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## Cause of admission and mortality in geriatric patients: a hospital based study, Nepal

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### ABSTRACT

**Introductions:** As the life expectancy of people of Nepal rises, geriatric population is also on constant rise. Prevalence of diseases in this population is not well studied in Nepal. This study is carried out to assess the disease burden in geriatric in-patients and the cause of death in Patan Hospital to inform the planning process.

**Methods:** A retrospective prevalence survey of geriatric in-patients in Internal Medicine Department in Patan Hospital was carried out using the data base record and patient's files over a period of one year. The demographics of patients, disease entity and the cause of death were recorded in Microsoft XL and were analyzed.

**Results:** There were 1,587 patients' charts available for analysis (out of total 1,599 admissions, 12 were excluded because charts were not found). There were 840 (52.93%) diseases of the respiratory system followed by cardio-vascular diseases 184 (11.59%) and infectious diseases 122 (7.68%). Of the 89 deaths (5.61% of 1587), 58 (65%) were due to non-communicable diseases while 31 (35%) were due to communicable diseases. The commonest cause of death was due to diseases of respiratory system 44 (COPD 20, pneumonia 18, others 6), followed by cerebrovascular accidents in 14.

**Conclusions:** Respiratory disease was common findings in more than half of geriatric patients admitted to Patan Hospital and was also the major cause of death. Overall, non-communicable diseases accounted for two thirds of the death.

**Keywords:** cause of death, elderly patient, geriatric patient, non-communicable diseases

## INTRODUCTIONS

Nepal is a developing country with rising geriatric population. The law of Nepal defines age above 60 years as elderly.<sup>1</sup> The national census reveals that the population above the age of 60 was 5% in 1951, 5.8% in 1991, 6.5% in 2001 and 8.1% in 2011.<sup>2-4</sup>

The pattern of disease has also changed in these years, a shift from infectious diseases to non-communicable diseases.<sup>5-8</sup> There are limited studies locally for the disease prevalence in the elderly.<sup>9-10</sup> Patan Hospital is the first hospital to be recognized by the Government of Nepal to provide the geriatric care subsidized by the ministry of health.

We aim to analyze the cause of hospital admission and outcome of geriatric population at Patan Hospital for better planning to serve the elderly.

## METHODS

This is a retrospective review of files of geriatric patients in Department of Internal Medicine of Patan Hospital, Patan Academy of Health Sciences, Lalitpur, Nepal, from April 13, 2016 to April 13, 2017. The discharge records as per ICD-10 of all the patients were retrieved from the record section, and files for geriatric patients were reviewed for age, sex, cause of admission, hospital stay and the cause of mortality. The geriatric population was defined as the patients

of 60 years or more on the day of admission. Study was approved by the Institutional Review Committee of PAHS. The data were analyzed descriptively with Microsoft Excel.

## RESULTS

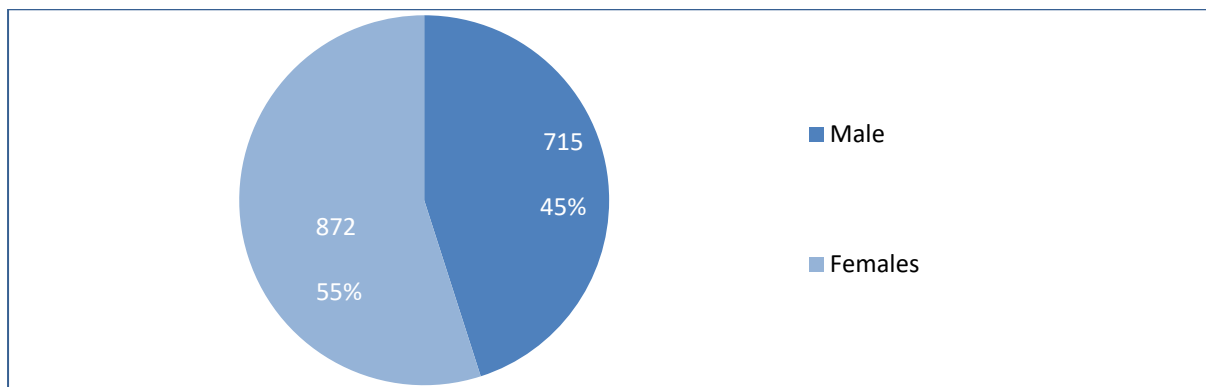
A total of 1587 charts of geriatric patients were available for analysis (out of 1599 admissions, 12 charts were not found and were excluded). There were 872 female patients (55%) compared to 715 (45%) male, (Figure 1). There were 574 (36.17%) patients in the age group 70-79 years, followed by 60-69 years, (Table 1).

