 DOI: 10.18231/2394-2738.2016.0010

Trend and pattern of mortality among patients admitted in a tertiary care hospital

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Abstract

Introduction: Mortality data provides information which helps in planning health care services.
Objectives: To find out proportion and trend of mortality among patients admitted in a tertiary carehospital and to assess distribution of mortality in relation to age, sex, and system affected etc.
Material and Methods: A record based cross sectional study was conducted .Mortality data from 2013-2015 was collected from Medical record section and analysed.
Results: Mortality rate from 2013 to 2015 was found to be 23.9, 17.94 and 19.09/1000 population .60 % of deaths occurred among patients above age of 40 years.25-30% deaths were among geriatric population. More than 60% deaths were among males. More than 30% deaths were either due respiratory or cardiovascular causes.25% deaths were due to non-communicable diseases.
Conclusions: There is a decreasing trend of mortality. Proportion of mortality was more among males and geriatric population.

Keywords: Trend of Mortality, Pattern of Mortality, Mortality Rate, Tertiary Care Hospital.

Introduction

To the epidemiologist, the most important event and the least equivocal measure of health is death, which could be called the absolute opposite of health.(1)

Traditionally and universally, most epidemiological studies begin with mortality data, which is relatively easy to obtain and, in many countries, reasonably accurate. Many countries have routine systems for collection of mortality data. Causes of death are important and widely used for number of purposes they may employ in explaining trends and differentials in overall mortality, indicating priorities of actions and in the assessment and monitoring of public health.(2)

India is undergoing rapid epidemiological transitions a consequence of economic and social change.(3) Although diseases have not changed significantly through human history, their patterns have. It is said that every decade produces its own pattern of disease.

The pattern of diseases in developing countries is very different than those in developed ones. In a typical developing country, most deaths result from infectious and parasitic diseases, abetted by malnutrition. In India, about 40% of deaths are from infectious, parasitic and respiratory diseases as compared with 8% in developed countries. Diarrheal diseases are widespread. Cholera has shown a declining trend. Malaria and kala azar, which showed a decline in the 1960s, have staged a comeback. Japanese encephalitis and meningococcal meningitis have shown an increasing trend. There is no appreciable change in the prevalence of tuberculosis, filariasis, viral encephalitis, diarrhoeas and dysentery and disorders of malnutrition and under nutrition. On the other hand, an increase in the frequency of new health problems such as coronary heart disease hypertension, cancer, diabetes and accidents has been noted.(2)

The Medical Records Department in a teaching hospital has a system of compilation and retention of records; yet, the acquisition of meaningful statistics from these records for health care planning and review is lacking. Mortality data from hospitalized patients reflect the causes of major illnesses and care-seeking behaviour of the community as well as the standard of care being provided. Records of vital events like death constitute an important component of the Health Information System. Hospital-based death records provide information regarding the causes of deaths, case fatality rates and age and sex distribution, which are of great importance in planning health care services. There is a paucity of information about direct causes of child mortality in developing countries.(1) This information also provides the basis for patient care and helps the administration in managing day-to-day hospital affairs.

Objectives

1) To find out the proportion and trend of mortality among patients admitted in a tertiary care hospital from 2013 to 2015.
2) To study the distribution of mortality in relation to age, sex, department of admission, system affected and time of death.

Material and Methods

After taking permission from Institutional Ethics Committee the study was started. A record based cross sectional study was conducted in a medical college attached to a tertiary care hospital in Nagpur. All case records of indoor patients after discharge or death are submitted in the Medical Record Section that works under the Department of Community medicine. All deaths that occurred during the 3-year period, i.e., 2013-2015, were considered for analysis. Data was analysed in the form of percentage. Case sheets of deaths for years

2013-2015 were analyzed to study the trend of mortality. Mortality was analysed Department wise, age wise and sex wise, in relation to time of mortality and cause of mortality. The data was analysed in the form of percentages.

