Research Paper　　　　　　　　　　　**Medical Science**

To Study Morbidity Pattern Among Geriatric Patients Attending Inpatient Department of A Tertiary Care Hospital of North India

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ABSTRACT

INTRODUCTION:Geraitrics is the branch of medicine dealing with the diseases, disabilities and care of aged persons AIM: as people age the mind and body become more vulnerable. This means that people become more sensitive to things like stress, injuries, illnesses, and medication side-effects so the present study is undertaken to see the morbidity pattern among geriatrics attending a tertiary care institute.MATERIAL AND METHODOLOGY: The study was carried out in Inpatient departments SKIMS Srinagar . The study was done from lst January 2013 to 31st December 2013 (i.e for a period of one year) .It was a prospective type of study undertaken on elderly people as defined in study population .It was a Questionnaire based study. Questions were asked as per Annexures by an investigator to each selected case and answers were filled by investigator at the same time. Cases were selected by Systematic Random sampling method by picking every 5th patient of the target population (> 60 years of age as defined in subsequent paragraph) after checking the admission files in the respective wards. The study was carried out every day and as per turn every ward was used for study (excluding those patients who were admitted and discharged in the Emergency Medicine itself).A total of 421 cases selected through systematic random sampling were studied. The questionnaire was developed and validated by a pilot study. The questionnaire had questions pertaining to morbidity pattern of elderly . The questionnaire includes 9 questions related to morbidity pattern. The questions regarding morbidity pattern were reproduced from Stanford Arthritis center disability and discomfort scales 1981 which were modified as per the need of the study. Morbidity in elderly was assessed by their ability to dress and groom, arise, walk, grip and other day to day activities performed by elderly. The responses were graded on likert scale.The study population were elderly (Geriatric) group of people with age greater than or equal to 60 years (> 60years) as per their medical record. Inclusion Criteria: All those selected elderly people who agree to participate in the study. Exclusion Criteria: a) All those patients who does not agree to participate in the study. b) Those patients who were comatose or on ventilator c) Those who were admitted and discharged in emergency medicine itself. The responses obtained on the questionnaires were converted into data over a Microsoft Excel sheet. Each response was given a numerical code. The Questions having graded responses were marked on likert scale and were given numerical codes from 1-3, 1-4 or 1-5. All categorical variables were compared using Pearson's Chi Square test and P value < 0.05 were considered to be statistically significant. Data was analyzed using SPSS software version 20.RESULTS:A total of 421 cases of Geriatric age group were studied after selecting them through systematic Random sampling. All Geriatric patients attending medical and surgical specialties were included in the study except those discharged in Emergency Medicine. Out of total 421 cases, 268 (64%) were admitted to medical specialties while 153 (36%) cases were related to surgical specialties. Out of total cases studied 44% were in the age group of 60 -70yrs, 40% were in the age group of 70-80 yrs and 16% were > 80 yrs of age. It was seen that among the selected cases 60-70 yrs age group was the largest one and > 80yrs of age was the least one .The results were described with respect to variables ,as, DRESS AND GROOM that among the age group of 60-70yrs majority were able to dress and groom 'without any difficulty'. In the age group of 70-80yrs majority (43.5%) Emergency Admission had 'some difficulty' in dressing and grooming while (52.5%) Routine admission were 'without any difficulty'. Among the age group of > 80yrs majority having 'some difficulty' in dressing and grooming. While as (41.4%) of the s routine admissions were having 'much difficulty' in dressing and grooming.Studying the morbidity variable 'ARISING' majority of patients in the age group of 60-70yrs had 'some difficulty' . The scenario in older group i.e > 80 years majority experienced 'much difficulty' in arising from sitting posture. In the age of 70-80yrs majority facing 'Some difficulty' WALKING. Majority (100%) of patients above 80yrs of age faced 'much difficulty' in walking . Also majority in the age group of 60-70yrs and 70-80yrs faced 'no difficulty' in EATING while 76.3% of emergency patients and 48.3% of routine patients in the age group of > 80yrs faced 'some difficulty' . No patient in either of the three groups was seen with inability to eat.REACH In the age group of 80 or more majority faced 'much difficulty' in reach. Above 80yrs of age significant percentage were 'unable' to reach (likert scale 4). AIDS OR DEVICES In age group of 60-70yrs majority were found not using any Aids or devices while 21.8% Emergency and 21.7% routine admissions were using walkers. The pattern was similar in the age group of 70-80yrs. Majority of Geriatric patients > 80 years were found using multiple devices i.e walkers as well as wheel chairs to walk AND a good percentage of patients (18.4% in Emergency and 24.7% in Routine) were not using any devices at all. PAIN The above results shows that majority in age group of 60-70 experienced 'mild pain' in the past week while 'severe pain' was felt by majority of those age group of > 80yrs .Significant %age i.e 21.1% in emergency and 20.7% in routine experienced 'very severe pain' in the last week. CURRENT HEALTH STATUS majority in the age group > 80yrs rated their current health status as 'poor'. 21% patients in Emergency and 24% in Routine rated their health status as 'very poor' and fitted at the extreme in likert scale. In the age group of 60-70yrs and 70-80 yrs majority of Geriatric patients rated their health status as 'not well'. CONCLUSIONS:The study on conclusion establishes that Geriatric age group is associated with high morbidity and there is need for providing social support during hospitalization to the elderly patients.

