



Correspondence

Years of potential life lost due to cancer in Kamrup Urban District of Assam, northeast India

Sir,

Despite sophistication in diagnosis and advances in treatment, cancer continues to be a major public health problem as well as a major cause of premature death across worldwide^{1,2}. In 2012, there were an estimated 8.2 million deaths from cancer in the world: 4.7 million (57%) in males and 3.5 million (43%) in females. The world age-standardized mortality rate shows that there are 126 cancer deaths for every 100,000 men in the world and 83 deaths every 100,000 females³. However, an estimated 600,000-700,000 deaths in India were caused by cancer in 2012⁴. In India, the highest incidence and mortality rate of cancer were seen in the north-eastern part of the country⁵. Some of the specific types of cancer have the highest incidence and mortality in these regions as compared to the national (India) and global scenario, particularly cancers of the gall bladder, stomach cancer, oesophageal cancers, mouth cancer and hypopharyngeal cancer^{5,6}. Aizwal district of North-east India had the highest rate of mortality in India in men (140.6/100,000) and women (83.2/100,000)⁷. In Kamrup urban district, 70/100,000 men and 41.2/100,000 women died due to cancer⁷.

The number and rates of deaths alone do not reflect the complete burden imposed on the society, as some cancers harm younger people more than others. The number of years of life lost (YLL) therefore, depends on the age at death and the number of deaths at each age, and may resolve some of the mismatches of disease impact derived from death numbers alone. YLL data may be more useful in resource allocation and design of prevention programmes⁸⁻¹⁰.

Data from the Population Based Guwahati (Kamrup Urban District) Cancer Registry^{5,7} for the 5-year period 2010 to 2014 were used to calculate YLL.

Simple percentage mortality expressed the number of deaths from an individual tumour type divided by the total number of deaths from cancer as a percentage. The aim of the study was to quantify the total and YLL due to cancer in Kamrup urban district between 2010 and 2014.

Estimates of the YLL due to cancer are generated by comparing the life expectancy at five years of age interval with the number of deaths from cancer that occurred at that age group. The projected level of the expectation of life at birth for 2010-2015 for Assam State was calculated as 63.6 yr for males and 64.8 yr for females¹¹. In Kamrup urban district, a total of 2259 deaths (males=1474, females=785) had occurred due to cancer in the last five years (2010-2014). On an average, about 452 deaths due to cancer were recorded per year, of which 295 were male deaths and 157 were female deaths. The age distribution of deaths among men and women is shown in the Figure. The probability of death increased with advancing age and was higher among older age group. Nearly 82.6 per cent (1218/1474) and 70.6 per cent (554/785) of deaths among men and women, respectively, occurred in the population in the age group of 50 yr and above.

Oesophageal cancer was the leading cause of cancer death in both sexes; 15.6 per cent of cancer deaths in men and 11.6 per cent in women during 2010-2014. Lung cancer was the second leading cause of death among men (11.5% of all cancers) of Kamrup urban district and, among women, gallbladder cancer was the second leading cause of death comprising 11.5 per cent of the total deaths due to cancer. Deaths from oesophageal, stomach, lung, gallbladder, breast and ovary cancers combined contributed almost half of all deaths from cancer during this period.

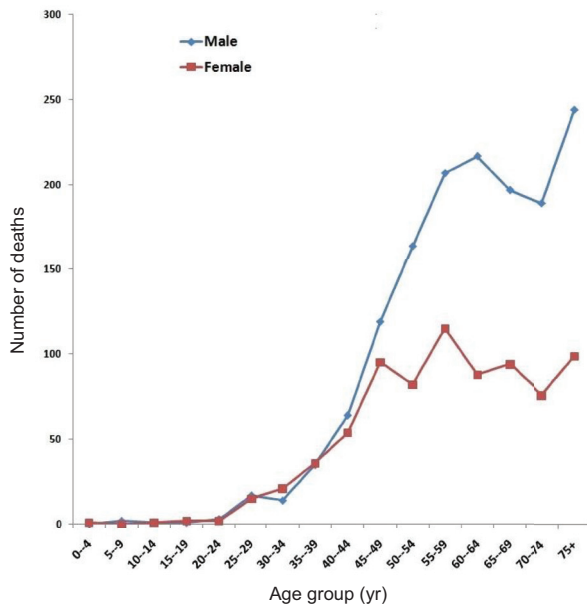


Figure. Total number of cancer-caused deaths in Kamrup urban district in 2010-2014 according to age group.

Oesophageal cancer was the sixth leading cause of cancer death worldwide¹². A substantial number of years of life were lost or affected by oesophageal cancer worldwide, with the burden resting disproportionately on less developed countries. Geographically, the greatest burden is in the eastern part of Asia¹³. Oesophageal cancer was the top most killer among men in Kamrup urban district in terms of total YLL and mortality percentage. A total of 1567.4 and 581.2 life years were lost due to oesophageal cancer death among men and women, respectively, in 2010-2014.

The YLL for an individual cancer site can be expressed as a percentage of the total YLL from all cancers, so it can be directly compared with percentage mortality. Based on the total number of deaths at each age level, multiplied by the expected remaining years of life on each level, a total of 9305.4 YLL was estimated for men and 7668.6 for women who died from cancer between 2010 and 2014 (Table). The greatest percentage of YLL in men was due to oesophageal cancer, contributing a total of 16.8 per cent followed by hypopharyngeal cancer (7.8%) and lung cancer (7.4%). Among women, the greatest percentage of YLL was from breast cancer, comprising a total of 12.1 per cent followed by ovarian cancer (11.3%) (Table).

