

Original Research Article

Pattern of mortality in a tertiary care teaching hospital according to the 11th Revision International classification of disease

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ABSTRACT

Background: Mortality is the oldest known health care indicator and a valuable tool for planning and managing in hospitals. Identifying the causes of mortality in hospital is important to monitor the health of the nations, identifying priorities and burden of disease analysis to attempt to estimate the causes of loss of healthy life. Hence this study was done to know the causes of death as per International Classification of Diseases (ICD) 11 among patients who died in Hangal Sri Kumareshwar Hospital in the year 2023.

Methods: A retrospective descriptive study was conducted from 01 January to 31 December 2023 in Hangal Sri Kumareshwar Hospital. All mortality data of the year 2023 in the hospital were included in the study. The content of format included demographic variables of patients on the patient record like age, sex, address, mortality and its causes and classified according to ICD 11. Collected data was analyzed using percentages and Chi-square test.

Results: Out of 505 deaths in Hangal Sri Kumareshwar Hospital and Research centre in 2023, 305 (60.40%) were males and 200 (39.60%) were females. Majority of deaths (31.48%) occurred between 41 to 60 years age group followed by 31.29% deaths occurring between 61 to 80 years age group. Regarding cause of death according to ICD-11, majority (24.16%) had a circulatory disease followed by 16.24% due to an infectious disease.

Conclusions: The National Health Program to combat non communicable diseases has been implemented and the 12th five-year plan has made specific provision for the management and control of non-communicable diseases.

Keywords: Mortality, Tertiary care hospital, ICD classification, Pattern

INTRODUCTION

Mortality is the oldest known health care indicator and a valuable tool for planning and managing in hospitals.¹ Identifying the causes of mortality in hospital is important to monitor the health of the nations, identifying priorities and burden of disease analysis to attempt to estimate the causes of loss of healthy life.² The magnitude of mortality and causes are different from ward to ward even in one hospital. The majority of the causes are known to be preventable by devising preventable strategies such as guidelines and being complaint with it.¹

With 2030 defined as the next major global health horizon, the majority of targets and indicators related to the 3rd sustainable development goal, ensure healthy lives and promote well-being for all at all ages require an ability to measure population health status.³

This data is a potentially rich source of information for advocacy, accountability and action.

Hence this study was done to know the causes of death as per International Classification of Diseases (ICD) 11

among patients who died in Hangal Sri Kumareshwar Hospital in the year 2023.

METHODS

A retrospective descriptive study was conducted from 01 January to 31 December 2023 in Hangal Sri Kumareshwar Hospital.

The hospital is located in Navanagar, Bagalkot, Karnataka in South India. It is a tertiary care teaching hospital which is a referral centre in the region and delivers a range of services. All mortality data of the year 2023 in the hospital were included in the study. After ethical clearance, data was collected using a structured format. The content of format included demographic variables of patients on the patient record like age, sex, address, mortality and its causes and classified according to ICD 11. Collected data was analyzed using percentages and Chi-square test.

RESULTS

Out of 505 deaths in Hangal Sri Kumareshwar Hospital and Research centre in 2023, 305(60.40%) were males and 200 (39.60%) were females.

Majority were from rural areas (67.33%). It was observed that majority of deaths had occurred in February 2023 (11.29%) followed by 10.30% in March.

Maximum deaths (56.44%) had occurred in medicine department followed by cardiology department (8.51%) (Table 1).

Majority of deaths (31.48%) occurred between 41 to 60 years age group followed by 31.29% deaths occurring between 61 to 80 years age group ($p=0.001$) (Table 2).

Regarding cause of death according to ICD-11, majority (24.16%) had a circulatory disease followed by 16.24% due to an infectious disease ($p\leq 0.001$) (Table 3).

Table 1: Distribution of deaths according to department of admission to hospital.

