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Editorial

A stitch in time saves nine: Answer to the cancer burden in India

Cancer or neoplasia is a disease characterized by an uncontrolled division of abnormal cells and which can invade adjoining tissues and/or spread to other organs[1]. Malignancies can affect any organ and have many types, varying in pathology, clinical features and management strategies.

Mortality and morbidity due to cancer

Worldwide, in 2012, 14.1 million cancer cases were newly diagnosed, with >8 million deaths and 32 million five-year prevalent cases. Interestingly, 57 per cent of new cases, 65 per cent of deaths and 48 per cent of five-year prevalent cases of cancer are estimated to occur in less developed countries[2]. In 2015, it became the second leading cause of mortality globally, killing approximately 8.8 million people, which translates to one in six deaths worldwide. Globally, malignancies of the lung, prostate, colorectal, stomach and liver, in that order, are the most common types in men, with breast, colorectal, lung, cervix and stomach cancers most prevalent among women[2].

The overall age-standardized incidence rates of cancers are 205/100,000 in men and 165/100,000 in women. Incidence rates of cancer in males vary from 79/100,000 in Western Africa to 365/100,000 in Australia/New Zealand. Cancer incidence in females ranges from a low of 103/100,000 in South-Central Asia to a high of 295/100,000 in North America[2].

The mortality rates due to cancer in developed regions are 15 and 8 per cent higher in men and women, respectively than in less developed ones. Cancer mortality in males ranges from 173/1000 in Central and Eastern Europe to 69/100,000 in Western Africa. Interestingly, females have the highest rates in Melanesia (119/100,000) and lowest in South-Central Asia (65/100,000)[2].

Cancer in India

The Indian Council of Medical Research (ICMR) has been collecting cancer incidence data through several population-based and hospital-based cancer registries for the last 30 years. These registries provide the most accurate information regarding cancer morbidity and mortality rates in India, thus helping in health expenditure planning for the disease at the national level. In India, nearly 2.5 million people are living with a diagnosis of cancer. Incidence rate of cancer is more in females as compared to males. In the urban areas of country, the age-adjusted incidence of cancer ranges from 107.8 to 142.0/100,000 for women and from 92.1 to 126.1/100,000 for men[3,4]. The most common sites in women are the breast, cervix and oral cavity; while the most common malignancies in men are of oral cavity, lung, oesophagus and stomach. Overall, breast, uterine cervix and oral cavity are the three most common sites of malignancies, accounting for about 34 per cent of >1 million cases diagnosed each year[5-8].

Nearly 50 per cent of all cancer deaths in India can be attributed to cervical and breast cancer in women, and oral and lung cancer in men, with 40 per cent of all malignancies being attributable to tobacco consumption. Cancer is not a notifiable disease yet in most States, leading to under-reporting of its incidence and mortality[6-8].

Cancer prevention

Up to 60 per cent of total cancer cases are preventable, and thus, prevention has a major role to play in cancer control. There is an urgent need to plan and implement national policies and programmes to increase awareness, to reduce exposure to cancer risk factors and to assist people adopt healthy lifestyles[6,8].

Worldwide, the consumption of tobacco is the most important preventable risk factor for cancers

responsible for >6 million deaths each year. Tobacco smoke is known to contain >7000 chemicals of which >70 have been proven to be carcinogenic[9-11].

Smoking can cause cancers of the lung, oesophagus, oral cavity, kidney, bladder, stomach, pancreas and cervix among others[10,11]. There are nearly one billion smokers in the world, with eight out of 10, living in low- and middle-income countries[10,11]. Second-hand smoke is well established as a cause of lung cancer in non-smoking individuals. Smokeless tobacco, mostly prevalent in the Indian subcontinent, also causes many types of cancers. Areca nut, a usual constituent of smokeless tobacco, is a known class I carcinogen[10,11]. The ICMR-National Institute of Cancer Prevention and Research hosts the WHO Framework Convention on Tobacco Control Global knowledge Hub for Smokeless Tobacco (*http://untobaccocontrol.org/kh/smokeless-tobacco/*).

