

Original Research

Profile of mortality and related co morbidities at a tertiary care hospital in Northern India

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ABSTRACT:

Background: Morbidity and mortality statistics are an important resource for research and policy making in any country as it reflects on the public health status. Majority of the mortality in the medical wards occur within the first few days following admission. Factors such as age, sex, diagnosis, co-morbidities, social-economic factors and duration of hospital stay have been shown to affect mortality. There is a paucity of such studies in Bihar. **Objective:** To know the causes of mortality in the hospital and associated co morbidities of the cases. **Study Design:** A retrospective review of hospital based mortality records. **Methodology:** It was done by secondary data analysis from review of case files and medical records. The study included cases from March 2015 to August 2017. The files of patients who had died at the hospital following admission during above period were reviewed. The purpose of this study was to determine the overall mortality and disease specific mortality at the hospital. **Results:** A total of 978 files of hospital based mortality were reviewed. The mean age of the cases was 52.9 years. (Range <1 - 98 years). Total 621 (63.4%) were males and 357 (36.5%) were females. All the cases were residents of Bihar. Chronic Kidney disease was present in 10.3% of cases. Hepatitis B was positive in 3.9% of cases. HIV was positive in 0.26% of cases. Nearly 30% cases had hypertension and 11.9% cases had diabetes. Prevalence of diabetes was higher among cases of chronic kidney disease than all other cases combined (p<.001). Total 45 cases had both diabetes and hypertension. Minimum duration of stay was less than 1 day (range 1-35). Maximum no of death occurred within 1 day of admission. Mortality was highest for cases admitted under general medicine followed by neuromedicine, nephrology, cardiology and Oncology.

Key words- Mortality, Morbidity, comorbidities, disease specific mortality, Hospital based mortality, HIV.

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INTRODUCTION

As per the Indian Constitution, health in India is the responsibility of the state governments of the country. Morbidity and mortality statistics are an important resource for research and informing policy in any country as it reflects on the public health status¹. Progress towards the United Nations 2030 Sustainable Development Goals requires improved information on mortality and cause of death. Causes of many of the deaths occurring in developing countries remains unknown.² Ideally community based studies are done

either in the form of verbal autopsy or by MCCD (Medical certificate of cause of death) to ascertain the cause of death³. India has seen the transition in the leading causes of death from infectious caused to NCDs in the last few decades.⁴ However mortality at a tertiary care referral hospital may not truly represent the actual proportionate causes of mortality in the community. In the recent years, children have been the principal focus of public health research and policy formulation in developing countries in an attempt to achieve the sustainable development goals. With improved

interventions, nearly 90% of children born in developing countries are living to be fifteen years old and above owing to substantial reductions in child mortality⁵. However, many of the health problems affecting adults are still largely neglected whereas the majority of morbidity and mortality in this age group defined as fifteen years to sixty years are preventable^{6,7,8}. In any society adults are the economically productive age group, biologically reproductive and responsible for the support of children and elderly dependants. The health of adults in developing countries is therefore, increasingly becoming an important priority in global health policy. Awareness of common causes of death is part of the basic steps to extend life and promote healthy communities.⁹ However in many developing countries including India, there is paucity of this vital data to reliably influence policy and improve budgetary and other resources to manage the underlying health condition. Unavailability of population-based statistics makes hospital based studies a suitable alternative. Present study is an effort to look into the hospital based causes of mortality in a tertiary care government hospital.

OBJECTIVE

1. To know the cause of Mortality in the hospital
2. To know the age and sexwise distribution of the cases
3. To study the associated co-morbidites of the cases if any

METHODOLOGY

It was a retrospective review of Hospital based mortality records from March 2015 to August 2017. Total 978 deaths occurred during that period out of total 46263 admissions. Data was extracted from the file and entered into Excel. There is a separate medical record section in the hospital . Files of all cases from all the departments are kept there. Interns and senior residents working in department of community medicine extracted the data from the files and entered it into

Excel. This secondary data had information on age, gender, length of stay in hospital, pathological final diagnosis, diabetes, hypertension ,immediate cause of death & few other important medical history. Data analysis was done in excel on Age, gender, final diagnosis ,cause of death, presence or absence of comorbidies like diabetes, hypertension, hepatitis B and other relevant information.

