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Original Research Article

A study to assess premature mortality and years of potential life lost among the mortality victims of Victoria Hospital, Bengaluru

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ABSTRACT

Background: Premature mortality by age 60 accounted for one-third of total deaths in low and middle income countries in 2008. While under-5 mortality as a proportion of premature mortality remains high in some countries, premature adult mortality is also increasing. Non-communicable diseases (NCDs) are the leading cause of death and primarily affect those of productive age. India is also experiencing rapid demographic and epidemiological transition. Although evidence suggests recent reductions in infant and child mortality, little is known about the age and sex patterns of premature deaths in India.
Methods: Record based study was conducted from 4 months mortality statistics who belong to less than 69 yrs during the period June-September 2016 at Victoria Hospital. Data is entered in MS-Excel and analyzed in the form of descriptive statistics. Data is presented in the form of figures, tables, charts and percentages wherever necessary.
Results: There were total of 1265 deaths in 4 months, among them 890 deaths occurred <69 yrs of age. Most of them belong to 45-54 yrs which is the income generating age-group. Most of them belong to 45-54 yrs which is the income generating age-group. Most of the mortality victims admitted in hospital for <24 hrs (45.28%) followed by a week (45.05%). Infectious diseases, burns, hypertension, and alcohol related complications and poly trauma are the top 5 causes of premature deaths. Mean years of potential life lost (YPLL) due to NCDs like cardiovascular diseases, diabetes mellitus and hypertension is 20.92 yrs.
Conclusions: Health system should gear up at all levels of health care in order to reduce mortality due to NCDs and thus to increase life-expectancy.

Keywords: Premature mortality, YPLL, NCDs, Epidemiological transition

INTRODUCTION

Premature deaths are those which occur before reaching the existing life-expectancy of a particular country. Premature mortality by age 60 accounted for one-third of total deaths in low and middle income countries in 2008.[1] YPLL is an estimate of the average years a person would have lived if he or she had not died prematurely. It is a measure of premature mortality.[2]

The premature mortality rate is used to analyze the increasing social and economic cost of mortality at a younger age because conventional measures such as crude death rate and age specific death rate do not quantify the extent of life years lost following early death.[3] Premature mortality is the best single proxy measure for reflecting differences in the health status of population.[1] A number of measures have been developed and used to quantify the extent of premature mortality: the potential years of life lost (PYLL), the premature years of potential life lost (PYPLL), the working years of

potential life lost (WYPLL) and the valued years of potential life lost (VYPLL).[3]

In terms of the number of YPLL due to premature death in India, preterm birth complications, LRTIs and diarrheal diseases were the highest ranking causes in 2010.[1] NCDs are the leading cause of mortality and morbidity and account for 60% of total deaths in India.[2] India is also experiencing rapid demographic and epidemiological transition.[5]

Quantification of premature mortality would help identify the social and economic cost associated with mortality, rank the disease burden and be useful for policy making.[4] In this context, this paper provides numerical estimates on the causes of premature deaths and years of potential life lost due to premature deaths.

Objectives

1. To assess the premature mortality pattern among mortality victims of Victoria Hospital.
2. To determine the YPLL among the mortality victims of Victoria Hospital.

Inclusion criteria

All deaths which have occurred during July-October 2015 in Victoria Hospital from all the specialities.

Exclusion criteria

Deaths which have occurred among the patients more than 70 years of age are excluded as Life expectancy in India is 68.5 yrs.

METHODS

A record based Cross-Sectional study was conducted from July-October 2016 at Victoria Hospital, Bengaluru after obtaining ethical clearance from the institution. Mortality data was collected from Medical Records Department after obtaining permission from Head of the department of MRD and Medical Superintendent of Victoria Hospital. There were totally 1265 deaths in 4 months of which 890 deaths occurred within 69 yrs age which is considered for study.

Data is entered in MS-Excel. Life expectancy of Indians is 68.5 yrs in 2016. Age is classified into class-intervals and mid-point of the age is calculated. Later YPLL is calculated from the formula (Life expectancy-Midpoint of the age).[6] Data is analyzed using Descriptive statistics and is presented in the form of figures, tables, charts and percentages wherever necessary.

RESULTS

Victoria Hospital mainly serves deceased adults. There were total of 1265 deaths in 4 months, among them 890 deaths occurred <69yrs of age. Most of them belong to 45-54yrs which is the income generating age-group (Table 1).

Table 1: Age-group distribution.

