

## Original Research Article

# Age and sex patterns of mortality in a tertiary care teaching hospital in Bagalkot, North Karnataka, India

Gowri Shankar<sup>1\*</sup>, Eshwar B. Kalburgi<sup>2</sup>

<sup>1</sup>Department of Community Medicine, S. N. Medical College, Navanagar, Bagalkot, Karnataka, India

<sup>2</sup>Department of Surgery, S. N. Medical College, Navanagar, Bagalkot, Karnataka, India

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### \*Correspondence:

Dr. Gowri Shankar,

E-mail: [drgowrijnmc@gmail.com](mailto:drgowrijnmc@gmail.com)

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## ABSTRACT

**Background:** Mortality is an inevitable component of hospital practice and patient outcomes. The age and cause of death and sex mortality pattern and the audit give a myriad of information. This helps to identify the trend of mortality. Hence, this study was done to identify age and sex patterns of mortality of the patients admitted to Hangal Sri Kumareswar Hospital and Research Centre, Navanagar, Bagalkot, Karnataka, India.

**Methods:** A retrospective study of all deaths that occurred in the year 2018 in Hangal Sri Kumareswar hospital and Research Centre, Navanagar, Bagalkot, Karnataka was done by analysing the records from medical records department after institutional review board clearance. Data regarding age, sex, area of residence, ward of admission and cause of death was noted and analysed using percentages and chi square test.

**Results:** Out of 411 deaths during 2018 in HSK hospital, 64.96% were males and 35.04% were females. Majority (71.53%) were from rural areas. Maximum number of deaths (27.98%) was observed in those more than 61 years of age followed by those between 41 to 60 years of age. Overall, maximum number of deaths (69.35%) was due to a Non communicable disease. Infectious and parasitic disease contributed to 10.46% of deaths. Cardio vascular disease contributed to 16.30% deaths.

**Conclusions:** Primary prevention of non-communicable diseases by creating awareness in the community and secondary prevention by early identification is needed to prevent premature mortality before the age of 60 years.

**Keywords:** Age, Mortality, Sex pattern, Tertiary care hospital

## INTRODUCTION

Mortality is an inevitable component of hospital practice and patient outcomes. The age and sex mortality pattern and the audit give a myriad of information. This helps to identify the trend of mortality. Audit of mortality data is needed for further improvement of the hospital services and to allocate resources where needed. The spectrum of patients admitted to a tertiary care teaching hospital is different from the peripheral hospital.<sup>1</sup>

Non communicable diseases are the leading cause of death and primarily affect those of working age. Studies indicate that deaths in those less than 60 years of age adversely affect economic growth and development. In 2004, the estimated loss to gross domestic product in India due to cardio vascular disease alone was about 1 trillion rupees.<sup>2</sup>

Hence, this study was done to identify age and sex patterns of mortality of the patients admitted to Hangal

Sri Kumareshwar Hospital and Research Centre, Navanagar, Bagalkot, Karnataka, India in the year 2018.

## METHODS

A retrospective study of all deaths that occurred in the year 2018 in Hangal Sri Kumareshwar Hospital and Research Centre, Navanagar, Bagalkot, Karnataka was done by analyzing the available records from medical records department after institutional review board clearance.

Data regarding age, sex, area of residence, ward of admission and cause of death was noted. The deaths have

been classified according to International classification of diseases - 10<sup>th</sup> revision.

## Statistical analysis

The data was analyzed using percentages and chi square test.

## RESULTS

Out of 411 deaths during 2018 in HSK hospital, 64.96% were males and 35.04% were females. Majority (71.53%) were from rural areas (Table 1) Majority were from Bagalkot district (75.91%).

**Table 1: Distribution according to area of residence.**

Area	Male	Percentage	Female	Percentage	Total	Percentage
Rural	185	69.29	108	75.00	294	71.53
Urban	082	30.71	036	25.00	117	28.47
Total	267	100	144	100	411	100

DF=1,  $X^2=1.49$ ,  $p=0.11$ .

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

Age	Male	Percentage	Female	Percentage	Total	Percentage
Birth to <28 days	55	20.60	27	18.75	82	19.95
28 days to 1 year	07	2.6	07	4.86	14	3.41
1 to 5 years	01	0.3	02	1.39	03	0.73
6 to 15 years	07	2.62	10	6.94	17	4.14
16 to 20 years	03	1.12	06	4.17	09	2.19
21 to 40 years	38	14.23	24	16.67	62	15.08
41 to 60 years	79	29.59	30	20.83	109	26.52
> 61 years	77	28.84	38	26.39	115	27.98
Total	267	100	144	100	411	100

DF=7,  $X^2=14.31$ ,  $p=0.045$ .

