Factors influencing hypertension among geriatric population in the field practice area of kurnool medical college

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Abstract:

Background: In India, majority of the population, including the elderly, is poor. However, one positive feature concerning the elderly population is that most of those 60 or more years old are economically active, presumably because they are engaged in sectors for which there is no specific age of retirement. Objective: Factors Influencing Hypertension among Geriatric Population in the Field Practice Area of Kurnool Medical College. Materials and Methods: A community based cross sectional study was conducted from May 2008 to April 2009. A total of 490 subjects aged 60 years and above were selected by randomly from both rural and urban areas for this study. The data was analyzed by means and proportions. The data was analyzed by means, proportions. Results: The proportion of subjects falling in the age group of 60 – 69 years was 56.33% in urban areas and 55.10% in rural area. While 10.09% males and 19.05% of females of the subjects from rural area falling in 80 – 89 year age group compared to 6.84% males and 7.81% females in urban area.

Key-words: BMI, Geriatrics, Hypertension, SES

Introduction:

Ageing is a natural process. In the words of Seneca "old age is an incurable disease", but more recently Sir James Sterling Ross commented, "**you do not heal old age you protect it: you promote it; you extend it**" [1]. The geriatric population is defined as population age 60 years and above [2]. In order to make world familiar with the old age problems world health organization celebrated WORLD HEALTH DAY (WHO) with "Active aging makes the difference" as slogan and declared the year 1999 as international year for older persons [3].

Of all the degenerative problems, Hypertension is one of the most important causes of cardiovascular morbidity and mortality in the elderly. With the increase in the number of elderly in India hypertension is likely to emerge as an important public health problem [4].

Hypertension is now widely prevalent in several developing countries particularly those in rapid transition and is affecting both the elderly and middle aged alike. WHO health report 1998 stated that considering the prevalence of any disease hypertension ranked fourth in the world and that total number of hypertensive cases world wide has been estimated to be more than 69 millions [5].

Hypertension is the second (after Rheumatic heart disease) most common cardiovascular problem encountered in clinical practice in India [6]. The increase in the mortality rate of ageing population is directly proportional to the affection of the blood vessels, which carry blood to the vital organs. Hypertension is an important public health problem as it is common, asymptomatic, readily detectable, easily treatable and often leading to lethal complications if left untreated. Hypertensives when compared to normotensives develop twice as much as peripheral arterial occlusive disease, three times as much as coronary heart disease, four times as much as congestive heart failure and seven times as much as stroke [7].

Epidemiological studies demonstrated consistent, strong, continuous graded, independent, predictive and etiologically significant relationship between higher level of both systolic and diastolic blood pressure and mortality. A 20 mm Hg increase in diastolic blood pressure (DBP) was associated with a 60% increase risk of death over a 2 year period [8].

Objective:

To determine factors influencing hypertension among geriatric population in the field practice area of Kurnool Medical College.

Material and Methods:

The present study was carried out at the field practice area of Kurnool Government Medical College. One ward of urban area and one village of rural area were randomly selected based on random number table. Sriram nagar area of Urban Health Centre Kurnool which is urban field practice area of department of Community Medicine, Kurnool Medical College, Kurnool and Peddapadu village, which is rural subcentre of Primary Health Centre, Kallur was selected. The present study was conducted for a period of one year from May 2008 to April 2009. Ethical approval was taken from Institutional Ethical Committee. **Study Design:** This study was done as a Cross-sectional Descriptive study. **Computation of Sample Size:** The sample size for the present study was calculated using the following formula at 95% confidence interval, with an allowable error of 10%. Various earlier studies revealed that the prevalence of hypertension among the old age people was in between 45% to 55% in urban and rural areas. Hence a prevalence of 45% was assumed for the purpose of computing the size of the sample required for the present study. Thus, the sample size of 490 elderly subjects aged 60 years and above was found to be sufficient for this study. Among 490 subjects, 245 samples were selected randomly from urban area and 245 samples were selected randomly from rural area by using random number table. Enlisting of the study subjects was done by random sampling by using Loksabha electoral list of 2005.

Results:

In table 1, many study subjects were falling in the age group of 60 – 69 years, 56.33% in urban areas and 55.10% in rural area. 10.09% male and 19.05% of female study subjects in rural area falling in 80 – 89 age group compared to 6.84% males and 7.81% females in urban area falls in same age group.

