

## Changing Pattern of Causes of Death in Elderly – An Appraisal

Karuna Ramesh Kumar<sup>1\*</sup>, Sampath Kumar<sup>2</sup> and Muralidhar Pai<sup>3</sup>

<sup>1</sup>Department of Pathology, Mangalore, India

<sup>2</sup>General Medicine, Mangalore, India

<sup>3</sup>Justice KS Hegde Hospital, Nitte University, Mangalore, India

\*Corresponding author: Dr. Karuna Rameshkumar, Professor of Pathology Justice KS Hegde Hospital, Mangalore, India, E-mail: [karunark@yahoo.com](mailto:karunark@yahoo.com)

Receiving date: August 10 2015; Accepted date: October 26 2015; Published date: October 29 2015

Copyright: © 2015 Kumar KR, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

**Aim and Objective:** To observe pattern of disease and death in elderly as a reflection of epidemiological transition reported by WHO.

**Material and Methods:** The study was cross sectional and hospital based. All deaths reported in the hospital for one year were reviewed for demographic details, diagnosis, and course of disease and cause of death. Whenever post mortem details were available, they were also recorded.

**Results:** Among 275 deaths, 43% was observed in patients above 60 years. Heart related ailments and diabetes with complications were leading causes of death followed by infections. Malignancy and liver related disorders including alcoholic liver disease were third common causes of death. The other causes included renal conditions, trauma and poisoning.

**Comment and Conclusions:** The pattern is consistent with changes seen globally. The impact of urbanization probably reflects in alcoholic liver disease being the third common cause of death. Trauma as a cause of death was the least common compared to patients below 60 years. The pattern implies a significant burden on the economy as there is a paradigm shift in diagnostics and management. As geriatric population increases, continuous modification of health care services is required to address needs created by changing pattern of disease and death.

**Keywords:** Epidemiological transition; Elderly; Cause of death

### Introduction

WHO defined "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" [1] which applies to the entire community, irrespective of the age. The state of health has a bearing in every aspect of our life and many factors including health care services play a role in it. According to Government of India statistics, cardiovascular diseases account for one third of elderly mortality, respiratory disorders account for 10% mortality. Infections like tuberculosis account for 10% while gastrointestinal and genitourinary tract infections are less than 4%. Incidence of neoplasms is only around 6% [2]. The general shift from acute infectious and deficiency diseases which characterize poor to under development to chronic non communicable diseases characteristic of modernization and advanced levels of development is referred to as the "epidemiological transition" by WHO [3]. The epidemiologic transition describes changing patterns of population age distributions, mortality, fertility, life expectancy, and causes of death. This study presents an evaluation of such a transition and analysis of the disease pattern and death in elderly from a hospital based study in Dakshina Kannada district in Karnataka.

### Material and Methods

The study was retrospective and hospital based in Dakshina Kannada. The Dakshina kannada district has a vast network of public

health services including one district hospital, six medical education institutions which includes private hospitals, six community health centers (CHCs), 62 primary health centers (PHCs), and 388 subcenters. The study population represented predominantly the population from Dakshina Kannada and also included patients from the border of Kerala especially Kannur and Kasargod and was cross sectional in nature.

For the purpose of the study the state of elderly was defined as persons above 60 years age. During the one year period, all deaths in the hospital were reviewed. For each patient, the following details were analyzed – (a) the demography (b) diagnosis at the time of admission and the course of disease (c) cause of death d.co-morbidities. If any post mortem was done, the details of the post-mortem were also included. If multiple co morbidities were present, the patient details were included in the predominant one at the time of death. For e.g. If the patient had diabetes mellitus and hypertension, if the patient had intra cerebral hemorrhage due to hypertension, the details were included in hypertension. If it was not possible, it was entered as multiple causes.

The results were summarized in the tabular form and descriptive statistics of percentage was applied.

