www.jmscr.igmpublication.org

Impact Factor 3.79
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: http://dx.doi.org/10.18535/jmscr/v3i11.01

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Morbidity Profile of Geriatric Population in a Rural Field Practice Area of a Tertiary Care Institute in Kashmir Valley

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ABSTRACT
Global ageing is one of the biggest challenges the world is facing currently. The ageing population is both a medical and a social problem. It makes a great demand on health services of a country. Hence studying geriatric population and its morbidity profile is essential for planning its health care services. Due to paucity of data on geriatric health from this part, this study was undertaken to assess the morbidity profile among elderly population. It was a Community based, cross sectional study conducted in Hajin Block, a rural field practice area of a tertiary care hospital for a period of one year. 500 geriatric subjects (≥ 60 years) were selected by random sampling technique. Study population comprised of 46.6% males and 53.4% females, 70.2% belonged to young-old age group, followed by 26.2% in old-old group and only 3.6%(18) belonged to very old group. 66.2% subjects were still married and 33.6% were widowed (maximum females).All the females in study population were illiterate. Prevalence of morbidity was as high as (92.8%). Females had higher morbidities. Diseases in order of magnitude were ocular (67%), Hypertension (55.2%), hearing impairment (21.6%), APD (18.2%), Arthritis (13.4%), COPD and bronchial asthma (11%). The data will enhance understanding the patterns of health problems among elderly population and will contribute to the application of appropriate intervention strategies.
Key words: *Geriatric, Demographers, Hajin , Morbidity, cross sectional.*

INTRODUCTION

The elderly person is defined as a person who has completed 60 years or more [1]. Government of India adopted 'National Policy on Older Persons' in January, 1999. The policy also defines 'senior citizen' or 'elderly' as a person who is of age 60 years or above [2]. Demographers categorize the elderly in three groups: Young old (60-69 yrs age), Old-old (70-79 yrs age) and Oldest old (80 yrs and above)[3]. In India, the 2001 census has shown that the elderly population accounted for 77million while as in 1991 it was around 57 million. The proportion of elderly has risen from 6.58 percent in 1991 to 7.5 percent in 2001. The growth rate among different groups of the elderly namely 60 plus, 70 plus and 80 plus during the

decade 1991-2001 was much higher than the general population growth rate of 2 percent per annum [4]. With fast increasing trend, the India's elderly population aged 60 and above is expected to increase from 77 million in 2001 to 179 million in 2031 and further to 301 million in 2051.The proportion is likely to reach 12 percent in 2031 and 17 percent in 2051. The number of the elderly persons above 70 years of age (old-old) is likely to increase more sharply than of the elderly above 60 years and above. The old-old are projected to increase five- fold from 2001 to 2051 (i.e. from 29 million in 2001 to 132 million in 2051).Their population is expected to rise from 2.9 to 7.6 percent. The oldest-old (80+) among the elderly in India is expected to grow faster than any other age group in the population. In absolute terms, it is likely to increase four- fold from 8 million in 2001 to 32 million in 2051. In short India is dooming towards a graying future [5]. In Jammu and Kashmir, the elderly population has increased from 432 thousand in 1991 to 675 thousand in 2001. The proportion of the elderly has increased from 5.78 percent in 1991 to 6.71 percent in 2001[4]. The findings of an ICMR survey conducted in 1984-87 of elderly persons over 60 years of age showed following morbidities, visual impairment , locomotive disorder, Neurological complaints, CVS, Respiratory, Skin condition, GIT disorder, Psychiatric problem, Hearing loss, Genitourinary disorder [6].

MATERIALS AND METHODS

This study was carried out on randomly selected geriatric population (more than or equal to 60 years of age) in block Hajin, which is a Rural Field Practice area of Dept. of Community Medicine of SKIMS, a super-specialty medical institute. The block caters to a population of 2,26,000 and is about 27 kms from Srinagar.

Taking the average of the prevalence of various morbidities (50%) in geriatric people, sample size was calculated at 5% risk with 10% allowable error. The sample size calculated was 400.A sample of 500 was taken in this study by applying the following formula[7] $n= Z^2 P (1-P)/d^2$,Where: n= sample size, Z= z statistic for a level of confidence (for 95% CI, Z value is 1.96),P= expected prevalence or proportion (in proportion of one; if 20%, P=0.2), and d= precision (in proportion of one; if 5%, d=0.05).

