Assessment of clinical and demographic profile of elderly patients admitted in emergency department of Government Medical College Jammu

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Abstract:

Background: Ageing is characterized by a gradual decline in organ functional reserves which reduces the ability to maintain homeostasis. The present study was conducted to study the clinical and demographic profile of elderly patients admitted in emergency department of Government Medical College Jammu. **Materials & Methods:** A total of 1000 patients were recruited during the study period and were subjected to lipid profile, serum calcium, thyroid stimulating hormone level and other necessary investigations. **Results:** The mean age of the 1000 study participants was 72.80±7.04 years. Male and female comprised of 45.6% and 55.4% of the participants respectively. 47.5% of participants presented to ED within 24 hours, 42.5% between 1-5 days, 9.5% between 6-10 days, and only 0.5 % after 10 days from the onset of initial symptoms. Themost common symptom was shortness of breath (37%) followed by fever (23.5%), giddiness (18%), nausea/vomiting (17.5%), generalised malaise (13.5%), focal neurological deficits (12.8%), others (12.5%),history of chest pain (10.7%)and altered sensorium (10.5%). The least common symptom was abdominal pain (7.5%). The most common cause was respiratory (19.5%) followed by infectious (17.6%), cardiovascular (17.4%), neurological (14.4%), and gastrointestinal (13.5%), followed by metabolic (9.8%), and then renal (6.5%). The least common cause was neoplasm (1.3%). The most common comorbidity found in the current study was endocrinological and metabolic in the form of hypertension (51%), followed by type II diabetes mellitus (38.5%). Hypothyroidism was found in 9.5% of participants. Among the respiratory comorbid conditions, chronic obstructive pulmonary disease and bronchial asthma were reported among 19% and 3.5% of the participants respectively. Amongst the cardiovascular conditions, coronary artery disease was found amongst 18% of participants, whereas Rheumatic Heart Disease and Dilated Cardiomyopathy were present in 2.5% each respectively. Chronic kidney disease was found in 7% of the participants, while 12.5% of participants had a history of old CVA. Chronic Liver Disease constituted 6.8 %, Psychiatric Disorder was present amongst 3% of study participants, Malignancy constituted 2.5%. 83% of patients required hospital admission (ICU or Ward), 9.9% were managed on an outpatient basis on oral medicines, and 7.1 % suffered death. **Conclusion:** 75% of the elderly reside in rural areas, and it is essential that geriatric health care services be made a part of the primary health care services. Specialized training of doctors in geriatric medicine needs to improve and increase on a large scale to meet the health demands of the second most populous country in the world.

Key words: elderly, Bronchial Asthma, Malignancy

Introduction:

Ageing is characterized by a gradual decline in organ functional reserves which reduces the ability to maintain homeostasis, especially under conditions of stress. It is believed that in many organ systems the loss of function begins as early

as at the age of 30-40 years and then proceeds at an approximate rate of 1% annually.[1]

Although this process appears to be continuous and irreversible, ageing itself does not mean pathology.[2] In the absence of additional pathogenic stimuli, it will not lead to overt disease. However, age-related changes pave the way for disease.[3] Ageing is associated with two overlapping processes which ultimately lead to death. These are (i) progressive degeneration of cells and (ii) loss of regenerative capacity. Degeneration and regeneration of cells are processes that occur at every stage of life and remain well balanced under normal conditions. The 'mitotic homeostasis' enables swift replacement of damaged cells and effective preservation of functional integrity of tissues and organs. However, in the aged this balance shifts towards degeneration.[4,5]

Mechanisms of degeneration appear to be primarily related to generation of reactive oxygen species and non-enzymatic glycosylation of proteins; both processes being closely linked to environmental factors.[6] In turn, loss of proliferative and regenerative capacity could be accounted for by genetically determined telomere shortening and apoptosis. This classification highlights the role of both exogenous and endogenous factors in ageing which unites two renowned but apparently contradictory theories of ageing.[7] The present study was conducted to study the clinical and demographic profile of elderly patients admitted in emergency department of Government Medical College Jammu.

Materials & Methods:

The present study was conducted on elderly patients of age ≥60 years admitted in the wards under the post graduate Department of Medicine, GMC Jammu.