Age- group	Number (n=890)	Percentage (%)
0-4 yrs	07	0.78
5-14 yrs	05	0.56
15-24 yrs	96	10.78
25-34 yrs	181	20.33
35-44 yrs	198	22.24
45-54 yrs	217	24.38
55-65 yrs	138	15.50
66-69 yrs	48	5.39

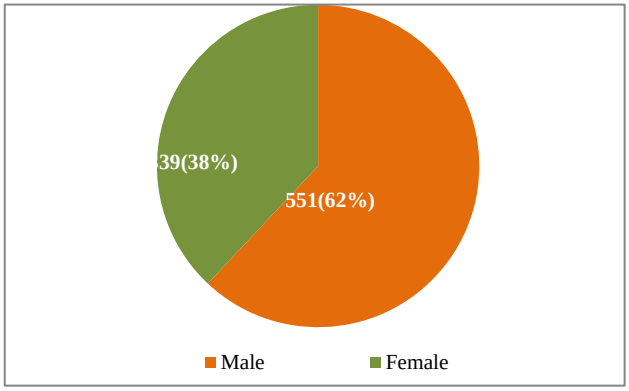

Figure 1: Sex-distribution (n=890).

Among the mortality victims if we see sex pattern distribution, 62% of them were males and 38% of them females, which depicts health seeking behaviour, are more among males rather than females (Figure 1).

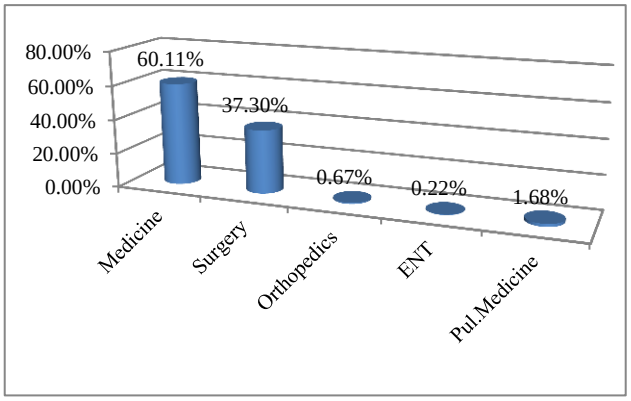

Figure 2: Speciality wise distribution of mortality cases.

Victoria Hospital is a multi-speciality hospital. It has many specialities and most of the emergencies come to medicine unit and hence it has the highest number of deaths (Figure 2).

Most of the mortality victims admitted in hospital for <24 hrs (45.28%) followed by a week (45.05%) which shows

that acute conditions and emergencies come late to a tertiary care after undergoing referrals where the mortality rate will be high (Table 2).

Table 2: Average length of stay in hospital (ASLO).

ASLO	Number (n=890)	Percentage (%)
≤24 hours	403	45.28
≤1 week	401	45.05
≥2 weeks	69	7.75
> 1 month	17	1.91

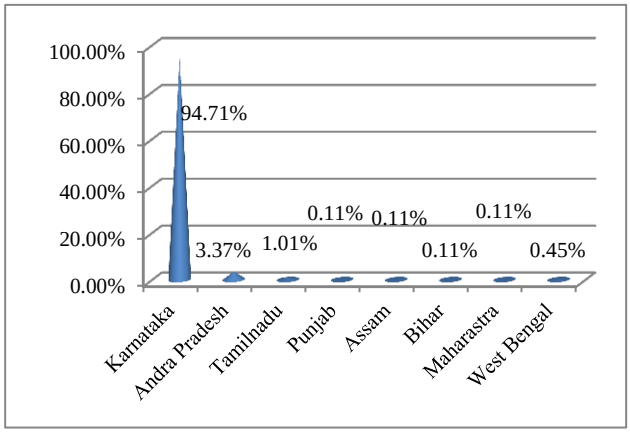

Figure 3: Residential distribution of mortality victims.

Most of the cases (94.71%) come from Karnataka followed by other states like Tamil Nadu, Bihar, Assam, Andhra Pradesh, and Punjab (Figure 3).

Table 3: Causes for premature deaths.

Cause of death	Number (n=890)	Percentage (%)
Infectious diseases	304	34.15
Burns	191	21.46
HTN with complications	96	10.78
Alcohol related diseases	95	10.67
RTA with polytrauma	62	6.96
DM with complications	45	5.05
Poisoning+Drug overdose	46	5.16
Cardiovascular diseases	25	2.8
Hanging	08	0.89
Thyroid related diseases	05	0.56
Metabolic encephalopathy	05	0.56
Malignancies	04	0.45
Snake bite	02	0.22
Autoimmune disorders	02	0.22

Infectious diseases, burns, hypertension, and alcohol related complications and poly trauma are the top 5 causes of premature deaths which account for the loss of productive years. Deaths from these causes occur suddenly where the interventions are failed (Table 3).

