



MORTALITY TREND IN A TERTIARY CARE HOSPITAL OF BHOPAL, MADHYA PRADESH

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ABSTRACT

Introduction: Mortality data from hospitalized patients reflect the causes of major illness and care seeking behaviour of the community as well as standard of care being provided. Record of vital events like death constitutes an important component of the health information system. This study was conducted to find out the causes of mortality of inpatients in tertiary care hospital admitted during 2007-2011.

Methodology: A retrospective analysis was conducted with medical record department in tertiary care hospital of Bhopal over a 5 years period. Death was classified using a standard system of ICD-10 (international classification of diseases).

Results: Total 1619 death more 24% (723) were in the group of 45 years and above followed by 16-30 years of age 21% (336). Males were more (56%) than females (44%). The leading cause of death in last five years was septicaemia (24%), followed by heart diseases (14.63%) and pulmonary tuberculosis (10.31%). Least common cause of mortality was poisoning 2.1% and cancer 2.4%.

Conclusion: Most common cause of overall mortality was septicaemia, cardiac and pulmonary disease. Steps are needed to be taken to educate the people and also to provide better treatment facilities at grass root level. An urgent reorientation of the health delivery system is required to enable the implementation of evidence-based strategies that can address this new challenge of non-communicable conditions.

Key Words: Trend of mortality, causes of death, tertiary care hospital

BACKGROUND

Patterns of mortality decline that occur with the demographic transition is a change in the distribution of deaths by cause away from a pattern dominated by communicable diseases toward one in which non-communicable diseases account for the overwhelming majority of deaths. This process, known as the epidemiologic transition.¹ Life expectancy in India shows a continuous increasing trend from 23.63 years for male

and 23.96 years for females in 1901 it has gone up to 63.9 years for males and 66.9 years for females in 2001.²

India is undergoing rapid epidemiological transition as a consequence of economic and social change. The pattern of mortality is a key indicator of the consequent health effects but up-to-date, precise, and reliable statistics are few, particularly in rural areas.³

Mortality statistics reveal much about the health of the population: Once derived statistics and life expectation at birth and at various subsequent ages is often cited as an indicator of population health when comparisons are made over time and between nations for designing intervention programs, allocation of resources and indicating priorities. It is essential to know the frequency of disease or death, but this is not static, and keeps changing. It is also important to decide whether the observed change reflects change in incidence, in case fatality or both. It is equally important to determine whether the observed trend in mortality is genuine or is it due to change in nomenclature or classification of disease, changes in accuracy of diagnosis or changes in the statistical classification or allocation of priorities.⁴

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.⁵

The causes of mortality often poorly documented in developing country, medical record department in the teaching hospital has a system of compilation and retention of a record, 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 illness and care seeking behaviour of the community as well as standard of care being provided. Records of vital events like death constitute an important aspect of health information system. Hospital based health records provide information regarding cause of death, case fatality rate, age and gender distribution, which are of great importance in planning health care services.⁴

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 and 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.⁵

This information also provides the basis for patient care and helps the administration in managing day-today hospital affairs. So it is very useful

for improving overall hospital services and timely corrective measure to avoid preventable deaths, the present study was aimed at finding out the various causes of mortality and trend in a tertiary care hospital admitted during the period of 2007 to 2011 and epidemiological information related to mortality.

OBJECTIVES

The research was conducted to study the trend of mortality in tertiary care hospital and analyze the various causes of mortality.

METHODOLOGY

A hospital based descriptive (retrospective) study was carried out in 1150 beds tertiary care medical college hospital from 2007 to 2011 of Bhopal to study the death trend and to find the various causes so we can rectify the problem for prevention of avoidable deaths, all deaths occurred during this period were retrospectively analysed for causes of death and various epidemiological parameters from medical record department, all deaths were reported during this period were taken as a sample size, all deaths occur during that period were computed from record and various epidemiological factors like age wise, sex wise mortality, cause of death, average stay in hospital were analysed to assess trend and various causes of mortality. Death was classified using a standard system of ICD-10 (international classification of diseases). The Period of study was from July 2013 to Dec 2013 and hospital record were analysed retrospectively, all deaths recorded during that period. A total of 1619 mortality cases were reported during study period, data were analysed with help of SPSS 10.

Those deaths occurred outside the hospital or brought dead or came for post-mortem were excluded from the study.

OBSERVATIONS

A total 1619 deaths were reported during the study period, maximum deaths occurred in 2011 (22%) followed by in 2008 (21%). Mortality cases according to their age more 24% (723) in the group of 45 and above followed by 16-30 years of age 21% (336). According to gender males are more 56% (907) than females 44% (712).

Table1: Mortality cases according to their socio-demographic profile

Category	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	Total (%) (n=1619)
Age group						
Up to 15 yrs	32(14)	51(22)	55(24)	47(20.5)	45(19.5)	230(14)
16-30 yrs	48(14)	71(21)	64(19)	70(20.8)	83(24.7)	336(21)
31-45 yrs	51(15.5)	72(22)	68(21)	60(18)	79(24)	330(20)
45 and above	127(18)	153(21)	140(19)	148(20)	155(21)	723(24)
Gender						
Male	136(15)	196(21.6)	191(21)	173(19)	211(23.3)	907(56)*
Female	122(17)	151(21.2)	136(19)	152(21.4)	151(21.2)	712(44)

* $\chi^2=3.72$ (P=0.46)**Table 2: Distribution of Mortality cases of five years according to diagnosis made**