A total of 1000 patients were recruited during the study period. In all of the patients a detailed history was obtained and a complete physical examination was carried out. From the subjects fulfilling inclusion criteria, the biodata was collected. Laboratory testing included hemogram, serum biochemistry including liver and renal function tests, urinalysis, 12-lead electrocardiogram. Diabetes mellitus was diagnosed by testing for fasting and post-prandial blood glucose levels. Pulmonary tuberculosis was diagnosed basing on sputum smear examination for acid-fast bacilli (AFB) and chest radiograph (postero-anterior view). Infections were diagnosed by carrying out relevant imaging procedures including plain radiograph, ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI); and by procuring appropriate tissue/ body fluid specimens for diagnostic testing. Where required two- dimensional echocardiography, gastrointestinal endoscopy and required neuroimaging procedures was also be carried out. Patients were subjected to lipid profile, serum calcium, thyroid stimulating hormone level and other necessary investigations. P value < 0.05 was considered significant.

Results:

Table 1: Age Distribution Among the Study Participants

Age Group (in years)	N	%
60-70	535	53.5
71-80	315	31.5
81-90	125	12.5
>90	25	2.5
Total	**1000**	**100**
Mean±SD	72.80±7.04	

A total of 1000 patients were taken for the study from NOV 2021 to NOV2022. The mean age of the 1000 study participants was 72.80±7.04 years.

Table 2: Gender Distribution Among the Study Participants

Gender	N	%
Male	456	45.6
Female	554	55.4
Total	**1000**	**100**

Table 2 shows the gender distribution among the study participants. Male and female comprised of 45.6% and 55.4% of the participants respectively.

Table 3: Time Span Between Onset of Symptoms and Arrival to Hospital

Interval	N	%
Up to 24 Hour	475	47.5
>1-5 Days	425	42.5
6-10 Days	95	9.5
>10 Days	5	0.5

Table 3 shows that 47.5% of participants presented to ED within 24 hours, 42.5% between 1-5 days, 9.5% between 6-10 days, and only 0.5 % after 10 days from the onset of initial symptoms.

Table 4: Symptoms Among the Study Participants

Symptoms	N	%
Shortness of Breath	370	37
Fever	235	23.5
Giddiness	180	18
Nausea/Vomiting	175	17.5
Cough	147	14.7
Generalised Malaise	135	13.5
Others	125	12.5
Altered Sensorium	105	10.5
Chest Pain	107	10.7
Focal Neurological Deficits	128	12.8
Abdominal Pain	75	7.5

Table 4 shows the most common symptom was shortness of breath (37%) followed by fever (23.5%), giddiness (18%), nausea/vomiting (17.5%), Generalised malaise (13.5%), Focal Neurological Deficits (12.8%), others (12.5%),history of chest pain (10.7%)and altered sensorium (10.5%). The least common symptom was abdominal pain (7.5%).

Table 5: Etiological Among the Study Participants

Causes	N	%
Respiratory	195	19.5
Gastrointestinal	135	13.5
Cardiovascular	174	17.4
Neurological	144	14.4
Infectious	176	17.6
Metabolic	98	9.8
Renal	65	6.5
Neoplastic	13	1.3

Table 5 shows the most common cause was Respiratory (19.5%) followed by Infectious (17.6%), Cardiovascular (17.4%), Neurological (14.4%), and Gastrointestinal (13.5%), followed by Metabolic (9.8%), and then Renal (6.5%). The least common cause was Neoplasm (1.3 %).

**Table 6: Comorbidities Among the Study Participants**

Respiratory		
Chronic Obstructive Pulmonary Disease	190	19
Bronchial Asthma	35	3.5
Endocrinological		
Type II Diabetes Mellitus	385	38.5
Hypothyroidism	95	9.5
Hypertension	510	51
Cardiovascular		
Coronary Artery Disease	180	18
Rheumatic Heart Disease	25	2.5
Dilated Cardiomyopathy	25	2.5
Chronic Kidney Disease	7	7

Cerebrovascular Disease (Old CVA)	125	12.5
Chronic Liver Disease	68	6.8
Malignancy	25	2.5
Psychiatric Disorder	30	3

Table 6 show the most common comorbidity found in the current study was endocrinolgical and metabolic in the form of Hypertension (51%), followed by Type II Diabetes Mellitus (38.5%). Hypothyroidism was found in 9.5% of participants. Among the respiratory comorbid conditions, Chronic Obstructive Pulmonary Disease and Bronchial Asthma were reported among 19% and 3.5% of the participants respectively. Amongst the cardiovascular conditions, coronary artery disease was found amongst 18% of participants, whereas Rheumatic Heart Disease and Dilated Cardiomyopathy were present in 2.5% each respectively. Chronic kidney disease was found in 7% of the participants, while 12.5% of participants had a history of old CVA. Chronic Liver Disease constituted 6.8 %, Psychiatric Disorder was present amongst 3% of study participants, Malignancy constituted 2.5%.