Results

Table 1: Mortality rate from 2013-15 in a tertiary care hospital

	Mortality rate/1000 admissions			Total
Year	2013	2014	2015	
No. of deaths	572	467	498	1537
Mortality rate	23.90	17.94	19.09	20.21

Mortality rate was found 23.90, 17.94 and 19.09 /1000 indoor patients during 2013, 2014 and 2015 respectively. There was a decrease in mortality rate in 2014. In 2015 again there was a slight increase in mortality rate.

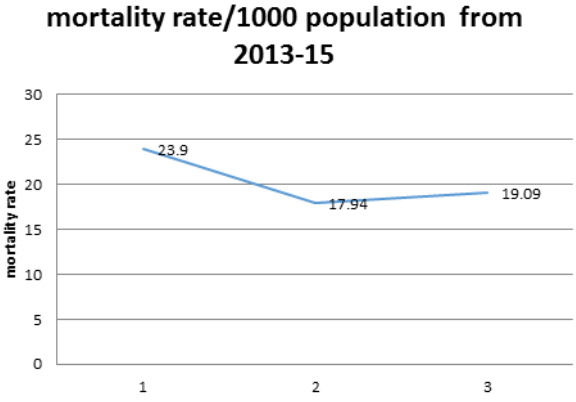

Table 2: Department wise, age wise and sex wise proportion of mortality in a tertiary care hospital

Dept.	Year			Total N=1537 No. (%)
	2013 (n=572)	2014 (n=467)	2015 (n=498)	
	No. (%)	No. (%)	No. (%)	
Medicine	335(58.6)	248(53.1)	269(54)	852(55.43)
Paediatrics	79(13.8)	77(16.5)	59(11.8)	215(13.99)
TB chest	20(3.5)	25(5.4)	37(7.4)	82(5.33)
Surgery	85(14.9)	49(10.5)	59(11.8)	193(12.56)
Orthopaedics	3(0.5)	3(0.6)	15(3)	21(1.37)
OBGY	3(0.5)	6(1.3)	3(0.6)	12(0.78)
Paed surgery	1(0.2)	3(0.6)	0	4(0.27)
ENT	1(0.2)	2(0.4)	0	3(0.190
casualty	45(7.9)	54(11.6)	55(11)	154(10.02)
Psychiatry	0	0	1(0.2)	1(0.06)
Age				
Age in years	No (%)			
0-1	63(11)	51(10.9)	49(9.8)	163 (10.60)
2-10	10(1.7)	30(6.4)	12(2.4)	52(3.38)
11-20	32(5.6)	23(4.9)	22(4.4)	77(5.01)
21-30	65(11.4)	64(13.7)	65(13.1)	194(12.62)
31-40	65(11.4)	57(12.2)	61(12.2)	183(11.91)
41-50	89(15.6)	81(17.3)	85(17.1)	255(16.60)
51-60	86(15)	58(12.4)	75(15.1)	219(14.25)
61-70	110(19.2)	68(14.6)	78(15.7)	256(16.65)
>70	52(9.1)	35(7.5)	51(10.2)	138(8.98)
Sex				
Male	373(65.21)	294(62.95)	313(62.9)	980(63.76)
Female	199(34.79)	173(37.05)	185(37.1)	557(36.24)

Maximum mortality was in Medicine followed by Surgery and Paediatrics. The rate of admission is more in these departments. This may be the reason for present study findings. 25-30% deaths were in elderly population. 60% deaths were in the population above age of 40 years. More than 60% deaths were among males. Deaths among males were more as compared to females.

Table 3: Duration between admission and death

Duration and timings	Year		
	2013 (n=572)	2014(n=467)	2015 (n=498)
Duration between admission and death	n (%)	n (%)	n (%)
Within 24 hours	138(24.1)	123(26.3)	152(30.5)
>24hrs-≤48 hours	59(10.3)	60(12.8)	53(10.6)
>48 hours	315(55.1)	250(53.5)	254(51)
Timing of death			
9am to 4pm	186(32.5)	131(28.1)	152(30.5)
4 pm to 10 pm	130(22.7)	121(25.9)	121(24.3)
10 pm to 9 am	225(39.3)	215(46)	225(45.2)

Out of total deaths, more than 50% deaths were occurred after 2 days of admission.25-30% deaths within 24 hours of admission.