Department	Number	Percent
Medicine	285	56.44
Cardiology	43	8.51
Surgery	37	7.33
Nephrology	11	2.18
Plastic surgery	01	0.2
Psychiatry	01	0.2
Neurology	26	5.15
Neurosurgery	13	2.57
OBG	08	1.58
PICU	12	2.38
NICU	33	6.53
Oncology	04	0.79
Orthopaedics	04	0.79
Respiratory medicine	03	0.59
ENT	01	0.2
Emergency medicine	21	4.16
Endocrinology	01	0.2
CTVS	01	0.2
Total	505	100

About deaths due to chronic alcoholic liver disease, maximum deaths were observed between 40 to 49 years of age followed by 21.82% between 50 to 59 years of age (Table 4).

It was observed that deaths due to associated diabetes mellitus were found to be 38.33% between 60 to 69 years of age followed by 20% between 50 to 59 years of age.

Table 2: Distribution of mortality according to age and sex.

Age	Male	%	Female	%	Total	%
Early neonate <7 days	17	5.57	05	2.5	22	4.36
Late neonate 8-28 days	07	2.29	01	0.5	08	1.58
29 days to 1 year	05	1.64	02	1.00	07	1.39
1 to 5 years	04	0.79	03	1.5	07	1.39
6 to 10 years	01	0.33	01	0.5	02	0.40
11 to 19 years	05	1.64	08	4.00	13	2.57
20 to 40 years	62	20.33	30	15.00	92	18.22
41 to 60 years	105	34.43	54	27.00	159	31.48
61 to 80 years	82	26.88	76	38.00	158	31.29
>81 years	17	5.57	20	10.00	37	7.33
Total	305	100	200	100	505	100

DF=5, $\chi^2=19.05$, $p=0.001$

Table 3: Distribution of male and female deaths according to ICD 11.

ICD 11	Male	Percent	Female	Percent	Total	Percent
Infectious diseases	46	15.08	36	18.00	82	16.24

Continued.

ICD 11	Male	Percent	Female	Percent	Total	Percent
Neoplasm's	11	3.61	08	4.00	19	3.76
Diseases of blood and blood forming organs	03	0.98	06	3.00	09	1.78
Disorders of immune system	01	0.33	02	1.00	03	0.59
Endocrine, nutritional, metabolic	19	6.23	17	8.5	36	7.13
Nervous system	17	5.57	13	6.5	30	5.94
Circulatory	60	19.67	62	31.00	122	24.16
Respiratory	16	5.25	11	5.5	27	5.35
Digestive	07	2.29	08	4.00	15	2.97
Skin	12	3.93	05	2.5	17	3.37
Genito urinary	09	2.95	08	4.00	17	3.37
Pregnancy, childbirth, puerperium	-	-	06	3.00	06	1.19
Perinatal period	26	8.52	05	2.5	31	6.14
Injury, poisoning, external cause	25	8.20	11	5.5	36	7.13
External cause- alcohol	53	17.38	02	1.00	55	10.89
Total	305	100	200	100	505	100

DF=12, $\chi^2=46.2$, $p<0.001$

Table 4: Age and sex distribution of deaths due to chronic alcoholic liver disease.

Age in years	Male	%	Female	%	Total	%
20-29	04	7.55	0	0	04	7.27
30-39	10	18.87	0	0	10	18.18
40-49	19	35.85	0	0	19	34.55
50-59	12	22.64	0	0	12	21.82
60-69	05	9.43	01	50	06	10.91
70-79	02	3.77	0	0	02	3.64
80-89	01	1.89	0	0	01	1.82
90-99	0	0	01	50	01	1.82
Total	53	100	02	100	55	100

DISCUSSION

The present study was done to know the causes of mortality of the patients according to ICD 11 who died in Hangal Sri Kumareswar Hospital during the year 2023.

It was observed that mortality was higher among males (60.40%) in comparison to females.^{1,4,5} This finding could be attributed to males being more vulnerable to risk factors related to behaviour, genetics and lack of preventive care.⁴

Rural areas represented more deaths (67.33%) compared to urban areas. This finding is similar to another study.⁶ This could be due to availability of tertiary health care services in the hospital and also the government health schemes like Ayushman and ESI. There is need for transition of the health centres in the rural areas to higher quality health systems.