RESULTS

The mean age of the cases was 52.9 years (Range <1 - 98 years). Total 621 (63.4%) were males and 357 (36.5%) were females. All the cases were residents of Bihar . Nearly 25% of cases were unconscious at the time of admission. Maximum no of deaths occurred in the admissions under general medicine department followed by neuromedicine, nephrology and other departments as shown (chart 1). Most common single category of disease leading to death was chronic kidney disease followed by acute or chronic liver disease ,Cardiovascular diseases and others. TB of any type contributed 5.3% of total deaths Ill-defined causes and cancers caused more than 40% of total deaths occurring in the hospital (chart 2). 25 % of total deaths occurred within 24 hrs of hospital admission (chart 3). Males died more (621)as compared to females(357). Age specific mortality was highest for age 65 and above (chart 4). More than 60% of the total deaths occurred between 15 to 60 years of age. Except neonatal age group mortality generally increases with increase in age. Neonatal mortality was more as compared to pediatric age group (chart 4). Neonatal mortality was caused due to LBW, Congenital anomalies, sepsis and pneumonia (chart 5). Hepatitis B was prevalent among 3.9 % of cases (chart 6). HIV was found to be positive among 0.26% of cases of death. Hypertension was found to be present in 29.8% of cases (chart 6). Prevalence of diabetes was higher (58.4%) among patients of chronic kidney disease than cases of all other diseases combined (4%), p<.001 (chart 7).

CHART 1:

Name of Department	No. Of Deaths	Total No. of Patients admitted (March 2015- Aug 2017)			Percentage of mortality= (No. Of deaths/ No. Of Patients) X100		
		General	Emergency	Total	General	Emergency	Total
Cardiology	104	5049	1441	6490	2.06	7.22	1.60
Gastro medicine	123	1509	3806	5315	8.15	3.23	2.31
GI surgery	8	2327	152	2479	0.34	5.26	0.32
Nephrology	112	1750	2589	4339	6.40	4.33	2.58
Neuromedicine	132	1121	2858	3979	11.60	4.55	3.27
Neuro surgery	31	568	889	1457	5.28	3.37	2.06
Urology	10	2844	915	3759	0.35	1.09	0.27
General Surgery	66	1713	897	2610	3.85	7.36	2.53
General Medicine	171	1631	3000	4631	10.48	5.70	3.69
Pulmonology	52						

RCC	100	2262	826	3088	4.42	12.11	3.24
Pediatrics	8	645	88	733	1.24	9.09	1.09
Pediatric Surgery	40	1903	243	2146	2.10	16.46	1.86
Psychiatry	0	74	15	89	0.00	0.00	0.00
Dermatology	1	190	6	196	0.53	16.67	0.51
Ortho	8	872	429	1301	0.92	1.86	0.61
Reproductive Medicine (Reproductive Biology)	1	72	3	75	1.39	33.33	1.33
ENT	3	1594	183	1777	0.19	1.64	0.17
OBG	4	1482	317	1799	0.27	1.26	0.22
unspecified	4	0	0	0	0.00	0.00	0.00
Total	978			46263			