Table 4: System wise cause of mortality

System	2013 (n=572)	2014 (n=467)	2015 (n=498)
	No. (%)	No. (%)	No. (%)
Respiratory	129(22.6)	94(20.1)	117(23.5)
Cardiovascular	74 (12.9)	46(9.9)	57(11.4)
Gastrointestinal	37(6.5)	42(9.0)	26(5.2)
CNS	32(5.6)	61(13.1)	39(7.8)
excretory	35(6.1)	28(6.0)	28(5.6)
Liver	33(5.8)	34(7.3)	32(6.4)
Circulatory	26 (4.5)	25(5.4)	30(6.0)
Malignancy	19(3.3)	15(3.2)	18(3.6)
reproductive	1(0.2)	9(1.9)	5(1.0)
Injury	20(3.5)	19(4.1)	23(4.6)
Burns	14(2.4)	7(1.5)	11(2.2)
Poisoning	7(1.2)	5(1.1)	5(1.00
others	21(3.7)	82(17.6)	107 (21.5)

Respiratory and cardiovascular were the major causes of deaths. Approximately 35% deaths occurred either due to respiratory or cardiovascular illness. 30% deaths were due to non-communicable diseases (cardiovascular, circulatory, malignancy etc.)

Discussion

Mortality rate was found 23.90, 17.94 1nd 19.09 /1000 indoor patients during 2013, 2014 and 2015 respectively. Overall there was a decrease trend of mortality. Kulkarni SK and Doibale MK[3] had findings similar to the present study. Few authors[1,4] found a linear trend of mortality which is contradictory to the present study findings.

Maximum mortality was among patients admitted under department of Medicine, Surgery and Paediatrics. The rate of admission is more in these departments. This may be the reason for present study findings. More than 25% deaths were in the age group above 60 years. Mohamed MK also found major proportion of deaths were in more than 60 years.[5] Few authors[1,6] reported 21% deaths and 30% deaths among age group above 60 years which is similar to the present study finding. 29% deaths were in the age group of 31-50 years.10.60% deaths were among infants.

A study conducted in Bhopal showed increasing mortality due to non-communicable diseases.[6] This is similar to present study. As compared to females, more deaths were reported among males. Few authors had similar study findings.[1,5,6,7]

Conclusions

Overall there is a decreasing trend in mortality. Proportion of mortality was found to be more in elderly population. It was more in males. Non-communicable diseases were a common cause of mortality.

By knowing information regarding trend, pattern of mortality, various reasons for mortality in the hospital would be helpful for health programmers and managers in planning various measures to reduce mortality.

References

1. L and Mulaje S. Mortality Trend and Pattern in Tertiary Care Hospital of Solapur in Maharashtra. Indian J Community Med. 2013;38(1):49–52.

2. Park K. Park's textbook of preventive and social medicine. 21st ed. 1167 Prem Nagar, Jabalpur, 482001 (M.P.), India: M/s Banarsidas Bhanot Publishers; 42 & 52.
3. Kulkarni SK and Doibale MK. Mortality trend in tertiary care hospital of Nanded in Maharashtra .International journal of basic and applied medical sciences 2014;4(1):372-73.
4. Joshi R, M- Agnolia Cardona, Ayengar S, Sukumar A. Chronic diseases –now a leading cause of death in rural India- mortality data from Andhra Pradesh rural health initiative. International Journal of epidemiology2006;35(6):1522-29.
5. Mohamed Murtuza Kauser, Someshwar Kinnera, Jonathan. Study of mortality pattern in adults at a tertiary care teaching hospital in south India 2014. RRJMHS; 3(4):145-149.
6. Holambe VM, Thakur NA. Mortality pattern in hospitalised patients in a tertiary care centre of Latur 2014.JKIMSU;3(2):111-15.
7. Khare N, Gupta G, Gupta SK, Khare S. Mortality trend in a tertiary care hospital of Bhopal, Madhya Pradesh. National Journal of Community Medicine2016;7(1):64-67.