KEYWORDS : geriatric,morbidity,systemic random sampling

INTRODUCTION

Geriatrics or geriatric medicine is a specialty that focuses on health care of elderly people[1,2] . It aims to promote health by preventing and treating diseases and disabilities in older adults. The twentieth century reaped an unprecedented gain in life expectancy at birth; some 25 years throughout the industrialized world and more modest though significant increase in the developing world.[3] Population in Europe & other developed countries are aging. Improvements in public health including the prevention and treatment of infectious diseases & other innovations have greatly reduced the proportion of deaths occurring in childhood & early adulthood.

The growing healthy aging population is a source of both joy and worries. Joy because people are living longer and healthier lives. Worries are about how to respond to a future with a larger older population with their rightful demands and needs.

The National Sample Surveys of 1986-87, 1995-1996, and 2004 have shown that: The burden of morbidity in old age is enormous. Non-communicable diseases (life style related and degenerative) are

extremely common in older people irrespective of socioeconomic status. Disabilities are very frequent which affect the functionality in old age compromising the activity to persue the ability of daily living.[4]

MATERIAL AND METHODS
Study Setting: The study was carried out in Inpatient departments of Sheri-Kashmir Institute of medical Sciences (SKIMS) Srinagar, a 673 bedded tertiary care facility. **Study Type**: It was a prospective type of study undertaken on elderly people as defined in study population, in the subsequent paragraph. **Study Design:** It was a Questionnaire based study. Questions were asked as per Annexures by an investigator to each selected case and answers were filled by investigator at the same time. Cases were selected by Systematic Random sampling method by picking every 5th patient of the target population (> 60 years of age as defined in subsequent paragraph) after checking the admission files in the respective wards. The study was carried out every day and as per turn every ward was used for study (excluding those patients who were admitted and discharged in the Emergency Medicine itself).

A total of 421 cases selected through systematic random sampling were studied. These include 38 cases of Cardiology, 30 cases of cardiovascular thoracic surgery (CVTS), 27 cases of Neurosurgery, 34 cases of General Surgery, 36 cases of Gastroenterology, 28 cases of Urology, 12 cases of Surgical gastroenterology, 37 cases of Nephrology, 10 cases of clinical Hematology, 20 cases of Medical Oncology, 40 cases of General Medicine, 25 cases of Geriatrics, 16 cases of Endocrinology, 12 cases of radiotherapy, 21 cases of plastic surgery and 35 cases of neurology.

Study tool (Development and pretesting of Questionnaire) The questionnaire was developed and validated by a pilot study. The questionnaire had questions pertaining to morbidity pattern of elderly .

The questionnaire includes 9 questions related to morbidity pattern. The questions regarding morbidity pattern were reproduced from Stanford Arthritis center disability and discomfort scales 1981 which were modified as per the need of the study. Morbidity in elderly was assessed by their ability to dress and groom, arise, walk, grip and other day to day activities performed by elderly. The responses were graded on likert scale.

