

Clinical profile of geriatric patients admitted through emergency department of a tertiary care center in South India

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Abstract

Introduction: India has a large and increasing population of patients in above 60 years age group It was 7.5% in 2010 and is expected to be 11.1% in 2025, with Kerala having highest at 16.5% (Census 2011) The majority of the elderly people reside in rural areas, belong to lower socio economic groups, and are dependent on their families. (1).

A knowledge of the clinical spectrum of geriatric disease states frequently encountered in the ED will enable preparedness, thus improving efficiency both in terms of quality of care and also speed of delivery of services. This study looks at the clinical profile of geriatric patients admitted through emergency department of GMC Ernakulam to various departments.

Materials And Methods: This is a hospital based descriptive cross-sectional study set in the casualty/

emergency department of GMC Ernakulam. All patients over the age of 60 years who gave informed consent were included in the study. A total of 511 were included using consecutive sampling and data was collected using proforma. The data was entered in Microsoft excel and analysed using standard software.

Results: The number of patients above 60 years was 54.36% (511/940). Of this, 25.2% were in the 60-64 age group which was the largest group. Males were 302 (59.1%) and 209 (40.9%) were females. General Medicine accounted for 84% (429) of the admissions, followed by General Surgery with 8.6% and Orthopedics with 7%. Amongst the patients included in the study, 171 (33.5%) reported moderate to severe difficulties with IADL & ADL with severe comorbidities being the commonest cause for the difficulty with self care ,44.4% of the patients who had issues with self-care . Only 304

(59.5%) had Government sponsored health insurance. The commonest presenting complaint was Dyspnea (36%) and commonest comorbidity was DM (32.3%). No co morbidities were reported in 16.8% of cases. The commonest primary diagnosis which precipitated the visit to the casualty and resulting admission was acute exacerbation of COPD / bronchial asthma (22.9%) The commonest secondary diagnosis (which contributed to primary problem) was respiratory infection. The commonest newly detected condition was Dyslipidemia (12.3%) Of the 511 patients studied, Mortality was 8.2% (42). The commonest cause of death was acute exacerbation of COPD (28.6%) The highest mortality was reported in the early geriatric 65-69 & 75-79 age groups (19% each), .

Conclusions: A large number of patients in above 60 age group are presenting to ED. Most are having NCD and their complications. Respiratory diseases and infections are the leading causes of morbidity and mortality. Early detection and treatment of NCD and their complications would help in reducing morbidity in initial geriatric age, and increasing health insurance coverage would decrease financial burden.

Keywords: NCD, ED, COPD.

Introduction

The elderly are a valuable resource for any society which will benefit from their vast experience and wisdom acquired over years of living. Unfortunately, aging can also be a challenge, with the attendant issues of social isolation, economic dependence, healthcare challenges etc. The National Policy for Older Persons 1999 outlined by the Central Ministry for Social Justice and empowerment in India , defines an elderly person as someone aged over 60 years and aims to extend all benefits including economic, healthcare and legal

protection to this group. According to the 2011 census, 8.6% of the total population of India is aged over 60 years and this had increased to 10.1% by 2021 . The proportion is expected to touch 13.1% by 2031. The majority of the elderly in India reside in rural areas, belong to weaker socio-economic groups, and are dependent on their families (1). Kerala has a larger proportion of people in the elderly age group, much above the national average, (16.5% as against national average of 10.1% in 2021.). The annual percentage growth rate of the elderly population for India is 3.28% whereas for Kerala, it is 3.96%. The old age dependency ratio is obtained by dividing the population aged 65 plus by the population aged 16-64. The ratio has increased from 14.2% in 2011 to 15.7% in 2021 and is expected to reach 20.1% in 2031 at the national level. The corresponding statistics for Kerala are 19.6% in 2011, 26.1% in 2021 and 34.3% projected for 2031. According to the Economic Review published by the State Planning Board, Government of Kerala in 2017 , population aging is a consequence of the demographic transition in Kerala from a low fertility high mortality state to low fertility and mortality state and this has socio economic implications. Changing social structure has resulted in social isolation and neglect of the elderly. Females outnumber males amongst the elderly with a preponderance of widows. There is a huge unmet demand for care homes.