Chart 2: Diagnosis of cases

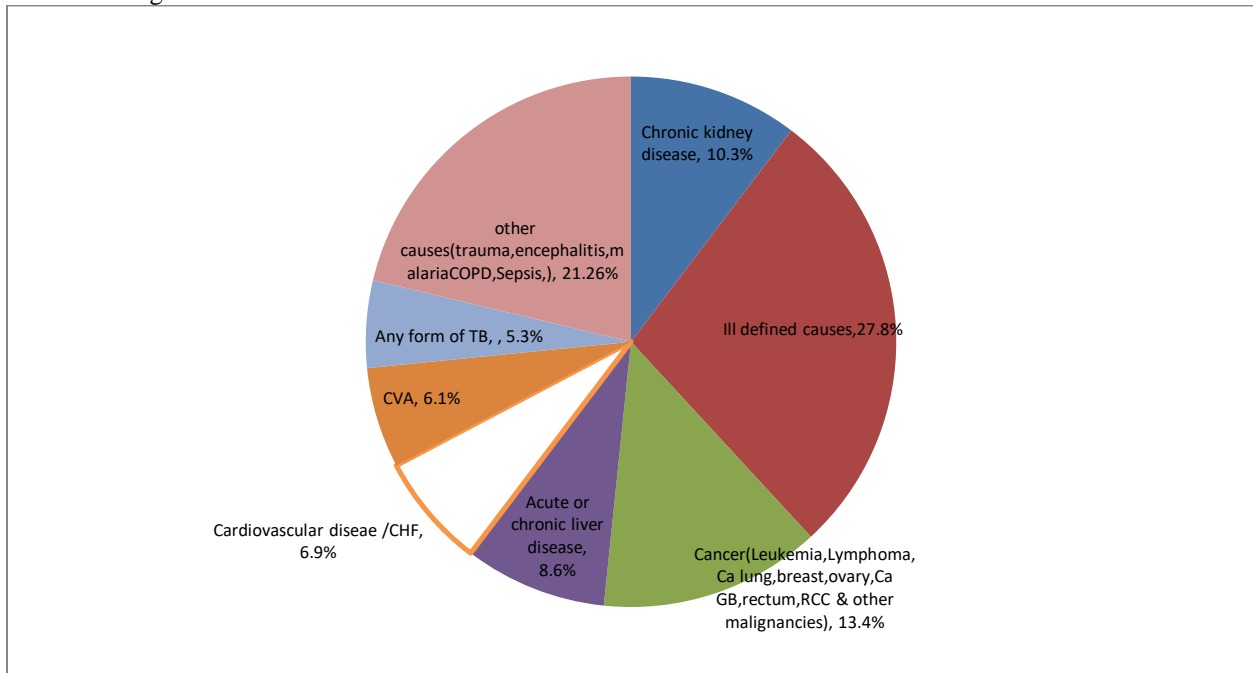


Chart 3

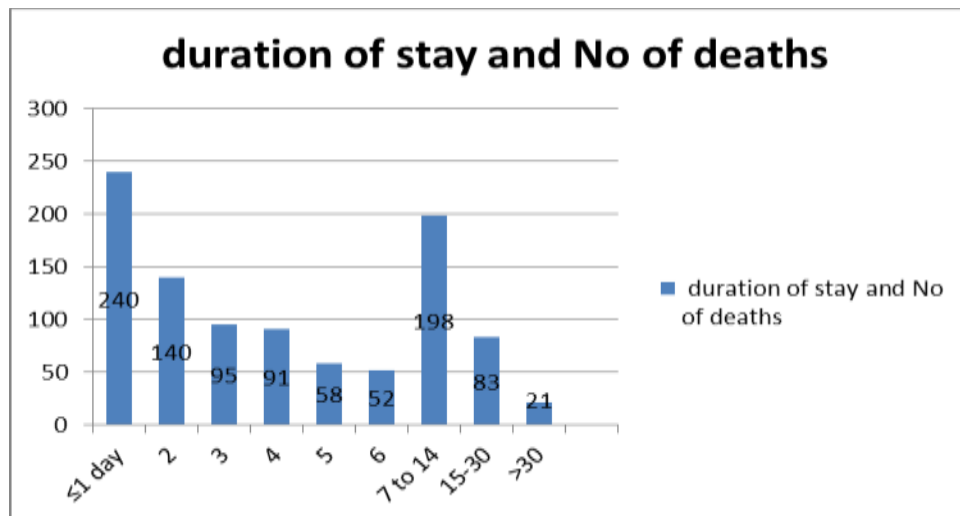