The system-wise disease prevalence showed 840 (52.93%) to have involvement of respiratory system, followed by cardiovascular 184 (11.59%), (Figure 2).

The average duration of stay was 6.75 days. Males stayed in hospital for 7.01 days and females for 6.55 days.

There were total of 89 (5.61% of 1587) mortalities, respiratory disease 44 (49.44%), being the most common cause of death (Figure 4).

Out of 89 (5.61% of 1587 patients) deaths, 58 (65% of total death 89) were caused by NCD, (Figure 3).



**Figure 1. Sex distribution of geriatric patients (n=1587) age 60 years or more admitted to internal medicine department at Patan Hospital during one year from Apr 2016-7**

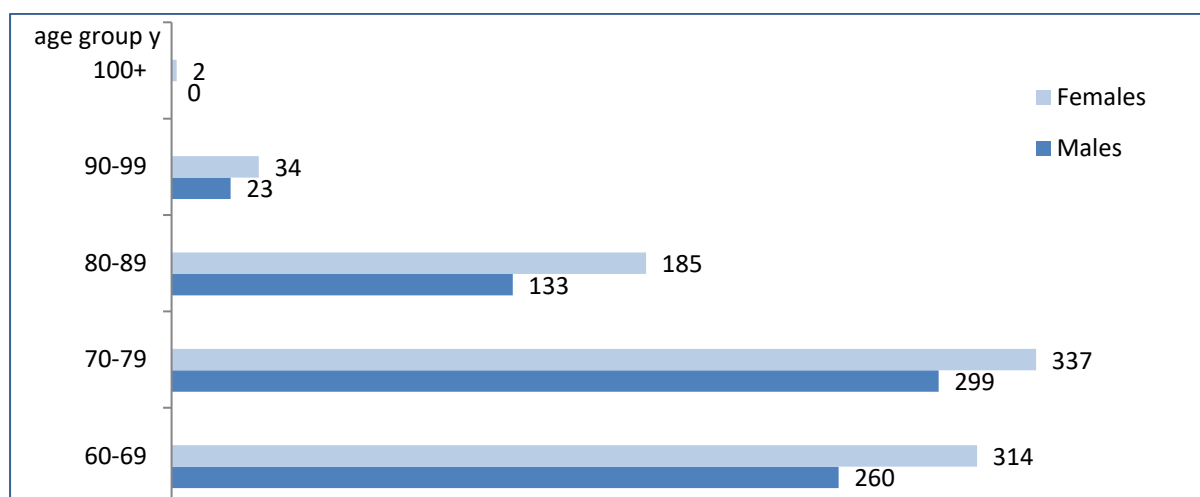


Figure 2. Age distribution of geriatric patients (n=1587) admitted to internal medicine department

Table 1. Cause of admission as per system of geriatric patients (n=1587) age 60 years or more admitted to internal medicine of Patan Hospital during one year from Apr 2016-7

Cause of Admission	N	Percentage
Respiratory	840	52.93%
Cardio-vascular	184	11.59%
Infectious diseases	122	7.69%
Neurology	117	7.37%
Gastro-intestinal	113	7.12%
Endocrine	61	3.84%
Renal	59	3.72%
Oncology	42	2.65%
Hematology	29	1.83%
Rheumatology	10	0.63%
Drugs and toxins	10	0.63%