Majority of deaths (31.48%) occurred between 41 to 60 years age group. This accounted for almost one third of total deaths in our study and is similar to another report. The high level of premature mortality is due to demographic and epidemiological changes that have altered mortality levels and disease patterns across age groups. This finding adversely affects economic growth

and development. Premature mortality is a proxy measure to reflect differences in the health status of populations.⁷

Almost one-fourths of the deaths (24.16%) was due to a circulatory disease in our study. A few other studies conducted previously reported similar findings.^{5,8,9}

The next leading cause of death (16.24%) was due to an infectious disease and this finding is similar to another study.¹⁰ This could be attributed to lower socio economic status of the study population.

Regarding deaths due to chronic alcoholic liver disease, maximum was between 40 to 49 years of age and more than 95% were males. This indicates the behaviour and life style of the male population in the area. Efforts are to be intensified to reduce male adult mortality due to this preventable cause. Policies aimed at reducing the production and consumption of alcohol and creating awareness of a healthy lifestyle can reduce the risk factors and avoidable mortality.⁷

With associated diabetes mellitus, 38.33% were between 60 to 69 years of age followed by 20% between 50 to 59 years age group. Timely population level interventions aiming for health education, lifestyle modification with

special emphasis on promotion of physical activity and healthy diet should be conducted.

The National Health Program to combat non communicable diseases has been implemented and the 12th five-year plan has made specific provision for the management and control of non-communicable diseases under three categories- programs for life style chronic diseases and risk factors; programs for disability prevention and rehabilitation, and programs for health promotion and prevention of non-communicable diseases.

Limitations

As this is a retrospective study of medical records of deaths, past history of non-communicable disease cannot be noted.

CONCLUSION

This study highlights preventable deaths in the age group less than 60 years of age regarding non communicable diseases. Stringent preventive action is the need of the hour in the way of modification of their lifestyle at an early age in the area of dietary practices in the region and also physical activity. Regular annual physical examinations and investigations should be a top priority after the age of 40 years to decrease premature mortality.

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REFERENCES

1. Abejew AA, Tamir AS, Kerie MW. Retrospective analysis of mortalities in a tertiary care hospital in North east Ethiopia. BMC Res Notes. 2014;7:46.
2. Bradshaw D, Pillay-Van WV, Laubscher R, Nojilana B, Groenewald P, Nannan N, et al. Cause of death statistics for South Africa: Challenges and possibilities for improvement. Burden of disease research unit. 2010.
3. English M, Mwanki P, Julius T, Chep Kirui M, Gathara D, Ouma PO, et al. Hospital mortality- a neglected but rich source of information supporting the transition to higher quality health systems in low and middle income countries. BMC Med. 2018;16:32.
4. Das BR, Deori MP, Borah A, Kakoti G. Analysis of causes of mortality in a tertiary care hospital according to the tenth revision, International classification of diseases. Curr Med Res Pract. 2023;13(6):270-4.
5. Nandi C, Mitra K, Bhaimik D, Paul SP. An observational study on pattern of mortalities as per ICD- 10 classification system in a tertiary care hospital in India. Asian J Med Sci. 2021;12:69-74.
6. Holambe VM, Thakur NA. Mortality pattern in hospitalized patients in a tertiary care center of Latur. J Krishna Inst Med Sci. 2014;3:11-5.
7. Dubey M, Mohanty SK. Age and sex patterns of premature mortality in India. BMJ Open. 2014;4:005386.
8. Bhatia S, Gupta A, Thakur J, Goel N, Swami H. Trends of cause specific mortality in union territory of Chandigarh. Indian J Comm Med. 2008;33:60-2.
9. Joshi R, Cardna M, Iyengar S, Sukumar A, Raju CR, Raju KR, et al. Chronic diseases now a leading cause of death in rural India- Mortality data from the Andhra Pradesh rural health initiative. Int J Epidemiol. 2006;35:1522-9.
10. Godale L, Mulaje S. Mortality trend and pattern in tertiary care hospital of Solapur in Maharashtra. Indian J Comm Med. 2013;38:49-52.
11. Jha RP, Shri N, Patel P, Dhamnetya D, Bhattacharya K, Singh M. Trends in the diabetes incidence and mortality in India from 1990 to 2019: a joinpoint and age-period cohort analysis. J Diabetes Metab Disord. 2021;20(2):1741.

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