Chart 4: Age specific proportion of death

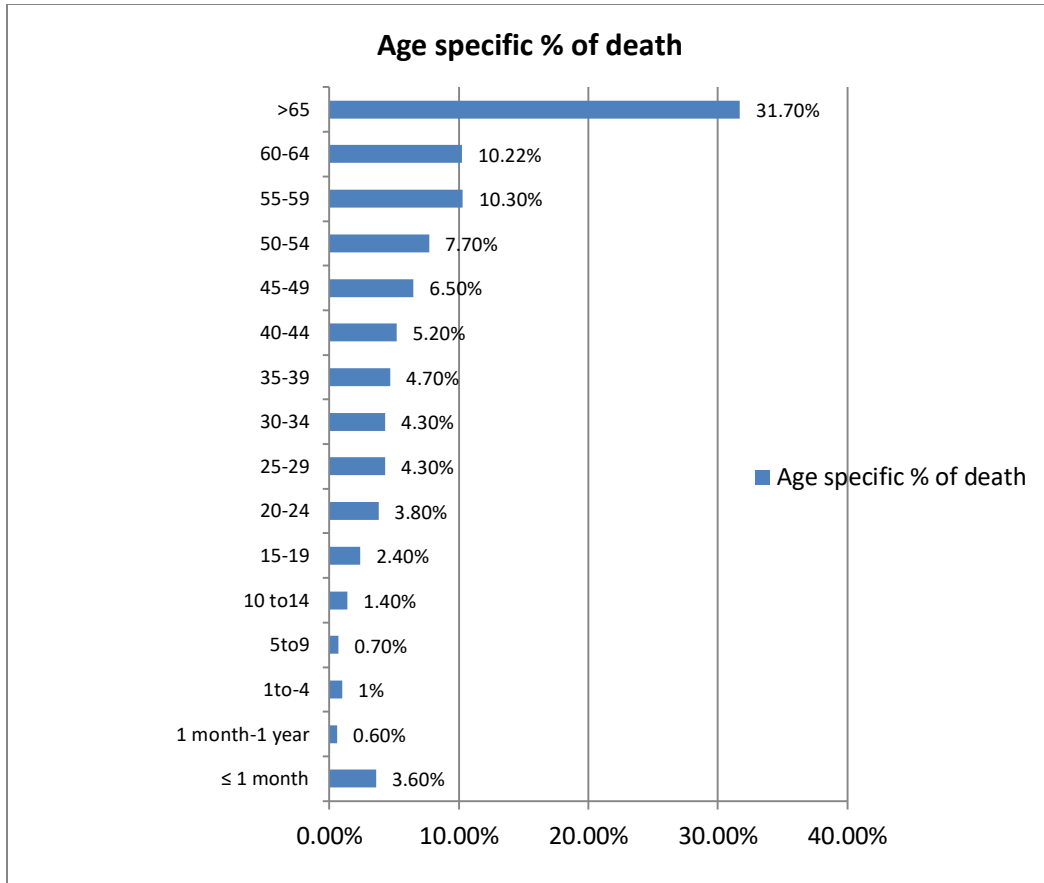


Chart 5: Causes of neonatal mortality

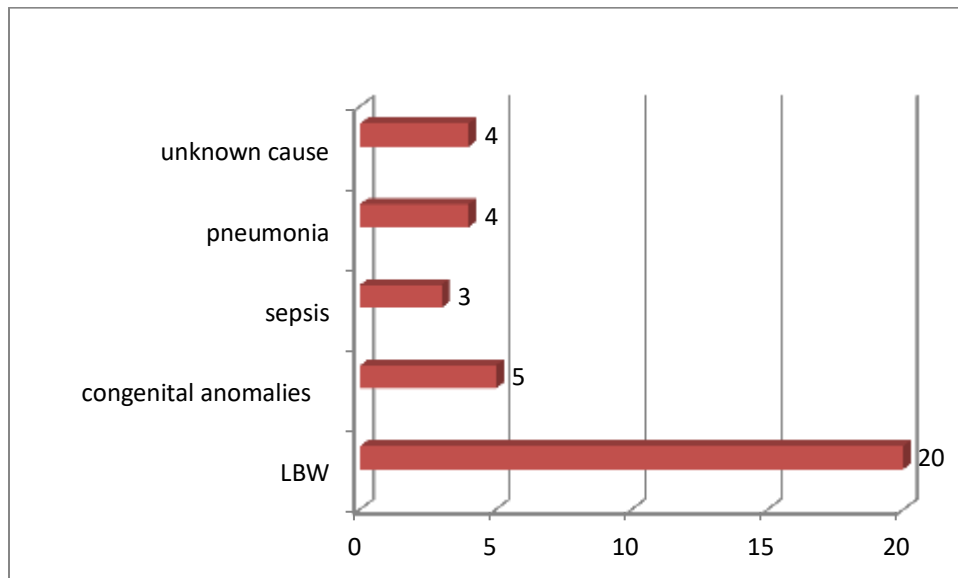


