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# Revisiting Cancer Prevention: Evidence That Most Cancers Are Avoidable

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**ABSTRACT**

Cancer remains one of the leading causes of morbidity and mortality worldwide. Although genetic predisposition and aging contribute to cancer development, a substantial proportion of cancers arise from modifiable environmental, behavioural, occupational, and infectious risk factors. Recent global estimates by the World Health Organization (WHO) and International Agency for Research on Cancer (IARC) indicate that approximately 30–50% of cancers, and nearly 40% of new cancer cases globally, are attributable to preventable causes.[12] Tobacco use remains the leading avoidable risk factor, followed by infections, alcohol consumption, obesity, poor diet, physical inactivity, ultraviolet radiation, and environmental pollution. Vaccination against hepatitis B virus and human papillomavirus, tobacco control, healthy lifestyles, occupational safety, and screening programs can substantially reduce future cancer burden. This viewpoint argues that the majority of cancers are preventable when primary prevention and early detection strategies are effectively implemented. Investment in prevention is therefore scientifically justified, economically prudent, and ethically imperative for global public health systems.

## Introduction

Cancer is traditionally perceived as an unavoidable disease linked with aging or hereditary predisposition. However, scientific evidence increasingly demonstrates that many cancers arise due to identifiable and modifiable risk exposures. WHO states that between 30% and 50% of cancers can be

prevented through avoidance of known risk factors and implementation of evidence-based prevention strategies.[2] Prevention offers the most cost-effective long-term approach to cancer control.[3]

The rising global cancer burden, especially in low- and middle-income countries, underscores the need to shift emphasis from treatment alone to prevention. If health systems prioritize prevention, millions of future cases and deaths can be avoided.[1]

**Rationale of the View Point**

1. Cancer incidence is rising globally.
2. Treatment costs are enormous and often inaccessible.
3. Many major carcinogenic exposures are modifiable.
4. Prevention strategies such as vaccination and tobacco control are proven effective.
5. Public awareness regarding preventable causes remains inadequate.
6. Policy makers often underinvest in prevention relative to treatment.

Therefore, justifying cancer prevention as the central strategy is timely and necessary.

**Literature Review**

Multiple studies confirm the preventable nature of many cancers.

- WHO and IARC (2026) estimated that **37% of all new cancers worldwide (7.1 million cases in 2022)** were linked to preventable causes.[1]
- Tobacco alone accounted for approximately **15%** of global new cancers.[1]
- Infections such as HPV and hepatitis B/C accounted for **10%**.[1]
- Alcohol contributed around **3%** of cancers globally.[1]
- Obesity is linked to colorectal, breast, endometrial, kidney, and esophageal cancers.[4]
- WHO recognizes ultraviolet radiation as a preventable cause of skin cancers.[2]
- Screening and early detection reduce mortality from cervical, breast, colorectal, and oral cancers.[5]

The scientific literature strongly supports the proposition that a large proportion of cancers are preventable through modification of known risk factors and implementation of public health measures. The World Health Organization (WHO) states that 30–50% of cancers can currently be prevented through evidence-based strategies such as tobacco control, vaccination, healthy diet, physical activity, reduction of alcohol use, and minimizing environmental exposures.

A landmark joint WHO–International Agency for Research on Cancer (IARC) global analysis published in 2026 examined 30 modifiable risk factors across 185 countries and 36 cancer types. It estimated that 37% of all new cancer cases in 2022 (around 7.1 million cases) were attributable to preventable causes. Tobacco smoking was the leading contributor (15%), followed by infections (10%) and alcohol consumption (3%).

*Tobacco as the Leading Preventable Cause*

Tobacco remains the single most important avoidable cause of cancer worldwide. WHO reports that tobacco smoke contains over 7,000 chemicals, including at least 69 known carcinogens. It is causally associated with cancers of the lung, oral cavity, larynx, pharynx, esophagus, pancreas, bladder, kidney, cervix, and stomach. Strong tobacco-control policies—taxation, smoke-free laws, advertising bans, and cessation services—have repeatedly shown reductions in cancer incidence and mortality.

*Infections and Vaccine-Preventable Cancers*

Chronic infections contribute substantially to global cancer burden, particularly in low- and middle-income countries. WHO estimates that carcinogenic infections accounted for approximately 13% of cancers globally. Important examples include human papillomavirus (HPV), hepatitis B virus (HBV), hepatitis C virus (HCV), Helicobacter pylori, and Epstein–Barr virus. Vaccination against HPV and HBV can prevent cervical and liver cancers respectively, making infection-related cancers among the most preventable forms.

*Alcohol Consumption*

Alcohol is classified by IARC as a Group 1 carcinogen. WHO notes its causal relationship with at least seven cancers, including breast, liver, colorectal, esophageal, and oral cancers. Globally, alcohol consumption is associated with 740,000 new cancer cases annually. Even light-to-moderate alcohol intake has been linked with increased cancer risk, reinforcing that no level can be considered entirely risk-free.

Obesity, Diet and Physical Inactivity

Growing evidence links excess body weight with multiple malignancies including colorectal, breast (postmenopausal), endometrial, kidney, pancreatic, and esophageal cancers. IARC estimated that elevated body mass index contributed to 3.6% of global cancers, nearly half a million new adult cancer cases. Sedentary lifestyle, low fruit and vegetable intake, and processed meat consumption also contribute to carcinogenesis.

*Environmental and Occupational Exposures*

Environmental pollution and occupational carcinogens remain significant preventable causes. WHO highlights the role of outdoor and household air pollution in lung cancer burden. Occupational exposure to asbestos, benzene, silica, and aniline dyes contributes to mesothelioma, leukemia, bladder cancer, and lung cancer. Stronger industrial regulation and workplace protections can reduce these risks.