The study sample was selected by using the multi-stage random sampling technique. All the sub centers in the block were enlisted. Using Random Tables 50% of sub-centers were selected. Villages falling under the above selected sub-centers were enlisted. Of these 25% of the villages were selected randomly. List of households of these selected villages was procured which constituted our final sampling unit. A house to house survey was conducted till the required sample size was obtained as per probability proportionate to size sampling (PPS). If more than one elderly was found in the same household, each one of them was taken as study subject.

The purpose of the study was explained to the subjects and they were ensured of confidentiality. Each individual was interviewed and the information on socio-demographic characteristics was recorded on a pre-tested Proforma. The assessment of age using local events calendar was made. Classification of socioeconomic status as per the modified Prasad classification was followed [8]. Clinical history of all subjects was taken followed by clinical examination. Health records of the subjects if any, drugs taken by the subject if any were checked to arrive at a diagnosis which was recorded on a Proforma. If the patient was suspected of any morbidity on history and clinical examination which was undiagnosed he or she was facilitated to the nearest CHC. Such subjects were followed and their morbidities recorded as per ICD-10 (International Classification of Diseases-10). All the data obtained was summarized as percentages. Chi square test was used to see the significant difference in categorical variables.

RESULTS

The study population comprised of 233 (46.6 %) males and 267(53.4) % females. The mean age was 69.9±6.7 years. 70.2% (351) were young-old, 26.2 % (131) were old-old and only 3.6 % (18) belonged to very-old age group. The marital status of the elderly revealed that 331(66.21%) were currently married, 168(33.6 %) were either divorced or widowed and 1(0.2%) never married. Among the elderly males 76.4 % were married and 23.2 % males were divorced and widower whereas among females 57.9% were married and 42.7% were single divorced and widowed and the differences in marital status across sexes was statistically significant (P=0.000).[Table 1].

Out of the total 500 elderly population studied, there were 464(92.8 %) subjects who reported illness by themselves. More number of females 94.4% reported illness as compared to males 91% but the difference was not statistically significant. Out of 464(92.8%) elderly who self reported the illness 385(83%) sought treatment for illness and the rest 79(17%) did not seek treatment. However these differences across the sexes were again non-significant. Only 23 elderly (4.6 %) had no morbidities, whereas majority of the elderly 238(47.6 %) were diagnosed as having 1 to 2 morbidities followed by 191(38.2%) who had 3 to 4 morbidities and 48(9.6%) had ≥ 5 morbidities. Proportionally more males 6.4% were without morbidity as compared to 3.0% females. Sex wise 1 to 2 morbidities were seen more in males(51.5 %) compared to females(44. 2%) and 3 to 4 morbidities was again more among males(42.7%) compared to females (33%). The difference across sexes was again statistically significant (p =0.015). [Table 2].

Over all 1285 total morbidities were found in 500 elderly subjects.1106 (86.1%) were reported and 179(13.9) were detected morbidities.801(62.4%) total morbidities were found in young-old age-group, 429 (33.4%) total morbidities were found in old-old age-group and just 55 (4.2%) morbidities were found in very-old age-group. Over all the mean number of morbidities per person were 2.6 ± 1.4. The mean number of morbidities per subject in young-old were 2.3 ±1.4; in old-old 3.3 ± 1.1 and in very-old there were 3.1±1.1 morbidities. The proportion of reported morbidities increased with age from 84.5% in young old to 92.7% in very old age-group; however the detected morbidities proportion decreased from 15.5 % in young-old to 7.3% in very old age group. This means that maximum of the morbidities were prevalent and detected in young-old or old-old age-group and lesser number were detected in very-old age-group [Table.3].

Majority of subjects 335 (67%) had morbidities related to ocular system followed by cardiovascular 294 (58.8%), gastrointestinal tract 115 (23%), auditory 108 (21.6%), musculoskeletal system 105 (21%) , respiratory system 73 (14.6 %) , central nervous system 55 (11 %), Genitourinary system 51 (10.2 %), endocrine system 36 (7.2 %), other diseases13 (2.6%) and lastly malignancies 9(1.8%). Among females significantly high morbidities system wise were of cardiovascular system 61.4 %(p= 0.026) followed by gastrointestinal tract 30% (p =0 .000), musculoskeletal system 27.7% (p =0 .000) in that order and system wise significantly high morbidity among males were related to respiratory system % (p = 0.000) and genitourinary 15.0 % (p=0.001) in that order. While Prostatomegaly (p= 0.000), Tuberculosis (p= 0.002), Stroke (p=0.004), chronic bronchitis (p=0.005), Bronchial Asthma (p=0.017), other diseases (p=0.005) and in that order were more frequently observed among males; Acid peptic disease (p=0.000), Arthritis (p=0.001), migraine /headache(p=0.005), other kidney diseases (p=0.008) , Anxiety (p= 0.021), Hypothyroid (p= 0.021) , other bone diseases (p=0.022) and hypertension (p= 0.036) in that order were more frequently observed among females. [Table. 4].