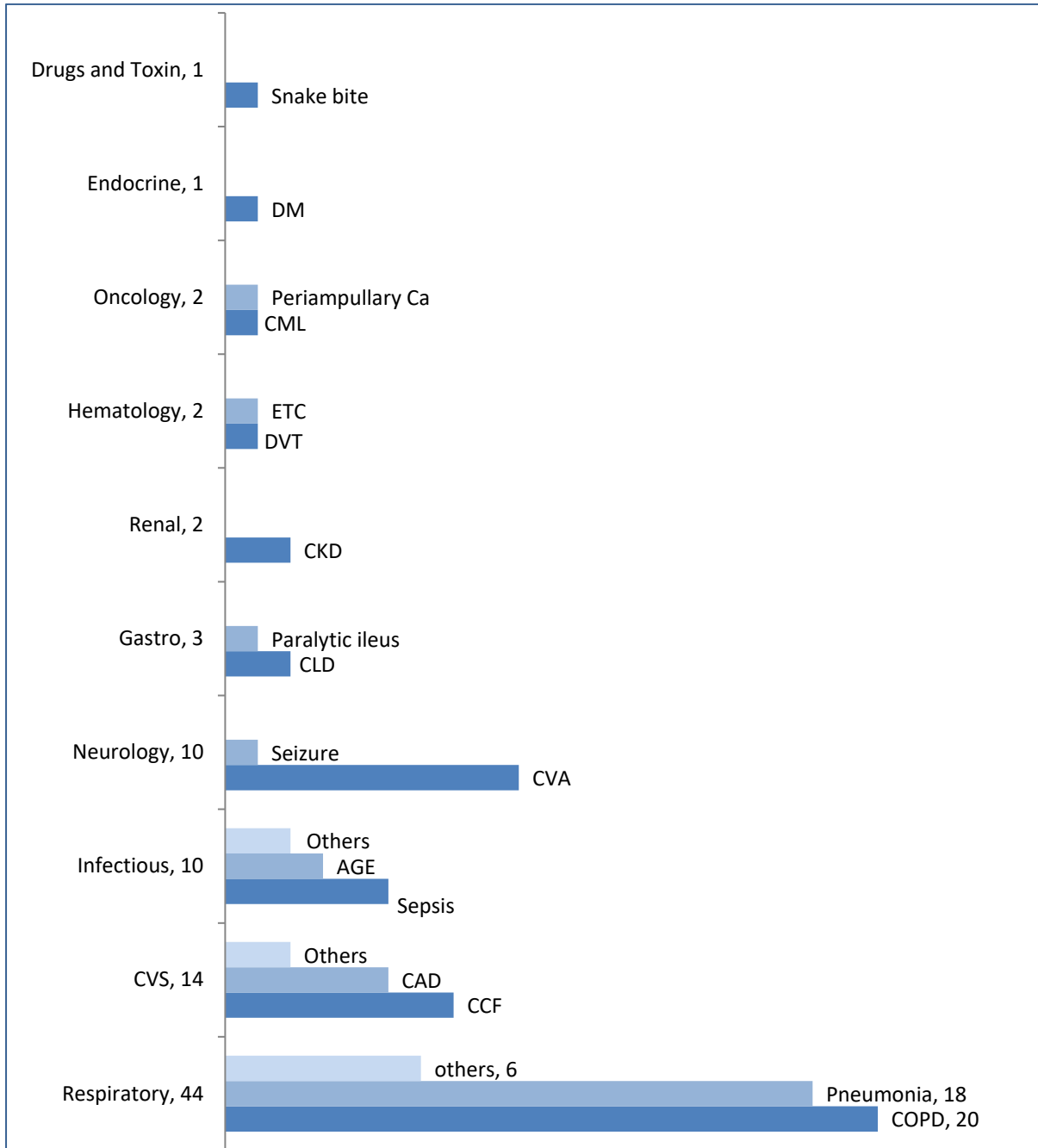
## DISCUSSIONS

Diseases of the respiratory system 840 (53.93%) was the most common disease among elderly population of both sexes, followed by cardio-vascular 184 (11.59%), infectious diseases 122 (7.69%), neurology 117 (7.37%) and gastro-enterology 113 (7.12%), (Table 1). Our finding is comparable with study conducted by GP Bhandari et.al.<sup>5</sup> which reports respiratory diseases, the chronic obstructive pulmonary disease (COPD) 43% to be the most common non-communicable disease (NCD) followed by cardiovascular disease in 40% among inpatients in non-specialized hospitals in Nepal. We had slight female preponderance, male to female ratio of 1:1.22, 719 vs 880. However, of average hospital stay of 5.76 days, male patients had

longer stay, average 7.01 days, compared to 6.55 days for females.