Study Period: The study was done from Ist January 2013 to 31st December 2013 (i.e for a period of one year) for Data collection and observations.

Study population
The study population in the study were elderly (Geriatric) group of people with age greater than or equal to 60 years (> 60years) as per their medical record. **Inclusion Criteria**: All those selected elderly people who agree to participate in the study. **Exclusion Criteria:** a) All those patients who does not agree to participate in the study. b) Those patients who were comatose or on ventilator c) Those who were admitted and discharged in emergency medicine itself.

**Data Management** (**Data Collection**):Data was personally collected by an investigator by choosing one specialty per day and upon entering the ward admission file was checked thereby coming to know about the target population by knowing the age. After counting the total number of elderly patients admitted, systematic random sampling was done and every 5th patient was selected among the target group for study. The selected patients were then followed till the time of discharge when questions were asked as per questionnaire and answers were recorded by an investigator at the same time.

Data Entry and Statistical Analysis: The responses obtained on the questionnaires were converted into data over a Microsoft Excel sheet. Each response was given a numerical code. The Questions having graded responses were marked on likert scale and were given numerical codes from 1-3, 1-4 or 1-5. All categorical variables were compared using Pearson's Chi Square test and P value < 0.05 were considered to be statistically significant. Data was analyzed using SPSS software version 20.

RESULTS
Ageing is a natural process. It is a vulnerable phase of life where physical, mental and social disruption is more pronounced. There are more than 76 million elderly people in the country . By the year 2020, the estimated population of the elderly will be 142 million or about 11% of the country's population.

A total of 421 cases of Geriatric age group were studied after selecting them through systematic Random sampling. All Geriatric patients attending medical and surgical specialties were included in the study except those discharged in Emergency Medicine. Out of total 421 cases (Fig.1) 268 (64%) were admitted to medical specialties while 153 (36%) cases were related to surgical specialties.
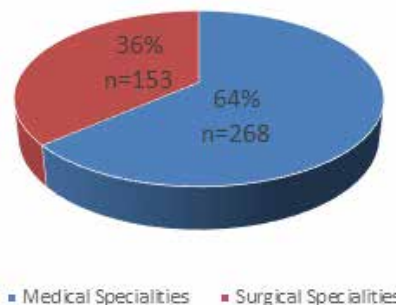
Fig 1. Specialty- wise distribution of geriatric patients.

Out of total cases studied 44% were in the age group of 60 -70yrs, 40% were in the age group of 70-80 yrs and 16% were > 80 yrs of age. It was seen that among the selected cases 60-70 yrs age group was the largest one and > 80yrs of age was the least one .
Comparing the stratified age groups viz a viz morbidity variable Dressing and Grooming (as shown in Table 1)

Table: 1 Morbidity Variable Dressing & grooming, Arising & walking viz a viz stratified age groups

Age	Admission	Dressing and Grooming								Arising								Walking							
		1		2		3		4		1		2		3		4		1		2		3		4	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
60-70 yrs	Emergency	70	69.3	31	30.7	0	0.0	0	0.0	43	42.6	55	54.5	2	2.0	1	1.0	40	39.6	58	57.40	2	2.0	1	1.0%
	Routine	60	72.3	23	27.7	0	0.0	0	0.0	39	47.0	43	51.8	1	1.2	0	0.0	42	50.6	38	45.8	3	3.6	0	0.0
70-80 yrs	Emergency	24	34.8	30	43.5	14	20.3	1	1.4	3	4.30	47	68.1	18	26.1	1	1.4	3	4.3	52	75.4	13	18.8	1	1.4
	Routine	53	52.5	35	34.7	12	11.9	1	1.0	3	3.0	75	74.3	23	22.8	0	0.0	7	6.9	79	78.2	14	13.9	1	1.0
Above 80 yrs	Emergency	5	13.2	21	55.3	11	28.9	1	2.6	0	0.0	3	7.9	35	92.1	0	0.0	0	0.0	0	0.0	38	100	0	00
	Routine	4	13.8	13	44.8	12	41.4	0	0.0	2	6.9	0	0.0	25	86.2	2	6.9	2	6.9	7	24.1	20	69.0	0	0.0
P-Value		< 0.0001								<0.0001								<0.0001							