Table 1: Socio-demographic Characteristics of the Studied Subjects

		Male		**Female**		**Overall**		
		n	%	n	%	N	%	P value
Age	Young-old	159	68.2	192	71.9	351	70.2	
	Old-old	64	27.5	67	25.1	131	26.2	
	Very-old	10	4.3	8	3.0	18	3.6	
	Total	233	46.6	267	53.4	500	100	
	mean ± SD	70.5 ± 6.8		69.4 ± 6.7		69.9 ± 6.7		0.342 (NS)
Marital Status	Married	178	76.4	153	57.3	331	66.2	
	Unmarried	1	0.4	0	0.0	1	0.2	**0.000**
	Divorced and Widowed	54	23.2	114	42.7	168	33.6	**(Sig)**
Occupation	Cultivator	129	55.4	11	4.1	140	28.0	
	Business	3	1.3	1	0.4	4	0.8	
	Unskilled-Worker	22	9.4	13	4.9	35	7.0	**0.000**
	Retired	14	6.0	0	0.0	14	2.8	**(Sig)**
	Household	2	0.9	223	83.5	225	45.0	
	Unable to work	63	27.0	19	7.1	82	16.4	
Literacy Status	Illiterate	212	91.0	267	100.0	479	95.8	**0.000**
	Literate	21	9.0	0	0.0	21	4.2	**(Sig)**
Monthly Per Capita Income (Rs)	< 547	4	1.7	16	6.0	20	4	
	1096 to 548	12	5.2	20	7.5	32	6.4	**0.000**
	1826 to 1096	20	8.6	34	12.7	54	10.8	**(Sig)**
	3652 to 1826	69	29.6	103	38.6	172	34.4	
	3653 and above	128	54.9	94	35.2	222	44.4	
Financial Status	Independent	177	76.0	31	11.6	208	41.6	**0.000**
	Dependent	56	24.0	236	88.4	292	58.4	**(Sig)**
Type of family	Nuclear	64	27.5	53	19.9	117	23.4	
	Joint	120	51.5	158	59.2	278	55.6	0.199
	Three generations	49	21.0	56	21.0	105	21	(NS)

Table 2 : Distribution of Self Reported Illness, Morbidities diagnosed by Physician and Treatment sought by the Studied Subjects

		Male		Female		Overall		p value
		n	%	n	%	n	%	
Self reported Illness	No	21	9.0	15	5.6	36	7.2	0.143 (NS)
	Yes	212	91.0	252	94.4	464	92.8	
	Total	233	46.6	267	53.4	500	100.0	
Number of Reported Co-morbidities	Nil	21	9.0	15	5.6	36	7.2	0.379 (NS)
	1 to 2	127	54.5	145	54.3	272	54.4	
	3 to 4	70	30.0	98	36.7	168	33.6	
	≥ 5	15	6.4	9	3.4	24	4.8	
Number of Detected Co-morbidities	0	159	68.2	169	63.3	328	65.6	0.247 (NS)
	1	71	30.5	94	35.2	165	33.0	
	2	3	1.3	4	1.5	7	1.4	
Total number of Co-morbidities	Nil	15	6.4	8	3.0	23	4.6	**0.015 (Sig)**
	1 to 2	120	51.5	118	44.2	238	47.6	
	3 to 4	77	33.0	114	42.7	191	38.2	
	≥ 5	21	9.0	27	10.1	48	9.6	
Seeking Treatment for Illness	No	37	17.4	42	16.7	79	17.0	0.822 (NS
	Yes	175	82.6	210	83.3	385	83.0	

Table 3: Total co-morbidities by age of Geriatric population

Geriatric Status		Number of Reported Co-morbidities	Number of Detected Co-morbidities	Sum total of Co-morbidities
Young-old	Sum	677 (84.5)	124(15.5)	801(62.4)
	Mean ± SD	1.9 ± 1.3	0.4 ± 0.5	2.3 ± 1.4
Old-old	Sum	378(88.1)	51(11.9)	429(33.4)
	Mean ± SD	2.9 ± 1.1	0.4 ± 0.5	3.3 ± 1.1
Very-old	Sum	51(92.7)	4(7.3)	55(4.2)
	Mean ± SD	2.8 ± 0.9	0.2 ± 0.4	3.1 ± 1.1
Overall	Sum	1106(86.1)	179(13.9)	1285(100.0)
	Mean ± SD	2.2 ± 1.3	0.4 ± 0.5	2.6 ± 1.4