There were total of 89 (5.61% of 1587) deaths during one-year study period. The major cause of death was disease of respiratory system 44 (49.44%), followed by conditions of cardio-vascular system 14 (15.73%). Diseases of nervous system and infectious diseases were equal in numbers 10 (11.24%) at 3<sup>rd</sup>.

Among the systems, the specific cause of death, in respiratory system (n=44) was COPD in 20 (45.45% of 44) followed by pneumonia 18 (40.91% of 44). In cardio-vascular system (n=14), congestive cardiac failure was 7 (50% of 14) and coronary artery disease 5 (35.71% of 14). The specific cause of mortality in our study



**Figure 3. Cause of death (n=89) in geriatric patients (n=1587) age 60 years or more admitted to internal medicine of Patan Hospital during one year from Apr 2016-7**

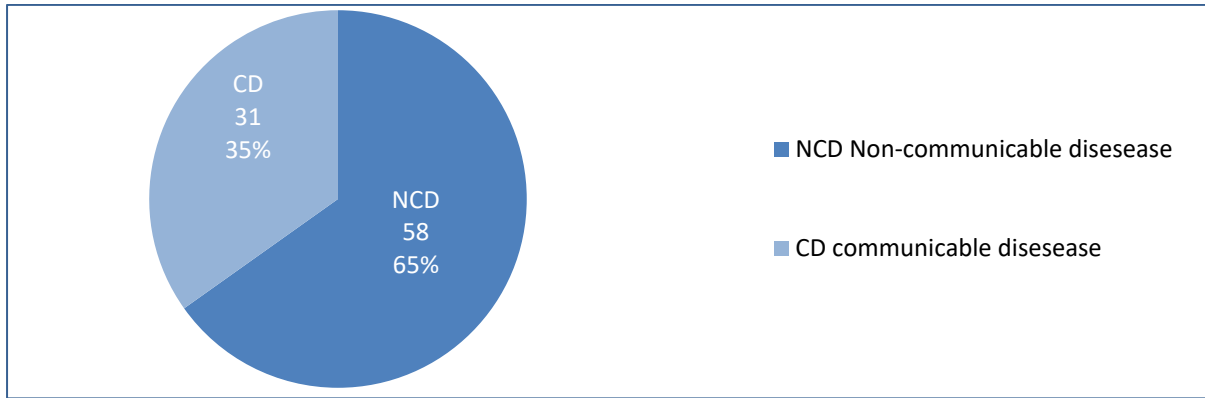
is comparable with the top five common causes of death in general population of Nepal and neighboring India published by WHO, (Table 2).<sup>6</sup>

Out of total deaths, NCD accounted for two-third with 58 (65%) deaths and communicable disease accounted for the remaining third 31 (35%). These findings match with the WHO report, which shows that there is an increasing

trend in death due to NCDs in Nepal rising from 51% in 2010 to 60% in 2014.<sup>7-8</sup>

If we look at the global prospective, 68% of the total deaths are attributable to non-communicable diseases.<sup>11</sup>

Aging is an inevitable process and the numbers of elderly population will rise constantly. There



**Figure 4. Mortality (89) due to NCD vs CD in geriatric patients (1587) age 60 years or more admitted to Patan Hospital during one year from Apr 2016-7**

**Table 2. Top five common causes of death in general population of Nepal and neighboring India, published by WHO.<sup>6</sup>**

Common Diseases	Nepal	India
Lung Disease	1	2
CAD	2	1
Stroke	3	3
Pneumonia	4	5
Diarrheal Disease	5	4

is no national data as of now on prevalence of disease in our population. Disease burden in geriatric population is not only burden to the patient and the family; it also consumes a lot of resources for advanced and complicated treatment at the end of life. Proper identification of disease load in the community helps to formulate national policies and guidelines.

Limitations of this study is nature of retrospective chart review; 12 charts were not found which may add to loss of overall data. Also, this was a study of geriatric patient admitted to internal medicine department and do not include other services, specially the surgical services which include elderly patients with malignancies. Thus, a further prospective study of multi-specialty and multi-center will provide better understanding of the disease burden and cause of death in geriatric population in Nepal. Patan Hospital is the first designated hospital for geriatric care and we aim to bring out more detail and broader study in this field.

## CONCLUSIONS

The most common cause of hospital admission and mortality in geriatric patients was respiratory cause.

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