1.   Without any difficulty
2.   With some difficulty

3. With much difficulty
4. Unable to do

The table shows that among the age group of 60-70yrs majority admitted through Emergency (69.3%) and Routine (72.3%) were able to dress and groom '*without any difficulty*'. In the age group of 70-80yrs majority (43.5%) of patients admitted through Emergency had '*some difficulty*' in dressing and grooming while in the same age group majority (52.5%) of patients admitted through Routine were able to dress and groom '*without any difficulty*'. Among the age group of > 80yrs majority admitted either through Emergency (55.3%) or Routine (44.8%) were having '*some difficulty*' in dressing and grooming. It was also seen that significant no. of cases (41.4%) of the same age group which were routine admissions were having '*much difficulty*' in

dressing and grooming.

Studying the morbidity variable 'Arising' it was seen that majority of patients in the age group of 60-70yrs admitted through emergency (54.5%) as well through routine (51.8%) had '*some difficulty*' in arising from sitting position. The scenario in older group i.e > 80 years revealed that majority in both emergency (92.1%) and routine admissions (86.2%) experienced '*much difficulty*' in arising from sitting posture. In the age of 70-80yrs majority of Geriatric patients in both sets of admissions emergency (75.4%) and routine (78.2%) were facing '*Some difficulty*' in walking. Majority (100%) of patients above 80yrs of age admitted from Emergency faced '*much difficulty*' in walking .

Morbidity Variables Eating, Grip and Reach among Geriatric population compared viz a viz stratified age groups (as shown in Table 2)

Table: 2   Morbidity Variable Eating, Grip & Reach viz a viz stratified age groups

Age	Admission	Eating								Grip								Reach							
		1		2		3		4		1		2		3		4		1		2		3		4	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
60-70 yrs	Emergency	92	91.1	7	6.9	2	2.0	0	0.0	81	80.2	17	16.8	2	2.0	1	1.0	36	35.6	57	56.4	7	6.9	1	1.0
	Routine	80	96.4	2	2.4	1	1.2	0	0.0	67	80.7	16	19.3	0	0.0	0	0.0	30	36.1	50	60.2	3	3.6	0	0.0
70-80 yrs	Emergency	54	78.3	12	17.4	3	4.3	0	0.0	44	63.8	19	27.5	6	8.7	0	0.0	5	7.2	48	69.6	15	21.7	1	1.4
	Routine	88	87.1	12	11.9	1	1.0	0	0.0	63	62.4	36	35.6	2	2.0	0	0.0	3	3.0	81	80.2	15	14.9	2	2.0
Above 80 yrs	Emergency	8	21.1	29	76.3	1	2.6	0	0.0	4	10.5	30	78.9	4	10.5	0	0.0	0	0.0	1	2.6	32	84.2	5	13.2
	Routine	12	41.4	14	48.3	3	10.3	0	0.0	12	41.4	13	44.8	4	13.8	0	0.0	2	6.9	7	24.1	17	58.6	3	10.3
P-Value		< 0.0001								< 0.0001								< 0.0001							

1. Without any difficulty
2. With some difficulty
3. With much difficulty
4. Unable to do

The table shows that majority of patients in the age group of 60-70yrs (91% in emergency and 96.4% in Routine) and in the age group of 70-80yrs (78.3% in Emergency and 87.1% in Routine) faced '*no difficulty*' in Eating while 76.3% of patients and 48.3% of patients admitted through emergency and Routine respectively in the age group of > 80yrs faced '*some difficulty*' in eating. No patient in either of the three groups was seen with inability to eat. In the age group of 80 or more majority (84 .2% in Emergency and 58.6% in Routine) faced '*much difficulty*' in reach. Above 80yrs of age significant 13.2% of patients in Emergency and 10.3% in Routine were '*unable*' to reach (likert scale 4)

Geriatric age groups compared viz a viz various devices used by elderly to walk   (as shown in Table 3)