Chart 6 - Associated co morbid conditions

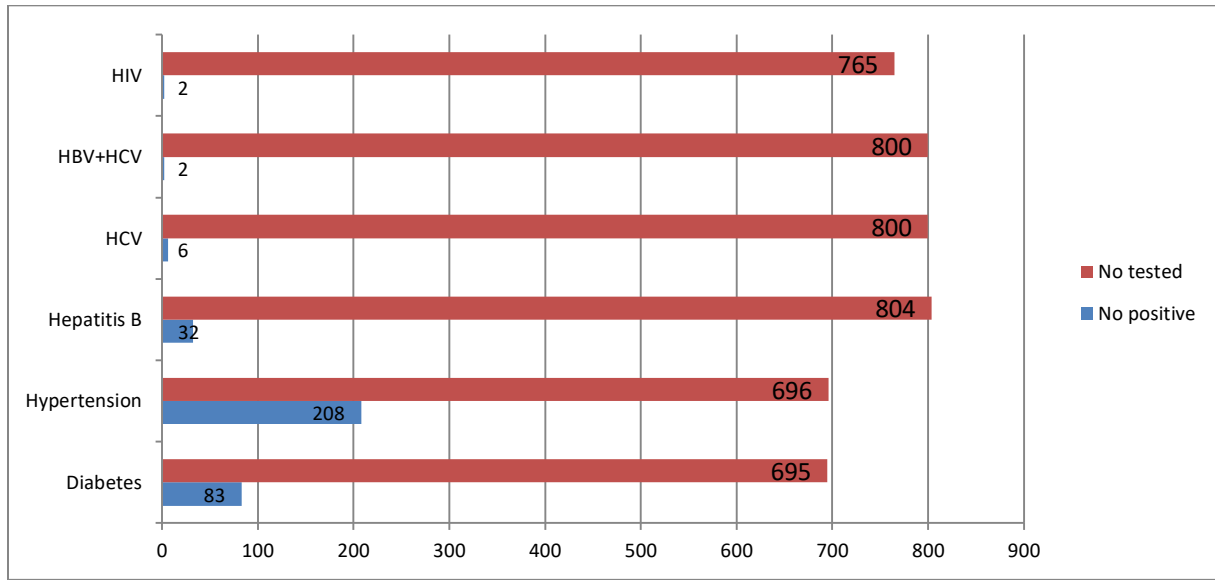
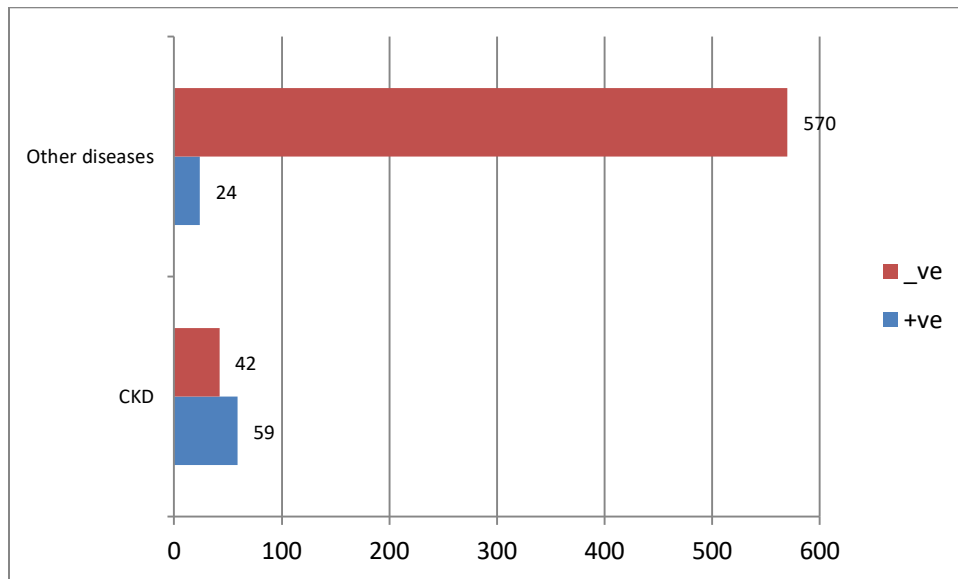