Graph 1 Final Clinical Outcome Among the Study Participants
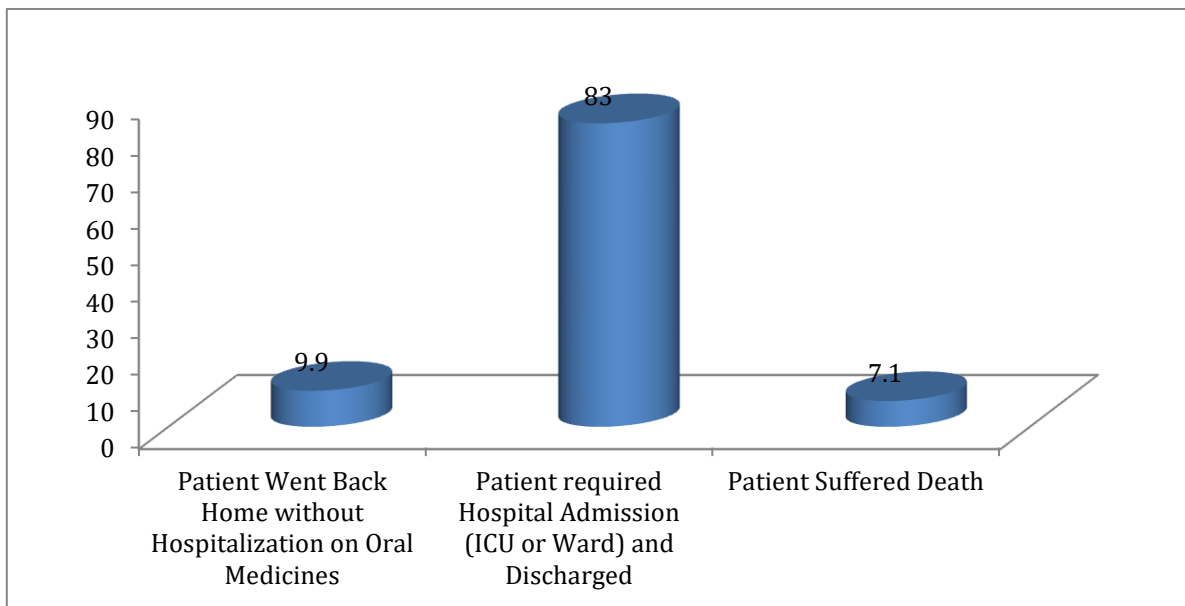
Graph 1 shows that 83% of patients required hospital admission (ICU or Ward), 9.9% were managed on an outpatient basis on oral medicines, and 7.1 % suffered death.

Table 7: Distribution of patients according to diagnosis

Cause	N	Distribution of Diagnosis	N	%
1. Respiratory	195	Acute Exacerbation of Bronchial Asthma	32	3.2
		Acute Exacerbation of COPD	154	15.4
		Pulmonary Embolism	4	0.4
		Pneumothorax	5	0.5

2. Cardiovascular	174	Acute MI	91	9.1
		Congestive Cardiac Failure	44	4.4
		ADHF	25	2.5
		AF with FVR	14	1.4
3. Neurological	144	Acute Ischemic Stroke	83	8.3
		Intracranial Haemorrhage	39	3.9
		Status Epilepticus	17	1.7
		Parkinson Disease	5	0.5
4. Metabolic	98	Hypertensive Crisis	46	4.6
		Hypoglycaemia	28	2.8
		Hyponatremia	12	1.2
		DKA	7	0.7
		HHS	5	0.5
5. Gastrointestinal	135	Acute Gastritis	61	6.1
		Peptic Ulcer Disease	18	1.8
		Variceal Bleed	16	1.6
		IBD	4	0.4
		Recently Detected CLD	16	1.6
		Hepatic Encephalopathy	12	1.2
		SBP	8	0.8
6. Infective	176	Community-Acquired Pneumonia	44	4.4
		Acute Gastroenteritis	62	6.2
		UTI (Complicated/ Uncomplicated)	13	1.3
		Extrapulmonary TB	16	1.6
		Pulmonary Koch	23	2.3
		Meningoencephalitis	8	0.8
		Liver Abscess	4	0.4

		Empyema	6	0.6
7. Renal	65	Chronic Kidney Disease with Complications	65	6.5
8. Neoplastic	13	Ca Lung	7	0.7
		Hepatocellular Carcinoma	4	0.4
		Multiple Myeloma	2	0.2