Table 4: Morbidity Profile across Gender of the Studied Subjects as reported and diagnosed

		ICD-10 Code	Male		Female		Overall		p value
			n	%	n	%	n	%	
CVS	Hypertension	I 10-I15	117	50.2	159	59.6	276	55.2	**0.036 (Sig)**
	IHD Heart attack/Angina	I 20-I 25	10	4.3	5	1.9	15	3.0	0.114 (NS)
	Others(CVS related)		5	2.1	4	1.5	9	1.8	0.587 (NS)
	Total		130	55.7	164	61.4	294	58.8	**0.026(Sig)**
Respiratory	COPD/Bronchial Asthma	J 44-J 46	34	14.6	21	7.9	55	11.0	**0.017(Sig)**
	Chronic bronchitis	J 40	11	4.7	2	0.7	13	2.6	**0.005(Sig)**
	Tuberculosis	A15	8	3.4	0	0.0	8	1.6	**0.002(Sig)**
	Total		50	21.5	23	8.6	73	14.6	**0.000(Sig)**
GIT	APD	K25-K27	26	11.2	65	24.3	91	18.2	**0.000(Sig)**
	Gallstones	K80-K81	7	3.0	12	4.5	19	3.8	0.385 (NS)
	Others (GIT related)		2	0.9	5	1.9	7	1.4	0.336 (NS)
	Total		35	15.0	80	30.0	115	23	**0.000(Sig)**
Genito-urinary	Renal stones	N20	11	4.7	6	2.2	17	3.4	0.128 (NS)
	Chronic Kidney Diseases	N03	1	0.4	2	0.7	3	0.6	0.644 (NS)
	Prostatomegaly	N40	25	10.7	0	0.0	25	5.0	**0.000(Sig)**
	Others (Genitourinary related)		0	0.0	8	3.0	8	1.6	**0.008(Sig)**
	Total		35	15.0	16	6.0	51	10.2	**0.001(Sig)**
Musculo-skeletal	Arthritis	M17/M6	18	7.7	49	18.4	67	13.4	**0.001(Sig)**
	Spondylitis	M47	8	3.4	11	4.1	19	3.8	0.689 (NS)
	Osteoporosis	M80-81	3	1.3	6	2.2	9	1.8	0.421 (NS)
	Others (Musculoskeletal related)		2	0.9	11	4.1	13	2.6	**0.022(Sig)**
	Total		31	13.3	74	27.7	105	21	**0.000(Sig)**
CNS	Migraine/Headaches	G43	0	0.0	9	3.4	9	1.8	**0.005(Sig)**
	Stroke	I60-I64	7	3.0	0	0.0	7	1.4	**0.004(Sig)**
	Anxiety	F41	0	0.0	6	2.2	6	1.2	**0.021(Sig)**
	Depression	F32	7	3.0	17	6.4	24	4.8	0.080 (NS)
	Others (central nervous system related)		5	2.1	4	1.5	9	1.8	0.587 (NS)
	Total		19	8.2	36	13.5	55	11	0.058 (NS)
Endocrine	Diabetes	E10-E11	14	6.0	10	3.7	24	4.8	0.255 (NS)
	Hypothyroid	E02	0	0.0	6	2.2	6	1.2	**0.021(Sig)**
	Total		17	7.3	19	7.1	36	7.2	0.938 (NS)
Malignancies		C00-D48	3	1.3	6	2.2	9	1.8	0.421 (NS)
Ocular		H00-59	147	63.1	188	70.4	335	67.0	0.083 (NS)
Auditory		H60-95	46	19.7	62	23.2	108	21.6	0.346 (NS)
Other Diseases			11	4.7	2	0.7	13	2.6	**0.005(Sig)**

DISCUSSION

Geriatric issues are more or less the same all over the world. What differs is the way these issues are tackled in different countries. There are social, economic and health related issues concerning the elderly. The proportion of the elderly population is fast growing in both developed as well as developing nations. Developed nations provide fairly effective geriatric care to their senior citizens. However, developing nations haven't yet addressed this issue in totality. Different countries have adopted different care models to suite their social, cultural and financial background. This community based study conducted in the Block Hajin of Kashmir valley showed that almost 2/3rd of studied geriatric population was young old and another 1/4th as old-old. This is expected, because our average life expectancy is still very low 60-61yrs [4]. and percentage of very old population (>80 Yrs) was therefore low.