While Kerala has one of the most robust healthcare systems in the country, it also has the highest morbidity rates. The 71st round of National Sample Survey on Morbidity (January to June 2015) shows that while 89 people per 1000 reported sick during the 15 day survey period in India, for Kerala, the ratio was 310 per 1000. Amongst the elderly, the corresponding morbidity ratios

were 276 per 1000 for India and 646 per 1000 for Kerala. The state has a high burden of non communicable diseases (NCD) also.

Since Government Medical College, Ernakulam, a tertiary center, caters to a large geriatric population, an awareness of the common geriatric emergencies afflicting the patients attending the emergency department here will enable preparedness thus ensuring speedy and effective delivery of services. This study looks at the clinical profile - common presenting problems, the age and sex distribution of the geriatric patients, the premorbid capability for self care, the insurance status, the most common comorbidities and primary diagnosis, the mortality statistics and common causes of mortality. A study from CMC Vellore found that 23.5% of patients attending the ED belong to the geriatric age group and cardio respiratory issues were the commonest presenting problems followed by trauma. (4). A study from North India found that 45.8% patients attending emergency belonged to the geriatric age group, with a higher rate of deaths, ICU admissions and morbidity in this group, and cardio respiratory issues were the commonest presenting problems followed by infection. (5).

Materials And Methods

Study design, Setting and Participants

This was a descriptive cross sectional study set in the casualty of government medical college Ernakulam. All patients over the age of 60 years who gave informed consent were included in the study. Though medical research defines those aged above 65 years as geriatric, the National Policy for Older Persons 1999 outlined by the Central Ministry for Social Justice and Empowerment in India aims to extend all benefits including healthcare and legal protection to all persons

aged over 60 years. Hence, this study included all patients aged above 60 years. The sample size was calculated from data based on the study from CMC Vellore by Abhilash KP et al (4), where 28% of geriatric patients presented with respiratory symptoms. Using the formula, $n = z^2 p(1-p) / d^2$, sample size was calculated as 257. A 10% margin was provided for non responders and the minimum sample size was duly adjusted to 282 and rounded off to 300.

Study procedure and Tool

The study was cleared by SRC and IEC. Data from a total of 511 consecutive, consenting patients aged above 60 years was collected using a prepared proforma.

Data was collected for age, sex, health insurance status, comorbidities, capability for self care, presenting complaints, primary and secondary diagnosis, department to which admitted and final outcome including mortality statistics were obtained.

Data Analysis

Data was entered in Microsoft excel and analysed using standard software. Categorical variables were presented as percentages

Results

During the study period, a total of 940 patients were admitted through the casualty of GMC, Ernakulam. Of this, 511 patients (54.36%) were aged above 60 years and were included in the study after obtaining informed consent.

Fig 1: Of the total patients, 50.2% were aged between 60-69 years followed by 20% in the 70-74 age group, 15.3% in the 74-79 age group, 7.4% were aged 80-84 age group, 5.3% were aged between 85-89 years and 1.8% were aged above 90 years.

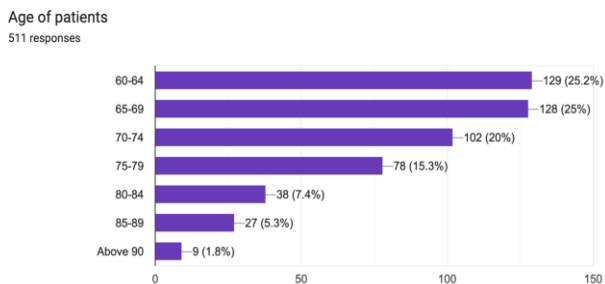


Fig 2: The sex distribution was 59.1% males and 40.9% females.

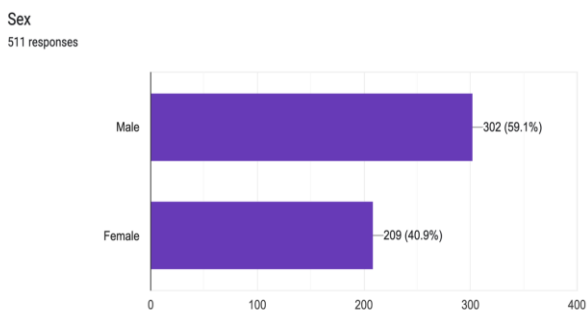


Fig 3: Majority of patients were admitted to General Medicine speciality (84%) followed by General Surgery with 8.6% and Orthopedics with 7%.