### Results

The number of admissions for during the study period was 16,936. The total number of deaths was 275 and in elderly were 120 (43%). There was a slight predominance of males as reflected in the general

population. The age ranged from 60 years to 97 years. The causes have been represented in the Table 1.

| S. No | Main cause of death               | Number |
|-------|-----------------------------------|--------|
| 1     | Myocardial infarction and related | 22     |
| 2     | Diabetes mellitus                 | 19     |
| 3     | Hypertension                      | 18     |
| 4     | Infections including tuberculosis | 26     |
| 4     | Liver diseases                    | 9      |
| 5     | Multiple causes**                 | 10     |
| 6     | Kidney related                    | 6      |
| 7     | Malignancy                        | 9      |
| 8     | Stroke                            | 9      |
| 9     | Trauma                            | 1      |
| 10    | Others**                          | 3      |

\*\*Others included poisoning and abdominal aneurysm

**Table 1:** Causes of death.

Heart related ailments and diabetes with complications were leading causes of death followed by infections. The common complications in Diabetes were neuropathy followed by ophthalmologic complications. The end stage renal disease and chronic nephrotic syndrome were seen in 4% of the patients, but that as a cause of death was observed only in 0.5% of cases. The cases of Tuberculosis included pulmonary as well as disseminated forms. This reflects the disease is not eradicated effectively and the elderly are prone for it due to decreased immunity. Three of them died of aspiration pneumonia.

Malignancy and liver related disorders including alcoholic liver disease were third common causes of death. The sites of malignancy included GI tract, ovarian and lung. Except two of them, all were in advanced state of malignancy.

## Discussion

India is in a phase of demographic transition. There has been a sharp increase in the number of elderly persons between 1991 and 2001 and it has been estimated that in the year 2050, the number of elderly people would have increased to about 324 million [4]. There are two major components of the transition: [1] changes in population growth and composition, especially in the age distribution from first decade to beyond six decades, and [2] changes in patterns of mortality, including increasing life expectancy and the relative importance of different causes of death [4]. The pattern of mortality observed in the present study is consistent with the change seen globally [5].

The pattern implies a significant burden on the economy as there is a paradigm shift in diagnostics and management. Review of incidence of the different diseases in the same hospital over a period of 10 years from 2003 to 2013 showed a dramatic increase of diabetes mellitus as

524 cases in a year in 2003 to 2100 per year in 2013. Similarly hypertension increased from 515 cases to 2422 in 2013. ICMR in the attempt to compile data on hypertension found 9 million elderly had hypertension [6]. The prevalence rate of heart disease among the city dwelling population was three times higher than the rural population and in 1997 it was reported as 9 million [6,7].

Alcohol consumption which starts as a social drink later becomes alcohol dependent. It was observed when the alcohol related diseases were reviewed, the number of cases had markedly increased from 42 to 412 (10% increase). The impact of urbanization probably reflects in alcoholic liver disease being the third common cause of death. Though the exact figures are not available, more than 30% of the elderly used other medicines such as ayurvedic, homeopathy and home remedy. This was probably due to population from rural areas and also the proximity to Kerala. Trauma as a cause of death was the least common compared to patients below 60 years.

In a study based on autopsy findings, one third of deaths were due to cardiac disorders which is similar to the present study [8]. Central nervous system disorders were frequent as an underlying disease, but not common as cause of death. Elderly people are prone to mental morbidities due to ageing of brain and other factors due to physical health in addition to socio economic factors which play a major role [9].

One of the key issues understood from the epidemiologic transition is that interventions in health care must fit the population as well as to prepare for the new challenges. In geriatric population old age diseases are not always curable, implying a stress in the financial as well as physical health, infrastructure both at macro and micro level as geriatric population increases, continuous modification of health care services is required to address needs created by changing pattern of disease and death.

## References

1. (1948) Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, and 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States and entered into force on 7 April.
2. Guha R (1994) Morbidity related epidemiological determinants in Indian aged- An overview. In: Ramachandran CR, Shah B (eds) Public health implications of ageing in India. ICMR.
3. McKeon RE (2009) The Epidemiologic Transition: Changing Patterns of Mortality and Population Dynamics. *Am J Lifestyle Med* 3: 19S-26S.
4. Caldwell JC (2001) Population Health in Transition. *Bull World Health Organ*; 79: 159-160.
5. Ingle Gk, Nath A (2008) Geriatric Health in India: Concerns and Solutions *Indian J Community Med*. Oct; 33: 214-218.
6. Shah B, Prabhakar AK (1997) Chronic morbidity profile among elderly. *Indian Journal of Medical Research*; 106: 265-272.
7. Ajith JD Souza (2011) Health of the elderly in rural Dakshina district. *Indian journal of gerontology*; 25: 329-344.
8. Klima MP, Povysil C, Teasdale TA (1997) Causes of death in geriatric patients: A cross cultural study. *J. Gerontol.A. Biol.Sci.Med.Sci*; 52: 247-253.
9. Dey AB, Soneja S, Nagarkar KM, Jhingan HP (2001) Evaluation of health and functional status of older Indians as a prelude to the development of a health program. *Natl Med J India* 14: 135-138.