antihypertensive medication will also help persons from lower economic status.

Conflict of interest: none declared.

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