Mortality Patterns among Hospital Deaths

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ABSTRACT

Background

Death occurring in hospital is medically certified by attending physicians with cause of death. In developing countries such as Nepal, limited resources are available related to the pattern of deaths that occur in hospitals, so that the health priorities can be selected wisely.

Objective

The objective of this study was to determine the pattern, frequency and causes of inpatient mortality in hospital.

Method

This was a retrospective study of all deaths occurred at the Dhulikhel Hospital, Kathmandu University Hospital, Dhulikhel from 1st January 2012 to 31st December 2013. There were 247 deaths and for each case, medical records were reviewed.

Result

There were 26,836 patients admitted during the study period and 247 (0.90%) of them died in hospital. Males accounted for 42.92% (n=106) deaths and female 57.08% (n=141). The average length of stay before death were less than 5 days (n=152). The majority of deaths were in Medicine department 52.64% (n=130) followed by Pediatrics 32.38% (n=80). Majority of deaths were at the extremes of life so that less than one month 12.95% (n=32) and over 60 years 36.84% (n=91). The main cause of death was respiratory disease 38.87% (n=96), followed by infectious 20.64% (n=51) and hepatobiliary disease 16.19% (n=40).

Conclusion

Registration data on causes for deaths occurring in hospitals require periodic validation prior to their use for epidemiological research or public health policy. Procedures for death certification and coding of underlying causes of death need to be streamlined to improve reliability of registration data. Estimation of cause-specific mortality from this research will inform the burden of disease and guide to intervene and reduce avoidable mortality in hospitals.

KEY WORDS

Cause of death, mortality, pattern of death

INTRODUCTION

Governments and international health agencies need accurate information on the leading causes of death in different populations to help them to develop and monitor effective health policies and programmes. Evaluation of in hospital mortality makes appropriate assessment of healthcare performance to some extent. Mortality data from hospitalized patients reflect the causes of major illnesses and standard of care being provided. The optimal source of information on causes of death is from medical certificates of cause of death, issued by attending physicians. The World Health Organization has prescribed a standard form for the medical certificate of cause of death, which allows for the listing of multiple diseases or conditions that occur in a chronological and pathophysiological sequence terminating in death, as well as the mention of associated diseases or conditions that are not directly linked to the causal sequence.[1] The importance of such information becomes apparent when viewed in the context of World Health organization objective of constant evaluation of available health services as an integral part of the managerial process in health care delivery.[2] Information on disease prevalence, patterns of morbidity and mortality in communities is of vital importance to health planners. Unfortunately, such information is often lacking in developing countries like Nepal. As such, hospital based disease frequency and pattern of death often offer second best alternative. Such hospital based data, when monitored over a period of time may assist in assessing changes in disease and death pattern, thus helping health planners to reorder their priority. In some instances, deaths in hospitals are also subjected to pathological autopsies to determine the cause, but these are rare, reserved largely for medico-legal cases.[3] Research conducted in several countries has indicated that even where adequate medical records are available, causes of death filed at registration are not always reliable. Such discrepancies can have important implications for the use of these data in epidemiological research and determination of public health priorities.[4,5] Health planning requires reliable information about frequency and causes of mortality. Precise and reliable information of this nature is lacking in our country because of under-reporting. There is very little reliable published data on cause-specific mortality rates in secondary and tertiary care. So, the present study was planned to determine the frequency and causes of inpatient mortality in a hospital.

METHODS

The study was conducted at Dhulikhel Hospital, Kathmandu University Hospital Dhulikhel, Kavre. This hospital is one of the tertiary referral centre serving in an around the Kavre, Sindhuli, Sindhupalchowk, Dolakha, Ramechap and Bhaktapur district. This was a retrospective study of all the deaths that occurred in the hospital from 1st January 2012 to 31st December 2013. Data was obtained from the Medical Record Department register and different variables such as age, gender, mode of admission and cause of death, etc. were worked out after the study was approved by the Institutional Review Committee. SPSS 11.0 was used for data feeding and analysis.

RESULTS

Of total 26,836 patients admitted in Dhulikhel Hospital over the period of two year, 247 patients (0.9%) died in hospital (Table 1). Among them 141(57.08%) cases were females while 106 (42.92%) were males. Mortality was more in medicine followed by pediatrics. (Table 1)

Table 1. Total number of cases and department wise

Year	Number of admission	Number of mortality (%)
2012	13120	129 (0.98)
2013	13716	118 (0.86)
Total	26836	247 (0.92)
Department wise mortality		
Department Year	2012	2013	Total (%)
Medicine	69	61	130 (52.64)
Pediatrics	41	39	80 (32.38)
Surgery	11	10	21 (8.50)
Obstetrics & Gynecology	3	4	7 (02.84)
Others (Orthopedics, emergency)	5	4	9 (03.64)
Total	129	118	247 (100)