Chart 7: Presence or absence of diabetes (fisher exact test p<.001)



DISCUSSION

Out of the total 46263 patients admitted during that time 978 patients died that is 2.1% of total admission. Hospital based mortality data from this part of India is not available for comparison and may not be valid for comparison because of different referral mechanism operating for different hospitals. Mortality data from other sources may not be comparable with this study because Hospital based mortality may not give accurate comparisons if admission rates for different diseases vary due to any reason. As the data available in the files is secondary data and the treating doctors, residents lack

training in medical record keeping and standardized terminology therefore chances of overlap or misclassification cannot be ruled out. In this study Maximum no of patient who died were admitted under medicine or allied branches. Initially patients were admitted but maximum no of deaths occurred within 1 day of admission so there was hardly anytime to send or refer them to other departments. This is seen in other studies also.⁹ Most common causes of death in India as per different data sources are vascular disease, tuberculosis, non road traffic accidents and cancers of different types.^{10,11,12} Tuberculosis of any form is an

important cause of death still in India. This may be due to high prevalence of TB in the population and emerging cases of MDR TB. In this study TB of any type caused >5% of total deaths. Since last decade NCDs contributing more towards the mortality than infectious diseases. In this study also Chronic Kidney disease, cardiovascular disease and cancers constitute nearly 30% of total mortality.^{13,14} Neonatal mortality constitutes 3.6% of total hospital based mortality. Significant causes are low birth weight, congenital anomalies, pneumonia and sepsis. Consistent with other studies.¹⁵ Chronic kidney disease is not listed as separate important disease leading to death in most of the data source. This hospital has a tertiary care superspeciality nephrology department. Reason for higher mortality due to kidney disease may be because of higher referrals from whole of the state and other hospitals. Prevalence of diabetes was also more in kidney diseases as compared to all other diseases combined ($p < .001$), Making diabetes very important public health threat in this part of the world.¹⁶ Economical impact of chronic kidney disease may also be considerably high.¹⁷ Deaths are more among males. This may be due to higher admission rates for males in this hospital. Ill defined causes constitute a large part of deaths in the hospital that needs urgent attention. Late presentation of cases in the emergency may be one of the reasons so that proper diagnosis could not be made. Death due to cancers comprise of lung cancer, breast cancer, cancer cervix and lymphoproliferative disorders. Similar patterns are seen in different studies. It is important to note that high quality population based cancer registry data, the basis for planning and implementing evidence based cancer control programs are not available in our part of the world.¹⁸ Acute or chronic liver disease is also contributing towards large proportion (8.5%) of deaths. Globally liver disease contributes towards two million deaths per year worldwide, one million due to complications of cirrhosis and one million due to viral hepatitis and hepatocellular carcinoma.¹⁹ Hepatitis B was found to be positive in 3.9% of the cases who were tested. Other studies have nearly similar results.²⁰ According to WHO 2% of general population is infected with Hepatitis B in general population in south east Asia region. Among adults above 20 years of age mortality increases with increase in age. More than 60% of the total deaths occurred between 15 to 59 years of age due to cardiovascular, respiratory and liver diseases. Despite having a lower percentage of deaths from NCDs, the share of premature deaths in India due to such diseases is quite significant. Cancer, diabetes and heart diseases alone account for 55% of the premature mortality in India in the age group of 30-69 years. Political commitment and leadership is urgently

required to strengthen both public and private sectors in managing Non Communicable Diseases (NCD) and risk factors. More population based studies and hospital based studies are needed to strengthen data base on mortality and morbidity so that utilization of Universal health coverage and health financing schemes recently launched may be optimized.

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