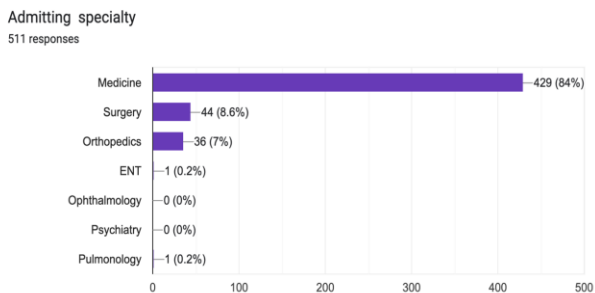


Fig 4 A and Fig 4B: Of the 511 patients included, 171 (33.5%) reported difficulties with self care, both ADL (activities of daily living) and IADL (instrumental activities of daily living). The commonest cause for this was severe comorbidities (44.6% of the total 171 patients), followed by dementia/ age related cognitive decline 35.7%, recurrent CVA / multi infarct state

(15.2%), fractures (7%), psychiatric illness (3.5%), and amputation of limb 2.3%.

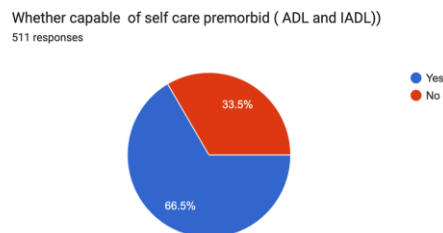


Fig 4A

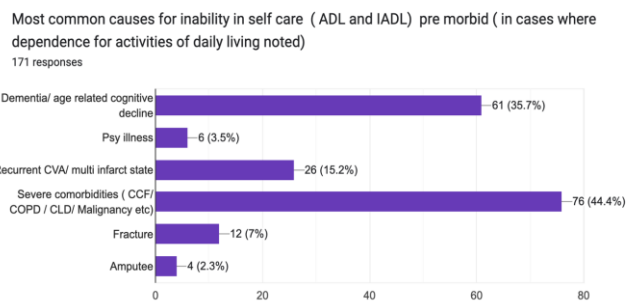


Fig 4B

The data collected shows 59.5% patients possessed Government supported insurance coverage which is above the national average (Fig5)

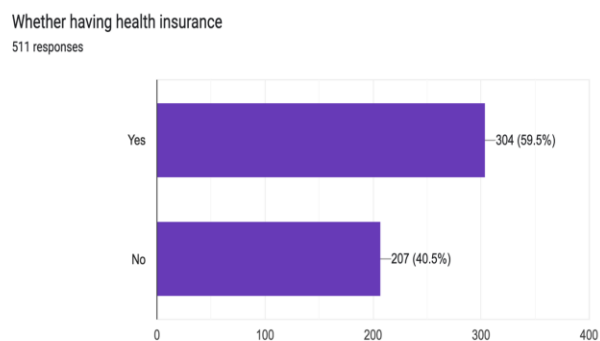


Fig 6: The commonest presenting complaint was Dyspnea (36%) and the other common presenting complaints were chest pain (20.2%), cough (13.1%), cough (13.1%), and focal neurological deficits (11.5%).

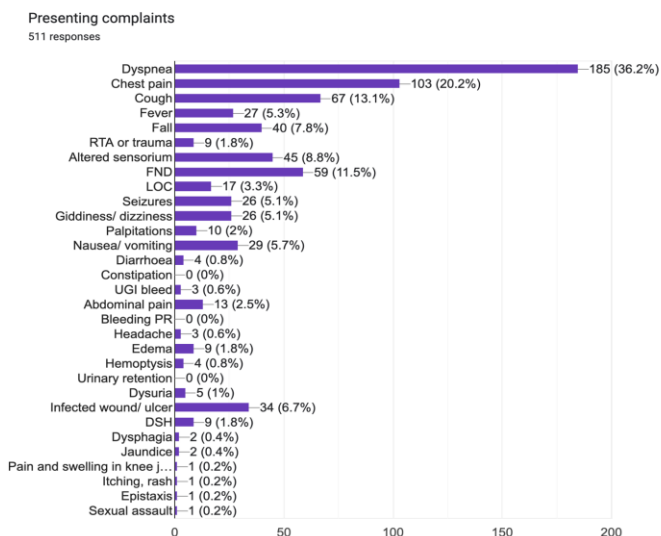


Fig 7: The commonest comorbidity was DM (32.3%), followed by HT (22.9%), CAD (17.4%), and COPD (19.6%). Eighty six patients (16.8%) reported no comorbidities.