Table 7 shows that amongst the respiratory causes (N=195), the most common diagnoses were Acute Exacerbation of COPD (n = 154, 15.4%), followed by Acute Exacerbation of Bronchial Asthma (n=32, 3.2%), Pneumothorax (n = 5,0.5%) and Pulmonary Embolism (n = 4, 0.4%). Amongst the Infective causes (N=176), the most common cases were Acute Gastroenteritis (n= 62, 6.2%), followed by Community-Acquired Pneumonia (n = 44, 4.4%), Pulmonary Koch (n=23, 2.3%), Extrapulmonary TB (n = 16, 1.6%), Meningoencephalitis (n = 8, 0.8%), Empyema (n = 6, 0.6%) and Liver Abscess. Among the cardiovascular causes (N=174), Acute MI was the most common diagnosis (n=91, 9.1%), followed by ADHF (n = 25, 2.5%) and AF with FVR (n=14, 1.4%). Amongst the Neurological events (N=144), the most common cause was Acute Ischemic Stroke (n = 83, 8.3%) followed by intracranial haemorrhage (n=39, 3.9%). Others included status epilepticus (n=17, 1.7) and Parkinson's Disease (n=5, 0.5%). Among the Gastrointestinal Causes (N=135), the most common ailment was Acute Gastritis (n=61, 6.1%), followed by peptic ulcer disease (n=18, 1.8%), Variceal Bleed and Recently Detected CLD (n=16 ,1.6%), SBP (n=8, 0.8%) and IBD (n=4, 0.4%).The most common Metabolic Cause (N =98) was Hypertensive Crisis (n = 46, 4.6%), Hypoglycaemia (n=28, 2.8%) followed by Hyponatremia (n=12,1.2 %), DKA (n=7, 0.7%) and HSS (n=5,0.5%). Amongst the renal causes (N=65), chronic kidney disease with complications (n=65, 6.5%). Amongst the Neoplastic (N=13) Hepatocellular Carcinoma (n=4, 0.4%) was the most common followed by Multiple Myeloma (n=2,0.2%).

Discussion:

The phenomenon of population aging is becoming a major concern for the ED of all hospitals in both developing and developed countries.[8] Studies have shown that in most of the developed world elderly patients overwhelmingly die in hospitals and often during and immediately after an ICU admission. This is related to the "medicalisation of ageing" with end of life care occurring in the ICUs more than in general wards, hospices or homes.[9,10] Generally, it is believed that older patients have a poorer outcome based on their co-morbid conditions, yet many studies have shown that elderly patients should not be denied ICU care based on their age alone.[11] The present study was conducted to study the clinical and demographic profile of elderly patients admitted in emergency department of Government Medical College Jammu.

We found that the mean age of the 1000 study participants was 72.80±7.04 years. Male and female comprised of 45.6% and 55.4% of the participants respectively. We found that 47.5% of participants presented to ED within 24 hours, 42.5% between 1-5 days, 9.5% between 6-10 days, and only 0.5 % after 10 days from the onset of initial symptoms. Chik Loon Foo et al[12] in 2009 recruited a study group with patients aged 65 years and above, and a control group with patients aged 45 to 64. They found that in the study group, the proportion of females, the number arriving by ambulance and the likelihood of having a higher triage acuity increased with age. The elderly had higher rates of co-morbidities. They also had a higher resource utilisation rate. Falls were their commonest presenting complaint. Authors concluded that it is crucial that EDs recognise the special needs of elderly patients due to the growing ageing population. Healthcare policy makers when allocating resources should take into account the profile of elderly patients presenting to an ED and their resource utilisation.

We found that most common symptom was shortness of breath (37%) followed by fever (23.5%), giddiness (18%), nausea/vomiting

(17.5%), Generalised malaise (13.5%), Focal Neurological Deficits (12.8%), others (12.5%),history of chest pain (10.7%)and altered sensorium (10.5%). The least common symptom was abdominal pain (7.5%). We found that most common cause was Respiratory (19.5%) followed by Infectious (17.6%), Cardiovascular (17.4%), neurological (14.4%), and gastrointestinal (13.5%), followed by metabolic (9.8%), and then renal (6.5%). The least common cause was Neoplasm (1.3 %). GUP Iloh et al[13] in 2012 reported that among the 216 geriatric emergencies, the ages of the patients ranged from 65 years to 98 years with mean age of 72 ± 1.14 years. There were 94 males and 122 females with a male to female ratio of 1: 1.3. The three most common causes of geriatric emergencies were acute malaria (33.8%), hypertensive crises syndrome (19.0%), and acute hypertensive heart failure (18.1%). Authors concluded that this study has shown that the three most common geriatric emergencies were medical emergencies (acute malaria, hypertensive crises syndrome, and acute hypertensive heart failure). Improving the quality of geriatric medical care will help in reduction of these emergency medical conditions. Similarly, health education of the geriatric population to embrace early health-seeking behavior, health maintenance, and promotional practices that are needed to promote longevity is invariably advocated.

