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Editorial

Cancer prevention through lifestyle modification

Cancer is a major health issue in the world, with a rising incidence trend in developing countries. In India, an estimated 14,61,427 new cancer cases were reported in 2022, with a crude incidence of 100.4/1,00,000 population, and the incidence is estimated to rise by 12.8 per cent by the year 2025[1]. It is estimated that nearly 70 per cent of this cancer burden is due to lifestyle factors such as tobacco usage, alcohol, human papillomavirus (HPV) infection, diet, obesity, lack of physical exercise, pollution (air and water), *etc.*, with nearly 40 per cent estimated to be due to tobacco consumption alone, with head neck and lung cancers being the foremost among Indian males[2]. This burden of cancer on low- and middle-income countries (LMICs) like India cannot be annihilated just by early detection and advancement of treatment in cancer. Primary prevention, which emphasises lifestyle modification and attributes towards reduction of the risk of the development of cancer, thus not only reduces the incidence but also reduces the burden on limited tertiary cancer centres. Being physically active, reducing or eliminating the use of tobacco & alcohol, limiting exposure to the sun, and maintaining healthy weight are a few of the lifestyle modification strategies that could play a crucial role in reducing cancer incidence & comorbidity[3].

Nearly 40 per cent of cancer burden is estimated to be due to tobacco consumption, and contributes to over one-fourth of cancer deaths[4]. The cancer risk with smoking and smokeless tobacco is estimated to be 2.71 and 2.68 times, respectively, compared to non-smokers or chewers. While smokeless tobacco is associated with oral, pharyngeal, laryngeal, and stomach cancer[5], smoking is associated with lung, breast, colon, pancreas, cervical, kidney, and urinary bladder cancer. Apart from cancer, tobacco is also associated with heart and lung diseases, adding to the overall burden of non-communicable diseases. The economic cost to our country attributed to tobacco use between 2017 and 2018, as per the World Health Organization (WHO) estimates, was INR 1773.4 billion. It is further estimated that for every INR 100 rupees received by the government on excise duty on tobacco, INR 816 rupees are spent to treat the disease burden caused by it[6]. About 91 per cent of this burden is on men while nine per cent is on women, suggesting an urgent need to address the growing tobacco menace[6]. From the argument above, it's clear that nearly 26 per cent of deaths caused by cancer are preventable. However, the strategies are mostly remaining ineffective, and the menace is rising. This requires a two-pronged approach: *i*) to stop the initiation and *ii*) to make the users quit. There is a lot of work done on the second approach, with the establishment of tobacco cessation clinics/centres (TCC) in many hospitals and clinics and government and non-government organization (NGOs) pushing to achieve this goal. Recently the government of India has issued the operational guidelines for TCC, emphasising that all tobacco users attending a medical college, institution, or clinic should be directed and should have access to TCC, and these centres should provide services like behaviour modification, pharmacological interventions, and relapse prevention[7]. Apart from this, a toll-free quit line and m-cessation services have also been added. The results of these activities have not been encouraging, with only a 16 per cent rate of cessation and 26 per cent of harm reduction[8]. This was attributed to largely depending on behavioural interventions and is expected to rise with the proposed three-pronged approach.

The way to stop tobacco initiation is arduous due to easy availability of tobacco. Despite government regulations, there is early initiation. More efforts are needed in the form of public awareness campaigns; however, it is often seen that instead of promoting cessation or demeaning tobacco use, some public figures and prominent actors are involved in surrogate advertising of various pan masalas. As the initiation happens between the ages of 16 and 20, it is important to target schools and college-going youths

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with campaigns. Other than awareness, strict control policies, community-based interventions, and access to cessation clinics (for those already initiated) need to be provided. This is one area we need to focus on, as stopping the initiation is better than cessation.

After tobacco, alcohol is the second preventable cause of cancer, attributing to about 6.6 per cent of cancer-associated disability-adjusted life years (DALYs) in India[9]. It is estimated to be the cause of 30,000 cancer deaths in India. Oral, pharyngeal, oesophageal, stomach, and liver cancers are associated with alcohol[10]. The efforts to reduce alcohol intake are mainly through government policies, which play a role by placing restrictions and regulations on its sale[11] and messaging on harmful effects of alcohol use (such as drunk driving) through various media. The number of deaddiction centres is far, and few with a restricted number of available beds, and relapse is rather common. There is an urgent need to stop surrogate advertising, increase the capacity of deaddiction centres, ensure regulatory implementation, and create innovative awareness campaigns.

HPV infection is associated with cervical, penile, oropharyngeal, and rectal cancers. An estimated 1,23,907 women are diagnosed with cancer of the cervix each year, and about 77,348 die from it[12]. About five per cent of women carry a high-risk of HPV infection at any given time, and it's estimated that nearly 90 per cent of cervical cancers are associated with HPV[12]. There are efforts to introduce the HPV vaccination at the population level; however, pairing it up with lifestyle modification-based interventions such as safer sex will go a long way[13].

Obesity is recognized as a growing problem in India and is associated with breast, endometrium, liver, kidney, colorectal, gallbladder, pancreas, and gastric cancers[14-16]. It is estimated that 4-8 per cent of all cancer burden is attributed to obesity. Accumulation of hormones, endocrine disruptors, toxic chemicals like persistent organic pollutants (POP), insecticides and pesticides in body fat have been attributed to the cancer burden[17]. Therefore, worldwide, awareness of cancer prevention through regular physical activity is being encouraged. Diet and nutrition-related issues are other lifestyle factors that could contribute to the increasing cancer burden, especially among the Indian urban population. A diet rich in saturated fat, red meat, processed food, and low in fibre, vitamins, and micronutrients has been associated with cancer[18]. Such a diet works by increasing inflammation, introducing chemically toxic substances and carcinogens, changing the gut microbiota, and introducing micronutrient and vitamin deficiencies[19].

Last but not least, the preventable strategy to reduce the cancer burden would be to reduce exposure to pollution and infections that contribute to the cancer burden. Air pollution is linked with the incidence of lung cancer, which is on the rise in the country and is estimated to kill 4.2 million people worldwide. In contrast, water pollution is linked to liver, gallbladder, and pancreatic cancer either through heavy metal contamination[20] or through the spread of waterborne diseases. Other infections like hepatitis B and C (prevalent among people who inject drugs) are also associated with liver cancer, which can be prevented through lifestyle modifications. Notably, climate mitigation and the inclusion of pollution control and reduction strategies can prevent cancer[21] by reducing the use of fossil fuels and moving towards clean and green energy by adopting electronic vehicles, cycling, or using public transport.

To conclude, nearly 70 per cent of cancer burden is due to preventable causes, and sustained efforts need to be taken for awareness among the general public as simple lifestyle modifications can lead to the prevention of cancer and can also help in the economic growth and health of the country by reducing the amount of money that is spent on treating lifestyle induced cancers[22,23]. In a country like India, where the majority of the population falls under middle and low socio-economic status, preventive strategies must be adopted to manage the huge burden of cancer.

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