Table: 3   Use of assistive devices by elderly viz a viz stratified age groups

Age	Admission	Aids or other devices used													
		1		2		3		4		5		6		7	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%
60-70 yrs	Emergency	1	1.0	22	21.8	2	2.0	8	7.9	55	54.5	0	0.0	13	12.9
	Routine	1	1.2	18	21.7	0	0.0	3	3.6	50	60.2	0	0.0	11	13.3
70-80 yrs	Emergency	1	1.4	20	29.0	1	1.4	7	10.1	32	46.4	2	2.9	6	8.7
	Routine	0	0.0	23	22.8	0	0.0	16	15.8	45	44.6	1	1.0	16	15.8
Above 80 yrs	Emergency	0	0.0	10	26.3	0	0.0	2	5.3	7	18.4	1	2.6	18	47.4
	Routine	0	0.0	2	6.9	0	0.0	6	20.7	7	24.1	3	10.3	11	37.9
P-Value		< 0.0001													

1. Cane
2. Walker
3. Crutches
4. Wheel chair
5. None
6. 2+3+4
7. 2+4

The table shows that in age group of 60-70yrs majority of patients (54.5% in Emergency and 60.2% in Routine) were found not using any Aids or devices while 21.8% of patients admitted through Emergency and 21.7% patients admitted through routine in the same age group were using walkers. The pattern was similar in the age group of 70-80yrs with majority not using any devices. Majority of Geriatric patients > 80 years (47.4% in Emergency and 37.9% in Routine) were found using multiple devices i.e walkers as well as wheel chairs to walk. There was a good percentage of patients in the age group of >

80yrs (18.4% in Emergency and 24.7% in Routine) who were not using any devices at all.

The three groups of geriatric patients were assessed for pain in the preceding week (as shown in Table 4)

Table: 4   Assessment of pain in the past week by elderly viz a viz stratified age groups

Age	Admission	Pain in the past week									
		1		2		3		4		5	
		n	%	n	%	n	%	n	%	n	%
60-70 yrs	Emergency	15	14.9	61	60.4	23	22.8	2	2.0	0	0.0
	Routine	21	25.3	45	54.2	17	20.5	0	0.0	0	0.0

Age	Admission	1 n	1 %	2 n	2 %	3 n	3 %	4 n	4 %	5 n	5 %
70-80 yrs	Emergency	0	0.0	38	55.1	20	29.0	11	15.9	0	0.0
	Routine	0	0.0	48	47.5	41	40.6	11	10.9	1	1.0
Above 80 yrs	Emergency	0	0.0	0	0.0	6	15.8	24	63.2	8	21.1
	Routine	0	0.0	3	10.3	10	34.5	10	34.5	6	20.7
P-Value	< 0.0001										

1. No pain
2. Mild pain
3. Moderate pain
4. Severe pain
5. Very Severe pain

The above table shows that majority (60.4%) of patients falling in age group of 60-70 experienced '*mild pain*' in the past week while '*severe pain*' was felt by majority of those falling in the age group of > 80yrs (63.2% in Emergency and 34.5% in Routine). Significant %age of elderly in the age group of > 80 years i.e 21.1% in emergency and 20.7% in routine experienced '*very severe pain*' in the last week.

Self-assessment of the rating of current health of Geriatric patients (as shown in Table 5)

Table: 5   Self rated health (SRH) status by elderly viz a viz stratified age groups

Age	Admission	Rating of current Health							
		1		2		3		4	
		n	%	n	%	n	%	n	%
60-70 yrs	Emergency	14	13.9	85	84.2	2	2.0	0.	0.0
	Routine	16	19.3	67	80.7	0	0.0	0	0.0
70-80 yrs	Emergency	4	5.8	54	78.3	11	15.9	0	0.00
	Routine	7	6.9	75	74.3	16	15.8	3	3.0
Above 80 yrs	Emergency	2	5.3	4	10.5	24	63.2	8	21.1
	Routine	0	0.0	6	20.7	16	55.2	7	24.1
P-Value	< 0.0001								

1. Well
2. Not Well
3. Poor
4. Very Poor

The above table shows that in the age group > 80yrs with majority of patients (63.2% in Emergency and 55.2% in Routine) rated their current health status as '*poor*'. The same group i.e > 80yrs also showed 21% patients in Emergency and 24% in Routine rated their health status as '*very poor*' and fitted at the extreme in likert scale. In the age group of 60-70yrs and 70-80 yrs majority of Geriatric patients rated their health status as '*not well*'.