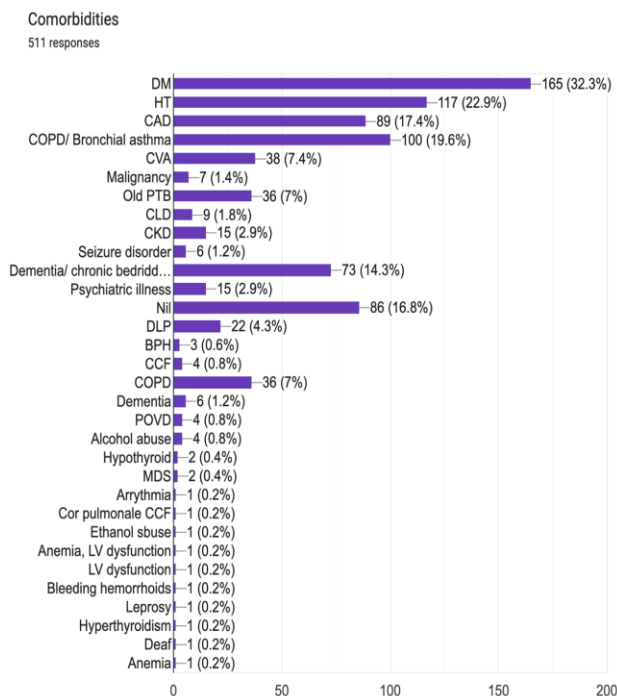
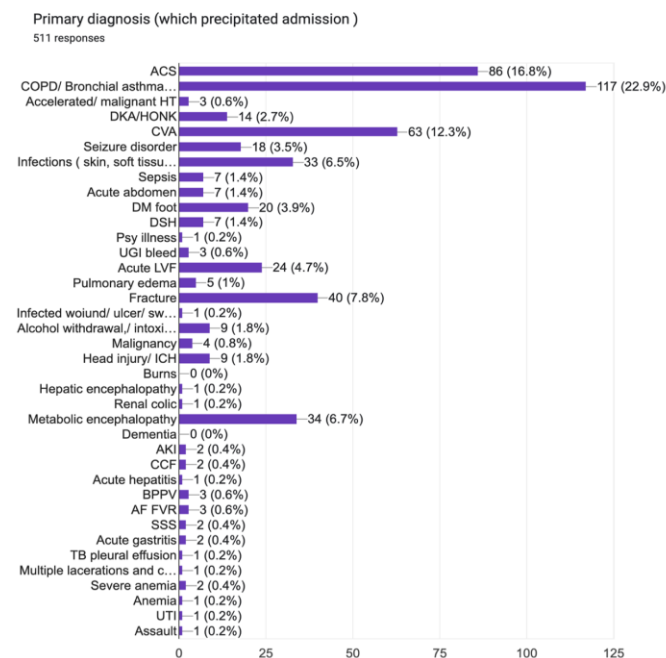


Fig 8 - The commonest primary diagnosis was acute exacerbation of COPD / bronchial asthma followed by ACS (16.8%), CVA (12.3%), fractures (7.3%), infections (6.5%), acute LVF (4.7%), and diabetic foot (3.9%). Respiratory infections precipitating acute exacerbation of COPD was the commonest secondary diagnosis followed by ACS precipitating acute LVF (6.3%), CVA precipitating seizures (3.5%), uncontrolled DM (10.2%), and cor pulmonale (12.3%). The commonest newly detected condition was Dyslipidemia (12.3%), followed by DM (7.6%) and HT (6.5%).