Prevalence of hypertension in urban study subjects (57.55) was more than in rural study subjects (41.63). 16.74% of urban study population and 17.14% of rural study population fall into pre hypertensive group according to latest JNC VII criteria. The difference of prevalence of hypertension between urban and rural areas was "significant" statistically.

Table 1: Distribution of geriatric subjects by age & sex

URBAN AREA

Age groups	Male		Female		Total	
	No.	%	No.	%	No.	%
60 – 69	58	49.57	80	62.50	138	56.33
70 – 79	47	40.17	35	27.35	82	33.47
80 – 89	8	6.84	10	7.81	18	7.35
90 & Above	4	3.42	3	2.34	7	2.85
Total	117	100.00	128	100.00	245	100.00

RURAL AREA

Age groups	Male		Female		Total	
	No.	%	No.	%	No.	%
60 – 69	69	57.98	66	52.38	135	55.10
70 – 79	36	30.25	32	25.40	68	27.76
80 – 89	12	10.09	24	19.05	36	14.69
90 & Above	2	1.68	4	3.17	6	2.45
Total	119	100.00	126	100.00	245	100.00

Table 2: Prevalence of Hypertension in the geriatric population

Status	URBAN AREA		RURAL AREA	
	No.	%	NO.	%
Normotensive	63	25.71	101	41.23
Pre hypertensive	41	16.74	42	17.14
Hypertensive	141	57.55	102	41.63
Total	245	100.00	245	100.00

$x^2 = 15.0762$ df = 2 $p < 0.0004$

Table 3: Risk factors of hypertension and statistical inference

Characteristic	URBAN		Statistical inference	RURAL		Statistical inference
	HTN group	Non HTN g		HTN group	Non HTN g	
Age						
60-69	67	71	X^2=10.5852	41	94	X^2=15.7082
70-79	56	26	P<0.004	38	30	P<0.002
>80	18	7	Significant	23	19	Significant
Sex						
Male	68	49	X^2=0.0296	48	71	X^2=0.1601
Female	73	55	P>0.05(N.S)	54	72	P>0.05(N.S)
Education Illiterates	69	59	X^2=2.1224	69	90	X^2=0.5798
literates	72	42	P>0.05(N.S)	33	53	P>0.05(N.S)
SES Upp classes Low classes	97	33	X^2=33.0120	62	47	X^2=18.7880
	44	71	P<0.001 Significant	40	96	P<0.001 Significant
Physical activity						
Sedentary	81	33	X^2=20.2333	62	30	X^2=45.4120
Moderate	58	53	P<0.001	35	75	P<0.004
rigorous	6	18	Significant	5	38	Significant

Note; HTN group (hypertensives), Non HTN group (prehypertensives+normotensives), SES=Socioeconomic status, Upper classes (I, II&III classes in urban area, Upper, higher middle &middle classes in rural area), Lower classes (IV&V classes in urban area, Lower middle, lower & BPL classes in rural area)

Statistically significant association was found between the risk factors (age ,socio economic status, physical activity, smoking, high salt intake, high fat intake, Body mass index, Waist hip ratio, psychosocial factors & positive family history) and hypertension in both urban and rural areas. However no association was found between other risk factors (sex, literacy & alcohol intake) and hypertension in both urban and rural areas.

Discussion:

The prevalence of hypertension in the present study was very high in the urban study subjects (57.55%) than in the rural study population (41.63%). Singh et al [6] revealed that the prevalence of hypertension 60.5% in urban geriatric population and 41% in rural geriatric population. This study resembles the present study with some variations.

Agarwal et al [9] observed similar finding of high prevalence of hypertension in urban geriatric population (54.3%) than in rural elderly subjects (32.6%). In the study done by Swami et al [10] revealed 58% of prevalence of hypertension in urban and rural areas of Chandigarh and among which 61.3% prevalence in urban geriatric subjects and 36.7% prevalence in rural elderly subjects. Gupta [11] observed lower prevalence of hypertension in the rural Indian population than in urban population. These studies support the present study.