DISCUSSION

India is amidst a demographic transition with a trend towards an ageing population. In India, the ageing population above 60 years has been estimated to almost double-up from 7.7% in 2001 to 12.30% in 2025 and the number of elderly people will be nearly 150 million. With improving living standards come better health and easy access to medical services, leading to a decline in mortality rates and higher life expectancy.

Comparing the stratified age groups of geriatric inpatients viz a viz morbidity variable Dressing and Grooming revealed that among the age group of 60-70yrs majority admitted through Emergency (69.3%) and Routine (72.3%) were able to dress and groom '*without any difficulty*'. It was also seen that significant no. of cases (41.4%) of the age group > 80 Years admitted through routine were having '*much difficulty*' in dressing and grooming. Majority (100%) of patients above 80yrs of age admitted from Emergency faced '*much difficulty*'

in walking. Morbidity Variables Eating, Grip and Reach among Geriatric population compared viz a viz stratified age groups revealed that majority of patients in all the three stratified age groups faced '*no difficulty*' in Eating. Above 80yrs of age significant 13.2% of patients in Emergency and 10.3% in Routine were '*unable*' to reach. A study by *Joshi K et al* [5] regarding morbidity profile and its relationship with disability and psychological distress among elderly people in Northern India revealed that morbidity was significantly associated with age and occupation. Age, sex, and occupation were important determinants of morbidity.

Comparing the stratified age groups viz a viz the devices used revealed that majority of Geriatric patients > 80 years (47.4% in Emergency and 37.9% in Routine) were found using multiple devices i.e walkers as well as wheel chairs to walk. There was a good percentage of patients in the age group of > 80yrs (18.4% in Emergency and 24.7% in Routine) who were not using any devices at all. In line with this study research by *Krishnamachari Srinivasan et al* [6] on prevalence of health related disability among community dwelling urban elderly from middle socioeconomic strata in Bangaluru, India revealed that Majority of respondents reported using assistive devices (89%)

Comparing the stratified age groups viz a viz assessment for pain in the preceding week revealed that majority (60.4%) of patients falling in age group of 60-70 experienced '*mild pain*' in the past week while '*severe pain*' was felt by majority of those falling in the age group of > 80yrs (63.2% in Emergency and 34.5% in Routine). Significant %age of elderly in the age group of > 80 years i.e 21.1% in emergency and 20.7% in routine experienced '*very severe pain*' in the last week. Self-assessment of the rating of current health of Geriatric patients revealed that in the age group > 80yrs with majority of patients (63.2% in Emergency and 55.2% in Routine) rated their current health status as '*poor*'. The same group i.e > 80yrs also showed 21% patients in Emergency and 24% in Routine rating their health status as '*very poor*' and fitted at the extreme in likert scale. Complementing the findings of this study research by *A Mohapatra et al* [7] revealed that among 467 respondents included in the study (235 were males and 232 females), three-fourth of the subjects rated their health status as either mostly' or '*somewhat*' healthy. Socio-demographic correlates of self-rated health (SRH) among Santals of rural West Bengal, India was studied by *Bhubon Mohan Das, et al* [8] which revealed that majority of the study participants rated their health as '*average*' followed by 'bad', 'good', and 'very bad' irrespective of sex. Elderly (OR= 6.78) and middle-aged (OR=2.52) individuals were more likely to report 'bad' health compared to young individuals.

Assessment of pain in past week revealed that majority of patients (males and females) fall in likert scale 2 and 3 with mild to moderate type of pain in the preceding week with percentage varying from 30-60%. *Silvana C Caetan* [9] et al in 2006 revealed that poor SRH was associated with low age, low income, not working, poor functional capacity, and depression in both men and women.

SUMMARY AND CONCLUSION

The study on conclusion establishes that Geriatric age group is associated with high morbidity and there is need for providing social support during hospitalization to the elderly patients. Hospitals need to be made Geriatric friendly in the form of availability of separate admission counters, medical social workers for assistance and making delivery of care free of charges for elderly patients. Hospital management needs to introduce practicum in order to train and retrain the hospital patient care staff including doctors and nurses to improve their behaviour and skills to deal with the elderly patients so that their stay in the hospital is facilitated.

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