Duration of hospital stay before the death were less than 5 days in majority of cases 152 (61.54%) followed by 6 to 10 days in 56(22.67%) cases, 11 to 15 days in 21(08.51%) cases and only 18(07.28%) cases were admitted for more than 15 days. Majority of deaths occur under one year and above 60 years of age. (Table 2)

Table 2. Age at mortality

Year Age	2012	2013	Total (%)
< 1 months	17	15	32 (12.95)
1 – 5 months	4	3	7 (02.83)
6 – 12 months	5	3	8 (03.24)
1 – 10 years	6	4	10 (04.05)
11 – 20 years	8	4	12 (04.86)
21 – 30 years	9	6	15 (06.08)
31 – 40 years	11	8	19 (07.69)
41 – 50 years	14	11	25 (10.12)
51 – 60 years	16	12	28 (11.34)
> 60 years	49	42	91 (36.84)
Total	129	118	247 (100)

The time of death were more during the period of evening and night hour (18:00 to 06:00) which was 106 (42.91%) cases, followed by morning hours (06:00 to 12:00 hrs)

79(31.99%) cases and in afternoon (12:00 to 18:00 hours) 62 (25.10%) cases. The death was more due respiratory disease followed by infections, hepatobiliary and cardiovascular. (Table 3)

Table 3. Cause of death.

Cause of Death Year	2012	2013	Total (%)
Respiratory disease	47	49	96 (38.87)
Infectious disease	29	22	51 (20.64)
Hepatobiliary disease	19	21	40 (16.19)
Cardiovascular disease	11	8	19 (07.69)
Gastrointestinal disease	8	7	15 (06.07)
Malignancy (cancer)	6	5	11 (04.45)
Poisoning	5	4	9 (03.65)
Others	4	2	6 (02.44)
Total	129	118	247 (100)

The primary cause of death in respiratory disease were mainly Chronic Obstructive Pulmonary Disease with corpulmonary in old ages followed by pneumonia, pulmonary tuberculosis, asthma and few cases of interstitial lung disease. In infectious disease, most of primary causes of death were diarrheal disease followed by meningitis and hepatitis. In hepatobiliary disease, alcohol induced cirrhosis of liver and its complication were very common primary cause of death and especially in young age group also. In neonate (less than one month of age), Low birth weight leading to neonatal septicemia and necrotizing enterocoloitis were the common primary causes of death.

DISCUSSION

About 57 million deaths occur every year worldwide. Out of which, three fourths (76.7%) is reported to occur in the developing countries. South East Asia contributes to about 22% of the total global death.[6] Medical record reviews have been used to serve different purposes. Perhaps one of the applications is the independent assessment of hospital based data of cause of death. So, in this study, hospital based data has been used to know the cause and pattern of death. This study showed majority of the deceased were females 141(57.08%) which was different from other studies and could be related to the awareness of female health in the society. In 1990, as per study done, three leading cause of death in Nepal were diarrheal diseases, pneumonia and tuberculosis where as in 2013; the three diseases that took most lives included ischemic heart disease, stroke and chronic obstructive pulmonary disease.[7] But in this study it was found that respiratory disease was most common followed by infectious and hepatobiliary disease. In hepatobiliary, alcohol induced cirrhosis in young age group was the main cause of death which should be eye-opener to medical field as well as to

the society. Similarly United Missionaries of Nepal hospitals which are located in the Central, Western, and Eastern regions of Nepal serving more than 3,00,000 outpatients a year has 2,997 deaths over a five year period from 1991 to 1995. The result shows 50% of deaths in Nepal are related Infectious, maternal, perinatal, and nutritional problems, 42% to non communicable and congenital problems and eight percent to Injuries and accidents.[8] In the present study most of the deaths occurs in the medicine department (52.64 %) followed by the pediatrics (32.38 %). This could be explained by the fact that most of the respiratory and infectious diseases which are the main cause of death are admitted in these departments whether it is child or an elderly.

Most of the deaths were during the evening and night hours from 6 pm to 6 am (42.91 %) which might be due to inadequate staff (both doctor and nurses) or proper care during this period. The hospital stay before death was less than 5 days in most of the cases (61.54 %) which can be explained by the fact that terminal cases are brought late to the hospitals. The observation of this study was also that the deaths that occur in hospitals are assigned diagnoses (ill-defined, septicemia) that are of little public health value and suggests that there are serious limitations with the current system for certifying and coding causes of death.

So, this study was carried out to stimulate various strata to take the issue seriously, as it will have many implications. Mortality measurement is easy in general terms but challenging in technical terms. The reliability and accuracy of information is very crucial in this respect.

Limitation

This study is limited to analysis of secondary sources of information based on the hospital records and death certificate issued by the respective physicians. So, interpreting or generalizing them should be done cautiously.

CONCLUSION

Respiratory and infectious diseases were the leading causes of death in the hospital, followed by chronic liver disease and cardiovascular disease. Increase trend in death due to alcohol induced cirrhosis of liver in young age groups is alarming to all. So, the findings of this study will provide the important relations between the disease and death pattern in Nepal which will assess to make health related program and policy better for reducing the unwanted mortality.

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