Table 4: Risk factors of hypertension and statistical inference

Characteristic	URBAN		Statistical inference	RURAL		Statistical inference
	HTN group	Non HTN g		HTN group	Non HTN g	
Tobacco use						
Present user	47	21	X^2=11.9392	53	41	X^2=16.5946
Ex user	29	12	P<0.003	15	18	P<0.001
Non user	65	71	Significant	34	84	Significant
Alcohol use						
Present user	22	24	X^2=3.1116	20	30	X^2=0.7227
Ex user	27	23	P>0.05(N.S)	19	32	P>0.05(N.S)
Non user	92	57		63	81	
High Salt intake						
Yes	106	37	X^2=38.6261	72	43	X^2=39.2431
no	35	67	P<0.001 Significant	30	100	P<0.001 Significant
High fat intake						
Yes	90	47	X^2=8.4343	47	45	X^2=5.4190
No	51	57	P<0.002 Significant	55	98	P<0.02 Significant
BMI			X^2=3.9268			X^2=4.3847
>25	58	30	P<0.04	40	38	P<0.03
<25	83	74	Significant	62	105	Significant
W.H.R. Male			X^2=5.5585			X^2=8.7914
>9.0	40	18	P<0.02	28	22	P<0.003
<9.0	28	31	Significant	20	49	Significant
W.H.R. Females						
>9.0			X^2=4.9301			X^2=8.4000
<9.0	41	20	P<0.03	32	24	P<0.004
	32	35	Significant	22	48	Significant
Psy.so.factors			X^2=57.6143			X^2=77.9327
Yes	108	29	P<0.001	81	32	P<0.001
No	33	75	Significant	21	111	Significant
FamilyH/o			X^2=10.6933			X^2=15.6458
Yes	67	28	P<0.001	49	34	P<0.001
No	74	76	Significant	53	109	Significant

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Agarwal et al [9] observed similar finding of increased prevalence of hypertension with the increase of age. In the study done by Singh et al [6], he found that hypertension prevalence 49.6% in 65 – 69 years age group and increased to 58.1% prevalence in the study subjects above 80 years. Deshmukh et al [12] in rural area of wardha reported similar finding of increased risk of hypertension with increase in age. Khalid et al [8], and Kalavathy et al [4] revealed the similar finding of

increased prevalence of hypertension with advancing age. These studies support the present study.

Singh et al [13] observed slightly higher prevalence of hypertension in female (51.8%) than in males (50.7%) in the geriatric age group. The findings were very similar to the present study with slight variation. Agarwal et al [9] revealed the higher prevalence of hypertension in female elderly subjects (60.7% in urban area and 37.7% in rural area) compare to the male elderly subjects (49.8% in urban area and 27.9% in rural area). Wilmanska et al [14] and Gupta et al [15] also observed the similar finding of high prevalence of hypertension in females (48.4%) than in males (47.5%). The similar finding was also revealed in studies done by Deshmukh [12] and Khalid [8].

Khalid et al [8] found that higher prevalence of hypertension was among illiterate persons (33%). Kalavathy [4] did not find any association between educational status and hypertension. Kalavathy et al [4] observed higher prevalence of hypertension in the widows. Deshmukh et al [12] observed that hypertension is more prevalent in sedentary occupations. There is a significant association between body mass index ≥ 25 and hypertension. Khalid et al [8] also found similar finding.

Agarwal et al [9] also observed the similar finding of "sedentary physical inactivity" was a risk factor for hypertension. They also reported that significant association between daily salt intake ≥ 5 gm in the diet and hypertension. They revealed that the daily saturated fat intake $\geq 10\%$ is very important risk factor of developing hypertension. There is a significant association between hypertension and positive family history of hypertension. These studies support the present study.

Agarwal et al [9], Singh et al [13] have reported the positive association between tobacco use and hypertension. These studies support the present study.

Deshmukh et al [12] also found association between body mass index ≥ 25 and hypertension. Swami et al [10], Khalid et al [8] observed that high prevalence of hypertension was found among obese and over weight persons. These studies support the present study.

Agrawal et al [9] and Deshmukh et al [12] observed significant association between high waist hip ratio and hypertension. Positive family history of hypertension was recorded in 47.52% of urban study subjects and 48.04% of rural study subjects. The difference between prevalence of hypertension and positive family history was found to be "significant" statistically in the study areas.

Conclusion:

Higher prevalence of Hypertension in urban study subjects (57.55%) compared to rural study subjects (41.63%). Due to lack of health facilities in rural areas majority of study subjects unaware that they were suffering from hypertension. 42.16% of rural study subjects and 18.44% of urban study subjects were newly diagnosed as hypertension.

Recommendation:

Strengthening of primary health care services and establishment of geriatric care units for elderly urgently needed.

Acknowledgement:

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