Of the 511 patients, 90.2% were treated and discharged while 8.2% patients died during admission. The commonest cause of mortality was acute exacerbation of COPD (28.6%) and sepsis/ infections (28.6%). Other leading causes of mortality included ACS (26.2%), CVA (11.9%), CKD (4.8%) and malignancy (4.8%).

Fig 9A and 9B: Most of the patients were discharged from respective departments – 90.2%

Mortality was 8.2% and those referred or DAMA were 1.6%

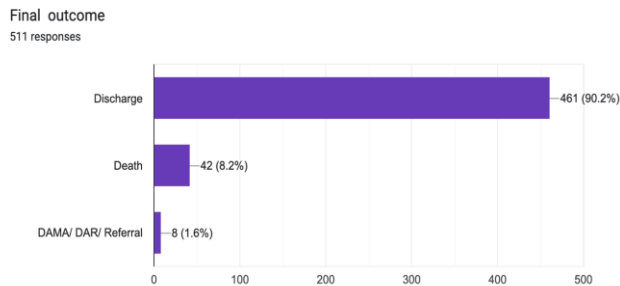
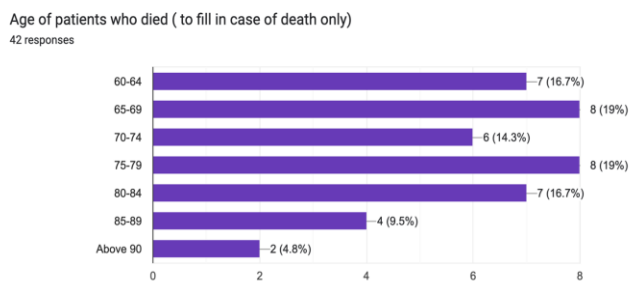


Fig 9B: The largest number of deaths occurred in the 65-69 & 75-79 age groups (19% each) followed by 60-64 & 80-84 age groups (16.7% each).



Discussion

A total of 511 patients aged over 60 years participated in the study. Of these, 302 were male (59.1%) and 209 were females (40.9%). Considering that females outnumber males amongst the elderly in Kerala (1065 women per 1000 men in 2021 census), this was unexpected and can only be explained by the economic dependency of females, a tendency to ignore own problems to promote larger interests of the family, and social isolation especially amongst widows living alone. The study on geriatric patients from North India by Nidhi Kaeley et al (5) showed similar findings (58.4% males) as also the study from CMC, Vellore by Abhilash KP et al (1) (65.4% males).

The age distribution shows that close to 50% of the patients were in the 60-69 age group followed by 20% aged 70-74 years, 15.3% aged 75-79 years. 7.4% aged 80-84 years, 5.3% aged 85-89 years and 1.8% aged above 90 years. This reflects the age profile of the elderly population in Kerala where 60-69 year age group constitute 58% of the elderly, followed by 70-79 year age group who form 29% and over 80 constituting 13% of the elderly population (6).

As many as 84% of the admissions were under general medicine and was followed by general surgery with 8.6% and Orthopedics with 7%. This again reflects the high prevalence of non communicable diseases(NCD) in Kerala with the state being described as the diabetic capital of the country. This is reflected in the common comorbidities where DM heads the list at 32.3% followed by HT at 22.9% and CAD at 17.4%. The prevalence of COPD/ asthma is high at 19.6% considering the national prevalence of about 9.23% (7). This could be due to smoking, air pollution and infections such as TB. The studies from CMC Vellore (1) and from North India (5) both showed a similar preponderance of admissions under medicine/ allied specialties.

Of the total number, 304 (59.5%) of the patients had government supported health insurance. The national coverage by government supported health insurance is less than 40%. Our statistics compares favorably with most states in India but Assam, Telangana, Meghalaya, and Goa report better coverage and Andhra Pradesh is ranked 1st with 70.1 % of households having at least one insured person.(National Family Health Survey -5, 2019-2020) data). The difficulties reported by our subjects in an informal discussion with those not having any health insurance, was mostly logistical. Considering

Kerala has a high level of education and a robust health care system, the inadequacy in insurance cover is surprising and needs to improve .