**Table 3: Distribution according to department of admission to hospital.**

Department	Male	Percentage	Female	Percentage	Total	Percentage
Medicine	128	47.94	61	42.36	189	45.98
Neurology	40	14.98	10	6.94	50	12.16
Surgery	17	6.37	18	12.50	35	8.51
Neurosurgery	06	2.25	00	0	06	1.46
Orthopaedics	02	0.75	2	1.39	4	0.97
NICU	58	21.72	28	19.44	86	20.92
OBG	0	0	07	4.86	07	1.70
Plastic surgery	0	0	1	0.69	1	0.24
PICU	12	4.49	16	11.11	28	6.81
Respiratory medicine	01	0.37	01	0.69	02	0.49
ENT	02	0.75	0	0	02	0.49
Dermatology	1	0.37	0	0	1	0.24
Total	214	100	143	100	357	100

DF=11,  $X^2=36.25$ ,  $p=0.0001$ .

Maximum number of deaths (27.98%) were observed in those more than 61 years of age followed by those

between 41 to 60 years of age (Table 2). Overall, 72.02% of deaths were below 60 years of age.

Majority of the deaths (45.98%) had occurred in General Medicine ward followed by 20.92% in Neonatal intensive care unit (Table 3).

Overall, maximum number of deaths (69.35%) was due to a non-communicable disease (Table 4).

**Table 4: Distribution of male and female deaths according to type of communicable and non-communicable disease.**

Variable	Male	Percentage	Female	Percentage	Total	Percentage
<b>Communicable disease</b>						
Infectious and parasitic disease	28	10.49	15	10.42	43	10.46
Inflammatory disorders of CNS	7	2.62	08	5.55	15	3.65
Respiratory tract infections	16	5.99	18	12.50	34	8.27
Infections of skin and subcutaneous tissue	8	2.99	5	3.47	13	3.16
Infections specific to perinatal period	10	3.75	11	7.64	21	5.11
Total	69	25.84	57	39.58	126	30.65
<b>Non-communicable disease</b>						
Neoplasm's	7	2.62	4	2.78	11	2.68
Cardio vascular disease	47	17.60	20	13.89	67	16.30
Conditions in perinatal period	45	16.85	16	11.11	61	14.84
Digestive system	26	9.74	0	0	26	6.32
Congenital malformation	4	1.50	2	1.39	6	1.46
Respiratory system	11	4.12	4	2.78	15	3.65
Genitourinary system	5	1.87	4	2.78	9	2.19
Pregnancy, childbirth and puerperium	0	0	8	5.55	8	1.95
Diabetes	26	9.74	17	11.81	43	10.46
Others	15	5.62	3	2.08	18	4.38
Burns	3	1.12	07	4.86	10	2.43
OP poisoning	9	3.37	2	1.39	11	2.68
Total	198	74.1	87	60.42	285	69.35

DF=1,  $X^2=8.308$ ,  $p=0.003$ .

Infectious and parasitic disease contributed to 10.46% of deaths. Cardio vascular disease contributed to 16.30% deaths.

Regarding deaths in males between 21 to 40 years of age, organo phosphorous poisoning and chronic liver disease contributed each to 18.42% deaths followed by 13.16% deaths due to a road traffic accident. Acquired immuno deficiency syndrome and pulmonary tuberculosis was responsible for 7.89% deaths each. In females of the same age group, sepsis and burn injury contributed each to 12.5% deaths.

In males between 41 to 60 years of age, the most common cause for death was chronic liver disease (24.05%) followed by Ischemic heart disease (13.92%) and diabetes mellitus (12.66%) Hypertension contributed to 7.59% deaths. In females between similar age group, diabetes mellitus contributed to 16.66% of deaths followed by chronic obstructive pulmonary disease and ischemic heart disease responsible for 13.33% deaths each. Necrotizing fasciitis and hypertension contributed each to 10% of deaths.