We found that most common comorbidity found in the current study was endocrinological and metabolic in the form of Hypertension (51%), followed by Type II Diabetes Mellitus (38.5%). Hypothyroidism was found in 9.5% of participants. Among the respiratory comorbid conditions, Chronic Obstructive Pulmonary Disease and Bronchial Asthma were reported among 19% and 3.5% of the participants respectively. Amongst the cardiovascular conditions, coronary artery disease was found amongst 18% of participants, whereas Rheumatic Heart Disease and Dilated Cardiomyopathy were present in 2.5% each respectively. Chronic kidney disease was found in 7% of the participants, while 12.5% of participants had a history of old CVA. Chronic Liver Disease constituted 6.8 %, Psychiatric Disorder was present amongst 3% of study participants, Malignancy constituted 2.5%.83% of patients required hospital admission (ICU or Ward), 9.9% were managed on

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Conclusion:

There are many socioeconomic challenges faced by the elderly population of India. Currently, most of the geriatric outpatient services are available only at a few tertiary care hospitals in India. However, 75% of the elderly reside in rural areas, and it is essential that geriatric health care services be made a part of the primary health care services. Specialized training of doctors in geriatric medicine needs to improve and increase on a large scale to meet the health demands of the second most populous country in the world.

References:

1. Sanderson JE, Tse TF. Heart failure- A disease requiring a global response. Heart 2003;89:585-6.
2. Salako BL, Ayodele OE, Kadiri S, Arije A. Assessment of blood pressure control in a black African population. Cardiol Trop 2002;9:3-6.
3. Sager MA, Rudberg MA, Jalaluddin M, Franke T, Inouye SK, Landefeld CS, et al. Hospital admission risk profile (HARP): Identifying older patients at risk for functional decline following acute medical illness and hospitalization. J Am Geriatr Soc 1996;44:251-7.
4. Batchelor WB, Jollis JG, Friesinger GC. The challenge of health care delivery to the elderly patients with cardiovascular disease: Demographic, epidemiologic, fiscal and health policy implications. Cardiol Clin 1999; 17:1-15.
5. Powers DC. Immunologic principles and emerging strategies of vaccination for the elderly. J Am Geriatr Soc 1992;40:81-94.
6. Omuemu VO, Okojie OH, Omuemu CE. Awareness of high blood pressure status, treatment and control in a rural community in Edo state. Niger J Clin Pract 2007;10:208-12.
7. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL et al. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of high blood pressure: The JNC VII report. JAMA 2003;289:2560-72.
8. Ansa VO, Ekott JU, Bassey EO. Profile and outcome of cardiovascular admissions at the University of Uyo Teaching Hospital, Uyo-a five years review. Niger J Clin Pract 2008;11:22-4.
9. Isezuo SA. Seasonal variation in hospital admission for hypertension-related morbidities in Sokoto, North-western Nigeria. Int J Circumpolar Health 2003;62:397-409.
10. Oyoo GO, Ogola EN. Clinical and socio demographic aspects of congestive heart failure patients at Kenyatta National Hospital, Nairobi. East Afr Med J 1999;76:23-7.
11. Dorsey G, Gasasira AF, Machekano R, Kamya MR, Staedke SG, Hubbard A. The impact of age, temperature and parasite density on treatment outcomes from antimalarial clinical trials in Kampala, Uganda. Am J Trop Med Hyg 2004;71:531-6.
12. Foo CL, Chan KC, Goh HK, Seow E. Profiling acute presenting symptoms of geriatric patients attending an urban hospital emergency department. Annals Academy of Medicine Singapore. 2009 Jun 1;38(6):515.
13. Iloh G, Amadi AN, Awa-Madu J. Common geriatric emergencies in a rural hospital in South-Eastern Nigeria. Niger J Clin Pract 2012;15:333-7.
14. da Silva FM, de Oliveira SM, Bick D, Osava RH, Nobre MR, Schneck CA. Factors associated with maternal intrapartum transfers from a freestanding birth centre in Sao Paulo, Brazil: A case control study. Midwifery. 2012 Oct 1;28(5):646-52.