The activities of daily living (ADL namely bathing, dressing, mobility, feeding and toileting) and the instrumental activities of daily living (IADL namely cooking, shopping, making phone calls , housework, money management, and locating address in a new area) were assessed based on self reporting by patients, proxy reporting by caregivers and by the observations recorded by principal investigator . Difficulties with 3 of the ADL tasks was considered moderate limitation and inability to perform any of the five tasks was considered severe limitation. Similarly, difficulties with 5 tasks under IADL was considered moderate limitation while inability to perform any of the tasks was considered severe limitation . Of the total 511 patients studied, 171 (33.5%) patients reported moderate to severe limitations in IADL and about half of these patients reported moderate to severe limitations in ADL also. In a study published by Shekhar Chauhan et al (8), based on data from the longitudinal aging study in India, it was reported that 3% of elderly in the community had severe limitation of ADL and another 19% had moderate limitation of ADL The corresponding figures for IADL was 42% moderate limitation and 6% severe limitation. Our study reported better self care capability especially considering that the study population was hospital based and not from the general community. Better family support, higher literacy levels, social interactions, and economic independence could account for this finding.

The commonest presenting symptom was Dyspnea (36%), followed by chest pain (20.2%), cough (13.1%), focal neurological deficits (11.5%), altered sensorium in 8.8%, and fall in 7.8%. The commonest primary

diagnosis based on presenting complaints was acute exacerbation of COPD followed by ACS (16.8%), acute LVF (4.7%), metabolic encephalopathy (6.7%) , and CVA (12.3%). Infections were reported in 6.5% including pneumonia, leptospirosis, dengue, skin, soft tissue and joint infections etc and DM foot with gangrene was reported in a further 3.9%. There is a high percentage of COPD cases much higher than the national average.(7). This could be due to lifestyle choices, smoking, TB , and effects of pollution . Fractures were diagnosed in 7.8%. These findings are in line with the findings of the study from CMC,Vellore (1) and the study from North India (5) , both of which reported cardio respiratory issues as commonest presenting problems and leading cause of admissions. The preponderance of cardio respiratory issues and diabetic complications is a reflection of the high burden of non communicable diseases in Kerala. The commonest secondary diagnosis was respiratory infections precipitating acute exacerbation of COPD followed by ACS precipitating acute LVF.

Of the total study population , 90.2% were discharged and 8.2% expired after admission. The study from Vellore reported a mortality of close to 7% which is slightly better than reported here(1). This needs to be addressed by improving speed and quality of delivery of services. A longer stay in casualty prior to admission has been reported to increase mortality figures in the study from North India. (5).

The commonest cause of death was acute infective exacerbation of COPD and infection/ sepsis with MODS followed by acute coronary syndrome. Mortality was 19% in the age groups 65-69 and 75-79 while it was 16.7% in the age groups 60-64 & 70-74 years. Similar findings were noted in the study from Vellore.(1).

COPD and its complications were a leading cause of emergency admissions and also mortality. The incidence of this condition appears to exceed the national average and this could be due to lifestyle choices (smoking), infections (TB), environmental pollution (from fuels used for cooking, proximity to busy roads, employment in dusty environments such as quarries or construction etc). Early education regarding lifestyle choices along with addressing of environmental issues must be considered.(9). Hot humid weather in the state can also exacerbate the condition by encouraging the proliferation of mold and dust mites and also by increasing the work of breathing.(10).

Of the total 511 patients studied, 13 had no bystanders meaning that they were living alone or were destitute and were brought in by neighbors / social workers / police who found them in a sick condition. They were treated at government expense and 10 were relocated to care homes while 3 were sent with family members. A further 5 patients were admitted from care homes where they had been living. This is a sad reflection of the social isolation faced by the elderly and highlights the need for more care homes to cater to this group.

Conclusion

The study was an attempt to understand the most common presenting complaints and primary diagnosis in elderly patients in Kerala. The most common presenting problem was cardio respiratory disease. There is a larger incidence of COPD precipitating admissions and the reason for this higher than national average incidence of COPD needs to be studied. Another factor that needs rectification is the less than optimal health insurance coverage. There is a huge unmet need for care homes or other arrangements to care for elderly people living alone. The findings also reflect the huge burden of non

communicable diseases in Kerala and the havoc played by DM and its complications. This too needs to be addressed with early institution of life style modification, early diagnosis, tight control of blood sugars and monitoring for complications. The NCD clinics started in peripheral health centres are a step in the right direction.

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