Cancers of the oesophagus, colorectum, breast, endometrium and kidney are linked to obesity. A healthy diet, regular physical activity and maintaining an appropriate weight, reduce the risk of cancer[12]. Alcohol use is a risk factor for cancers of the oral cavity, oesophagus, pharynx, larynx, liver, breast and colorectum and was estimated to cause >337,000 deaths in 2010[12]. These deaths are significantly more frequent in men as compared to women[12,13].

Data from 2012 suggested that globally approximately 15 per cent of all cancers might be due to infections such as human papillomavirus (HPV), *Helicobacter pylori*, hepatitis B virus (HBV) and hepatitis C virus (HCV). Infection attributable cancers range from <5 per cent of the total in the developed countries of the Americas, Europe and Australia, but >50 per cent in some African countries. Vaccines are available for oncogenic HPV types and the HBV and the latter is well established as reducing the risk of liver cancers. Data on both vaccines suggest promising safety and efficacy[12-17].

Carcinogens in pollution may lead to significant cancer burden in different geographical settings. In 2012, outdoor air pollution led to an estimated 3.2 million deaths worldwide[12,13]. Occupational hazards are known to cause lung cancer, bladder cancer and mesothelioma. Exposure to ionizing radiation increases the risk of leukaemia and some solid tumours[12,13].

Cancer prevention and effective early screening can only be achieved by collective efforts of government, research institutes and healthcare workers, including field workers, with use of technology-assisted learning and screening tools such as the Extension for Community Health Outcomes (ECHO) programme[17-20].

Cancer management

Early diagnosis, treatment and palliative care constitute the spectrum of cancer management. Oncology is the most well-researched field of medicine with the maximum number of clinical trials. Treatment options include surgery, chemotherapy, radiotherapy and targeted immunotherapy. Treatment plans depend on the type of cancer, its stage and available resources. Palliative care is an essential component of cancer care. Initiatives to reduce cancer deaths and improve cancer care are integral parts of universal health coverage[21].

Cost of cancer

In 2010, globally the estimated annual economic cost incurred due to cancer was US$1.16 trillion and with rising healthcare costs, the burden is expected to rise in future[2]. Efforts are ongoing worldwide for the provision of affordable cancer diagnostics, treatment and palliation. Almost every household in the world now has been impacted in some way by cancer[1-3].

Efforts by international bodies

International bodies such as UN and WHO are committed to create the environment conducive to cancer control worldwide. The WHO Member States conducted a meeting in May 2017 and laid action items for prevention, early diagnosis, prompt treatment and palliative care ensuring cancer care for all. Countries are taking actions on the recommendations of the resolution by enacting strategies proven to reduce cancer risk. Such strategies include higher taxation on tobacco products and alcohol, promotion of physical activity, healthy diet and HBV/HPV vaccination. Strengthened health systems should ensure both primary and secondary cancer prevention along with high-quality treatment and palliative care resulting in better cancer survival rates and/or quality of life[22].

In the second half of 2018, the third high-level meeting of the UN General Assembly on the Prevention and Control of non-communicable diseases will be held, wherein Member States will report on the actions taken for prevention and control of cancer as per their national commitments[22].

The way forward

The WHO has been instrumental in giving guidance on cancer control to countries which are now working

to formulate and implement national cancer control policies and programmes integrated with strategies for non-communicable diseases in the existing and expanding healthcare infrastructure. India's National Programme for Prevention and Control of Cancer, Diabetes, CVD and Stroke has goals including primary prevention through health education, secondary prevention through widespread cancer screening, improvement in cancer treatment and palliative care delivery and integration with healthcare facilities for other non-communicable diseases. All these should ensure long-term sustainability of interventions[13,21,22]. Preventable cancers form a large subset of cancers in India. Hence prevention and early screening largely outweigh the cancer treatment efforts with respect to cost, morbidity and lives saved[22].

The observed reduction in cancer morbidity and mortality through population-based national cancer screening programmes and interventions points to the necessity for robust screening, use of multidisciplinary delivery teams, coordinated clinical monitoring, timely evaluation and change in perspectives to maximize benefit to target populations[23].

***Conflicts of Interest*:** None.

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