The present study recorded a high prevalence of morbidity (92.8%) among geriatric population. Out of 267 elderly females 252(94.4%) were ill while as out of 233 elderly males 212(91.0%) were ill. 83% elderly had sought treatment for their illness without much differences among gender. Study conducted by Joshi k et al 2003[9] showed somewhat similar results with an overall prevalence of morbidity as 88.9%. Again ICMR 1984[6] report and study by Maharana PR et al (2008) [10] have shown 80% and 90% prevalence of morbidities respectively in elderly people. Yoko Tsuji-Hayashi et al 2005[11] showed prevalence of morbidity among elderly Americans as 76% while as it was 39% in Japanese elderly The differences in the prevalence are attributable to socio-demographic characteristics, cultural practices and differences between different study populations.

In the present study majority of the elderly (47.6 %) were diagnosed as having 1 to 2 morbidities, 191(38. 2%) had 3 to 4 morbidities, 48(9.6%) had ≥ 5 morbidities while as only 23 elderly (4.6 %) had no morbidities. The difference across sexes is again statistically significant (p =0.015). The average comorbidities of 2.6± 1.4 per person in the present study was similar to 2.92 morbidties per person in the study conducted by Maharana PR et al (2008)[10] which also showed 16% of subjects with single ailment, 32% with two diseases, 29% with three diseases and 14% with more than three diseases in their study. One third of the Korean subjects (31.2%) were diagnosed with single morbidity, 23.1% had more than three morbidities and 22.0% had no morbidity. The mean number of morbidities per person in this sample of elderly Korean was 1.62±1.32 as per Eun -kyung Woo et al 2007[12].

In the present study maximum subjects had morbidities related to Ocular system (67 %), followed by Cardiovascular system 58.8% , GIT system 23 %, auditory 21.6 %, Musculo-skeletal system 21%, Respiratory system 14.6 %, Central nervous system 11 %, Genitourinary system 10.2 %, Endocrine system 7.2 %, other systems 2.6% and lastly malignancies 1.8 %. This shows that involvement of almost all systems is there and could be because of both related to physiological ageing process in various systems and adoption of specific life style over a period of time. ICMR 1984[6] conducted a study in rural community showed that visual impairment (65%) was the leading morbidity followed by joint involvement (36%), Respiratory system (10%), Skin (8.5%), Central nervous system (7.45%) and Cardio vascular system (6.3%). Canbaz S et al 2002[13] reported the morbidity profile from Turkey in descending order as hypertension 48.6%, osteoporosis 26.8% arthritis 27% diabetes mellitus 20.8% cardiovascular 28.5%, GIT diseases 16.4% visual impairment 16.8%, urinary tract diseases 9.2% respiratory diseases 9.4% hearing impairment 5.5% psychiatric disorder 3.5% stroke 3.4% cancer 1.2%. Korean study by Eun -kyung Woo et al 2007[12] found hypertension (37.5%) as most prevalent geriatric disease followed by arthritis (15.6%), diabetes mellitus (14.9%), Osteoporosis (14.1%) and GIT problems (13.1%). From the above studies it is clear that morbidities related to almost every system are found in elderly

people. Looking at studies from other countries, a totally different pattern and magnitude can be observed which is as per their lifestyle patterns, genetic and socio-cultural practices and social security status. Moreover, the differences in health care systems and the methodologies used to determine disease status may also have contributed to such differences across the states at national level and international level. Conclusion: Geriatric problem goes beyond numbers and health issues. It has to be looked in totality as a socio-medical problem that is likely to be faced by all states in India. Prevalence of morbidity among elderly subjects was as high as (92.8%).Maximum morbidities reported and detected were in young-old age group followed by old-old and least in very-old age-group. Morbidity profile disease-wise showed six leading diseases i.e. ocular (67% with cataract as main disease), Hypertension (55.2%), hearing morbidities mainly partial impairment (21.6%), APD (18.2%), Arthritis (13.4%) and COPD & bronchial asthma (11%). In all above morbidities females lead except for in COPD & bronchial asthma where males lead. Recommendations: Based on these findings following recommendations are made to improve the health of geriatric population in this part of the country.

1. Introduction of Geriatric health services
2. Initiating Home based care
3. Self Help programs for old age
4. Ensuring complete social security for older people.
5. Introduction of multiservice centre for old age.

ACKNOWLEDGEMENT

We are greatly indebted to all the faculty members of Department of Community Medicine,SKIMS for their constant guidance in completing the project and special thanks to Mr Tariq Ahmad Wani for helping in statistical analysis of this data.

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