The average YLL (AYLL) is simply an average derived by dividing YLL by the actual number of deaths for each cancer site, over the defined time period. Effectively

it shows, on an average, how much a patient's life is likely to be shortened by his/her cancer. The variation in cancer burden per affected patient varied dramatically according to tumour type. The mean AYLL amounted to 11.0 yr in men and 15.0 in women, indicating the numerical average of the life shortening from cancer (Table). Deaths among female-specific cancers such as cervical, breast, ovarian and uterine cancers occurred in lower ages than the male-specific or predominant cancers such as prostate, bladder and oesophageal cancers, contributing to a higher AYLL in females than in males. Among the top 10 sites, brain and central nervous system (CNS) cancers in males had the highest average number of AYLL per death (16.1 yr) followed by rectum (14.7 yr). Among females, the highest AYLL was due to hypopharyngeal cancer (24.2 yr) followed by carcinoma of colon (23.5 yr).

In Kamrup urban district, the female population had a lower YLL, but lost more years on average (higher AYLL) by cancer type, largely because of the age at onset of particular type of cancer and longer life expectancy of women. Breast and cervical cancers were important contributors to female cancer mortality. A sustainable portion of these deaths can be prevented only by improving early detection and treatment methods of breast and cervical cancer.

Among men highest AYLL was due to brain and nervous system cancer (16.1 yr); this was probably due to CNS cancer occurring at early years of life. Among women on average 24.2 life years were lost due to hypopharyngeal cancer. Kamrup urban district recorded a significantly increasing trend of prostate cancer incidence rates over time from 2003 onwards and it was the sixth leading site among men in Kamrup urban district¹³. Despite a high prostate cancer incidence in Kamrup urban district, the AYLL due to prostate cancer were relatively low compared to other cancer types; this could be attributed to the advanced age at diagnosis.

Cancer is a major and increasing cause of premature deaths, and YLL may be a more accurate measure than number of deaths. AYLL measures the burden to individual patients and may be helpful where individuals' needs are relevant, such as palliative care. The high AYLL illustrate the poor prognosis. Primary prevention, early detection, adequate and timely treatment are needed to change this situation, particularly in Kamrup urban district, Assam.

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Table. Comparison of the years of life lost due to cancer, 2010-2014, in Kamrup urban district, North-east India

Sites of cancer (ICD-10 code ¹⁴)	Male					Female					
	Total YLL	AYLL	Per cent of all years lost	Per cent mortality	Per cent YLL /per cent mortality (ratio)	Sites of cancer	Total YLL	AYLL	Per cent of all years lost	Per cent mortality	Per cent YLL /per cent mortality (ratio)
Oesophagus (C15)	1567.4	11.3	16.8	15.6	1.1	Breast (C50)	925.2	15.7	12.1	8.9	1.4
Hypopharynx (C12-C13)	723.4	9.8	7.8	6.9	1.1	Ovary (C56)	865.0	17.3	11.3	8.5	1.3
Lung (C33-C34)	691.0	8.1	7.4	11.5	0.6	Gallbladder (C23-C24)	735.2	12.5	9.6	11.5	0.8
Stomach (C16)	632.8	10.9	6.8	7.6	0.9	Oesophagus (C15)	581.2	10.8	7.6	11.6	0.7
Liver (C22)	444.2	12.0	4.8	4.8	1.0	Cervix uteri (C53)	534.2	13.7	7.0	6.6	1.1
Larynx (C32)	400.8	10.5	4.3	4.5	1.0	Lung (C33-C34)	516.4	13.6	6.7	7.1	0.9
Gallbladder (C23-C24)	395.8	10.4	4.3	5.0	0.9	Stomach (C16)	511.2	17.6	6.7	5.7	1.2
Brain, nervous system (C70-C72)	355.2	16.1	3.8	2.4	1.6	Colon (C18)	329.2	23.5	4.3	2.8	1.5
Rectum (C19-C20)	353.4	14.7	3.8	2.5	1.5	Liver (C22)	280.4	15.6	3.7	3.7	1.0
Pharynx (C14)	306.6	11.8	3.3	3.4	1.0	Myeloid leukaemia (C92-C94)	215.8	19.6	2.8	2.2	1.3
Tongue (C1-C2)	291.2	9.1	3.1	3.5	0.9	Brain, nervous system (C70-C72)	172.4	21.6	2.2	1.4	1.6
Mouth (C3-C6)	268.0	8.9	2.9	1.5	1.9	Hypopharynx (C12-C13)	169.6	24.2	2.2	1.8	1.2
Tonsil (C9)	263.6	12.6	2.8	2.9	1.0	Mouth (C3- C6)	148.6	12.4	1.9	2.8	0.7
Colon (C18)	238.6	11.4	2.6	1.8	1.4	Tongue (C1- C2)	102.4	12.8	1.3	1.8	0.7
Pancreas (C25)	183.8	10.2	2.0	2.6	0.8	Tonsil (C9)	91.8	15.3	1.2	1.0	1.2
All sites	9305.4	11.0	100.0			All sites	7668.6	15	100		

The relative difference between the two parameters of mortality is given by the ratio per cent YLL/per cent mortality. Figures are presented only for the 15 specified sites. YLL, years of life lost; AYLL, average YLL; ICD-10, International Classification of Diseases 10th Revision. Number in superscript denotes reference.
Source: Refs. 5,7.

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Conflicts of Interest: None.

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