Table 4: YPLL due to premature deaths.

Premature deaths	Total number of victims	YPLL (Life Expectancy-Midpoint of age-group)
Poisoining+Drug overdose	46	36.74
Burns	191	35.94
Polytrauma+RTA	62	30.32
Snakebite	02	28.5
Autoimmune disorders	02	27.41
Infectious diseases	304	25.48
Alcohol related diseases	95	24.91
Cardiovascular diseases	25	23.5
DM with Complications	45	19.78
Hypertension with Complications	96	19.47
Malignancies	04	16.2
Thyroid related diseases	05	12.5
Metabolic Encephalopathy	05	12.5
Hanging	08	10.5

Mean YPLL due to NCDs like cardiovascular diseases, diabetes mellitus and hypertension is 20.92 yrs which is very large as these get diagnosed at a late stage with the onset of systemic complications (Table 4).

DISCUSSION

In a study done by Dubey et al on age and sex patterns of premature mortality in India in 2014 found that the increasing mortality trends was in the age group of 30-45 yrs and our study found to be in 45-54 yrs old and YPLL rates were highest for ischemic heart disease in their study and our study also got the highest YPLL in cardiovascular diseases among NCDs.[7]

As per CDC Global Health in India statistics of 2012, cardiovascular diseases account for 12% of total deaths and our study also suggests among NCDs, hypertension with complications account for 10.78% of total deaths followed by 2.8% of deaths due to cardiovascular diseases.[8]

YPLL before age 65 in Italy by Arca et al showed that cancer is the leading cause of YPLL in Italy (23.8 per cent of total YPLL), followed by unintentional injuries (16.3 per cent) and heart disease (11.2 per cent). The rates of YPLL are higher for males than for females (rate ratio=1.9) especially for causes related to lifestyle factors. Premature mortality is lower in Italy than in the USA, because of the striking difference in mortality from

injuries and heart diseases.[9] In our study among the mortality victims if we see sex pattern distribution, 62% of them were males and 38% of them females, which depicts health seeking behaviour, are more among males rather than females.

Years of potential life lost and valued years of potential life lost in assessing premature mortality in Slovenia by Semerl et al found found bimodal age distribution of YPLL, with the first peak in the 20-24 year age group and the second in the 45-49 year age group. Men to women rate ratio was 2.5.[10] There were total of 1265 deaths in 4 months, among them 890 deaths occurred <69 yrs of age. Most of them belong to 45-54 yrs which is the income generating age-group.

Potential gains in life expectancy or years of potential life lost: impact of competing risks of death by Lai et al showed that the YPLL overestimated the importance of premature deaths from HIV/AIDS compared to the PGLE. For the total US population and total US white population of working age, the YPLL were about 20-30% higher than the PGLE.[11] In our study, we found total of 34% of deaths were due to Infectious diseases which have included Sexually transmitted infections.

Measuring the impact of HIV/AIDS, heart disease and malignant neoplasms on life expectancy in the USA from 1987 to 2000 by Tarwater et al showed that the potential gains in life expectancy for the US population at birth by complete elimination of HIV/AIDS, heart disease and malignant neoplasms were 0.14, 3.71 and 3.06 years in 1987, respectively.[12] Our study also suggests among NCDs, Hypertension with complications account for 10.78% of total deaths followed by 2.8% of deaths due to Cardiovascular diseases and neoplasms about 0.45% 0f total premature deaths accounting for YPLL of 16 years.

Recommendation

The most common causes of death are Infectious diseases (34.15%) followed by burns (21.46%) and the YPLL are 25.48 and 35.94 respectively. The years of potential life lost due to poisoning and burns are 36.74, 35.94 years respectively which is huge and these are neglected in prevention aspects by health sector. We need to concentrate on deaths due to burns, RTA, Poisoning cases as we are losing younger people than older people which has impact on health status and economic development of nation. There is a need to strengthen up the health care services in order to reduce the premature deaths as premature mortality is preventable by the effective measures.

There is a need for interventions for prevention of deaths from poisoning and burns like mental health programme for prevention of suicidal and accidental burns and also licensing for issuing pesticides to common people for prevention of deaths from poisoning.

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