Diagnosis	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	Total (%)
Head injury	12(13%)	16(18%)	17(19%)	20(22%)	24(27%)	89 (5.49%)
Burn	11(7.5%)	22(15%)	37(25%)	42(28%)	36(24%)	148 (9.14%)
Poisoning	4(12%)	6(18%)	6(18%)	10(29%)	8(24%)	34(2.1%)
Septicaemia	79(20%)	87(22%)	78(20%)	63(16%)	81(21%)	388 (23.96%)
Heart Disease	46(19%)	61(26%)	34(14%)	39(16%)	57(24%)	237 (14.63)
Pulmonary Tuberculosis	23(14%)	46(28%)	30(18%)	26(16%)	42(25%)	167 (10.31%)
COPDs	18(20%)	21(24%)	18(20%)	16(18%)	16(18%)	89 (5.49%)
Interstitial lung Disease	6(15%)	10(24%)	6(15%)	7(17%)	12(29%)	41 (2.53%)
Liver disease	19(17%)	23(20%)	22(19%)	25(21%)	25(21%)	114 (7%)
Carcinoma	6(15%)	9(23%)	8(21%)	9(23%)	7(18%)	39 (2.40%)
Cerebral vascular accident	18(14%)	23(18%)	25(19%)	38(29%)	27(21%)	131 (8%)
Renal failure	4(5%)	12(15%)	33(43%)	19(25%)	9(12%)	77 (4.75%)
Low birth weight	12(18%)	11(17%)	13(20%)	11(17%)	18(28%)	65 (4%)
Total	258(16%)	347(21%)	327(20%)	325(20%)	362(22%)	1619(100%)

Table 3: Mortality cases according to cause of injury

Causes of mortality	Deaths (%)	P value
Head Injury (N=89)		
a) RTA	65 (73)	<0.05
b) Fall	11 (12.35)	
c) Assault	3 (3.37)	
d) Others	10 (11.23)	
Poisoning (N=34)		
a) Organo phosphorus	17 (50)	<0.05
b) Rat killer poison	3 (8.80)	
c) Unknown	14 (41.20)	
Carcinoma (N=39)		
a) Grade-I	8 (20.51)	>0.05
b) Grade-II	16 (41)	
c) Grade-III	15 (38.46)	
Septicaemia (N=388)		
a) Cardiac Plus Pulmonary	290 (74.74)	<0.05
b) Liver	36 (9.27)	
c) Renal	62 (15.97)	
Low birth weight (N=65)		
a) Pre term delivery	12 (18.46)	<0.05
b) Mother nutritional deficiency	53 (81.54)	
Liver diseases (N=114)		
a) Alcoholic	48 (42.10)	>0.05
b) Carcinoma	6 (5.26)	
c) Jaundice	55 (48.245)	
d) Hepatitis B	5 (4.38%)	

In all causes of mortality septicaemia was significant cause of mortality.

Most common cause of death in last five years was septicaemia 24% (388) followed by heart diseases 14.63% (237), least common cause of mortality was poisoning and cancer 2.1% (34) & 2.4% (39%) respectively. Common cause of head injury related mortality was road traffic accident (TRA) 73%, common cause of poisoning related mortality due to Organo phosphorus 50%, most common cause of septicaemia related mortality due to cardiac plus pulmonary causes.

DISCUSSION

The present study shows that there is increase trend of mortality rate from 2007 (16%) to 2011 (22%) similar finding found in John Last⁴ mentioned that the mortality trend with time was usually either upward or downward, and a seasonal trend of deaths was observed in the present study, but was not seen by Roy et al.⁶ But In the study by Godale et al., (2013), the mortality trend was linear for the period 2005-2009.⁷ Preponderance of male deaths (56%) over female (44%) deaths, similar to the present study, was a finding of many authors.^{4,6,8,9}

The present study reveals that septicaemia due to cardio pulmonary system diseases the leading

cause of deaths (23.96%), similar observation made by Bhatia et al⁸ (34.90%) and Rohina et al⁹ (32%), the deaths due to these disease have increased to almost one and half time as compared to year 1983 (18.1%), which may be due to multiple life style factors like sedentary life style, unhealthy diet, increasing alcohol and tobacco consumption, the stress of modern society and improvement in socioeconomic status. The case study of Medical college Hospital also reveals that (24 %) of septicaemia deaths were occurred due to cardiopulmonary diseases, observation made by Bhatia et al⁸; deaths due to circulatory system diseases (47.1%) which were higher than present study may be due to patients are referred from different part of North India at a very critical stage in PGI Chandigarh. The present study shows that Bhopal is experiencing epidemiological transition, where trend of increasing mortality due to non-communicable diseases, there is need to create more health awareness for risk factors of circulatory diseases and standard treatment practice so that the death due to these diseases could be prevented. The limitation of the present study are that deaths reported from the hospital only were medically certified and included, not including death certification of deaths which take place at home; and also this is not a community based study.

CONCLUSION:

In conclusion, mortalities in the hospital were prevalent and the causes are multifactorial. Most common cause of overall mortality was septicaemia. Common cause of head injury related mortality was road traffic accident, Organo phosphorus was the commonest poison among poisoning related deaths. Road traffic accident and poisoning were preventable cause of mortality in the hospital. This calls for public health measures to reduce mortality by intervening on preventable causes. Prospective studies should also be initiated in the hospital, and in fact the hospital should design mortality reduction strategies. A concerted action by the health care team includ-

ing all professionals (physicians, nurses, and clinical pharmacists) can greatly contribute to the reduction of mortality from treatable causes.

Future Implication of the study:

This study will helpful for reviewing critical areas and various reasons for mortality in the hospital, it would also helpful for health managers to see mortality in which department more than acceptable limit and how we can improve that by intervention.

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