## DISCUSSION

In the present study, maximum number of male deaths (64.96%) than female deaths were noted and this finding

is similar to other studies.<sup>2,3</sup> It was observed that 71.53% of deaths were in those residing in rural areas. This fact can be explained that this is a tertiary care teaching and referral hospital.

In this study, premature mortality (age less than 60 years of age) was seen in 72.02% of deaths. Elderly contributed to 27.98% of deaths. In 2008, premature mortality by age 60 accounted for one third of total deaths in low- and middle-income countries.<sup>2</sup> The higher level of premature mortality in this study is mainly due to demographic and epidemiological changes that have altered mortality levels and disease patterns across age groups and this finding is similar to other studies.<sup>4-6</sup>

Non communicable diseases contributed to almost 70% of deaths in this study and this finding is similar to other studies.<sup>7,8</sup>

Almost 20% of the deaths were observed in the neonatal period. Emphasis on newborn care is needed in today's perspective. Study tertiary care hospital is a major referral hospital in Bagalkot and caters to high risk neonates referred from its wide catchment area. This could be the reason for witnessing higher mortality in a well-equipped neonatal intensive care unit. Similar findings have been observed in another study.<sup>9</sup>

Estimating deaths in less than 60 years of age and understanding the factors responsible is essential to reduce preventable deaths and to improve population health.

Organo phosphorous poisoning, chronic liver disease, road traffic accidents and acquired immuno deficiency syndrome contributed to majority of deaths in 21 to 40 years age group males. Behavior change communication and mental health interventions needs to be provided by primary health care.

Regarding deaths in females between 21 to 40 years of age, sepsis and burn injury was the major cause. Women need to be educated to take care of their health both physically and mentally and approach the nearest health service provider.

In males between 41 to 60 years of age, again chronic liver disease was the major cause of death followed by Ischemic heart disease, diabetes mellitus and hypertension. Life style and fitness is the need of the hour.

About females between 41 to 60 years of age, non-communicable diseases like diabetes mellitus, chronic obstructive pulmonary disease, hypertension and ischemic heart disease were leading causes of death. Primary prevention has to be stressed at grass root level to avoid premature mortality. Dietary habits, exercise and stress factors need to be looked at and addressed.

From this study, it is obvious that the level of mortality in age less than 60 years of age is higher than in many developed and developing countries. It is high because of both higher neonatal mortality and higher adult mortality.<sup>2</sup> Intensive neonatal care is the need of the hour. Awareness needs to be created regarding a healthy lifestyle to reduce risk factors for non-communicable diseases and avoidable mortality in the primary health care system in both urban and rural areas of the region.

## CONCLUSION

Primary prevention of non-communicable diseases by creating awareness in the community and secondary prevention by early identification is needed to prevent premature mortality before the age of 60 years. Almost 20% of the deaths were observed in the neonatal period. Emphasis on new-born care is needed in today's perspective. Skilled birth attendant training is the need of the hour in remote facilities to decrease neonatal mortality.

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## REFERENCES

1. Hari Kumar KVS, Ajai Chandra NS. Mortality audit of medical patients at armed forces hospitals. Med Armed Forces India. 2017;73:299-303.
2. Dubey M, Mohanty SK. Age and sex patterns of premature mortality in India. BMJ Open. 2014;4:e005386.
3. Godhale L, Mulaje S. Mortality trend and pattern in tertiary care hospital of Solapur in Maharashtra. Indian J Community Med. 2013;38(1):49-52.
4. Saha R, Nath A, Sharma N, Badhan SK, Ingle GK. Changing profile of diseases contributing to mortality in resettlement colony of Delhi. Nat Med J India. 2007;20(1):125-7.
5. WHO. Premature NCD deaths: situation and trends Geneva: World Health Organization; 2014.
6. Quigley MA. Commentary: shifting burden of disease - epidemiological transition in India. Int J Epidemiol. 2006;35:1530-1.
7. Joshi R, Cardom M, Iyengar S. 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.
8. Goyal A, Yusuf S. The burden of cardiovascular disease in the Indian subcontinent. Indian J Med Res. 2006;124:235-44.
9. Upadhyay RP. An overview of the burden on non-communicable diseases in India. Iranian J Pub Health. 2012;41:1-8.
10. Aggarwal KC, Gupta R, Sharma S, Sehgal R, Roy MP. Mortality in new-borns referred to tertiary hospital: an introspection. J Family Med Prim Care. 2015;4(3):435-8.

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