*Ultraviolet and Ionizing Radiation*

Ultraviolet radiation from sunlight and tanning devices is a recognized cause of melanoma and non-melanoma skin cancers. Avoiding excessive sun exposure, using protective clothing, and sunscreen are proven preventive strategies. Ionizing radiation exposure in healthcare and occupational settings also increases cancer risk and should be minimized where appropriate.

*Role of Screening and Early Detection*

Although screening is considered secondary prevention, literature confirms that organized screening programs substantially reduce mortality from cervical, breast, colorectal, and oral cancers by detecting precancerous lesions or early-stage disease. This supports the broader concept that many cancers are preventable or highly controllable through timely intervention.

*Overall Evidence Synthesis*

The cumulative literature demonstrates that cancer is not solely a random or inevitable disease of aging. Rather, a large share of global cancer burden is driven by modifiable exposures. Population-wide preventive interventions are therefore scientifically justified, cost-effective, and essential for future cancer control.

These data strongly support the proposition that a large share of cancers can be prevented.

## Methodology

This paper is a narrative viewpoint based on review of secondary literature from WHO, IARC, peer-reviewed journals, and global cancer databases.

**Inclusion Sources:**

- WHO cancer prevention reports
- IARC global burden analyses
- Peer-reviewed epidemiological studies
- Public health guidelines

**Approach:**

1. Review of evidence on modifiable cancer risk factors
2. Synthesis of attributable fractions
3. Interpretation from public health perspective
4. Development of prevention-focused recommendations

## Results

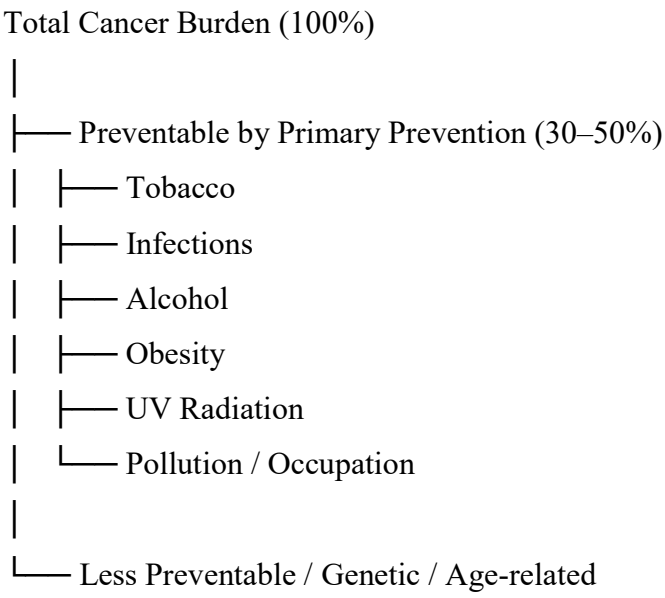
**Table 1. Major Preventable Causes of Cancer and Associated Cancers (Word Template)**

| Preventable Risk Factor | Examples of Related Cancers | Preventability Level |
|---|---|---|
| Tobacco use | Lung, oral, bladder, esophagus | Very High |
| Alcohol | Liver, breast, colorectal | High |
| Obesity | Breast, endometrial, colon | High |
| Infections (HPV, HBV, HCV) | Cervical, liver, anal | Very High |
| UV Radiation | Skin cancers, melanoma | High |
| Occupational exposure | Mesothelioma, lung, bladder | Moderate |
| Poor diet / inactivity | Colon, breast | Moderate to High |

**Table 2. Key Preventive Interventions and Expected Impact (Word Template)**

| Intervention | Target Population | Expected Benefit |
|---|---|---|
| Tobacco cessation | General population | Major reduction in multiple cancers |
| HPV vaccination | Adolescents | Prevention of cervical & related cancers |
| Hepatitis B vaccination | Infants / adults at risk | Prevention of liver cancer |
| Healthy diet & exercise | Adults | Reduced obesity-related cancers |
| Alcohol reduction | Adults | Lower breast/liver/colon cancers |
| Sunscreen / UV avoidance | All age groups | Reduced skin cancer |
| Screening programs | Eligible adults | Earlier detection, lower mortality |

**Figure 1. Conceptual Diagram of Preventable Cancer Burden (Word Template)**




**Discussion**

The argument that majority of cancers are preventable is strongly supported by epidemiological evidence. Although not every individual cancer is avoidable, a population-level perspective reveals that large fractions are attributable to modifiable exposures.[12]

Tobacco control remains the single most impactful intervention. Comprehensive bans, taxation, smoke-free laws, and cessation support significantly reduce future cancer incidence. Similarly, HPV vaccination can nearly eliminate cervical cancer when coverage is high.

Obesity, sedentary lifestyles, processed diets, and alcohol use are emerging drivers of cancer burden, especially in urbanized societies. Environmental pollution and occupational carcinogens remain major concerns in developing nations.

Importantly, prevention must be integrated with early detection. Screening for cervical, breast, colorectal, and oral cancers reduces mortality and treatment costs.

Thus, cancer prevention is not merely theoretical—it is practical, measurable, and economically beneficial.

**Conclusion**

The statement that the majority of cancers are preventable is justified when viewed through public health evidence. Between one-third and one-half of cancers globally are linked to modifiable causes, and millions of cases could be avoided through tobacco control, vaccination, healthier lifestyles, environmental regulation, and screening. Prevention should therefore become the cornerstone of national cancer control strategies. A future reduction in cancer burden depends less on discovering new cures and more on implementing known preventive measures effectively.

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