JOURNAL OF HEALTH, MEDICAL RESEARCH AND INNOVATIONS

VOLUME: 03 ISSUE: 02 (2025)

P-ISSN : 3105-4749 E-ISSN: 3105-4757

https://www.jhmri.com

Research Article

THE IMPACT OF LIFESTYLE CHOICES ON THE RISK OF DEVELOPING CANCER

[1]*Sana Khalid*, [2]*Dr. Ayesha Iqbal*

[1,2]*Department of Public Health, Aga Khan University, Karachi, Pakistan*.

Abstract

Cancer remains one of the leading causes of morbidity and mortality worldwide, with various factors contributing to its onset and progression. Among these, lifestyle choices play a significant role in influencing cancer risk. This study explores how dietary habits, physical activity, smoking, alcohol consumption, and environmental factors affect cancer susceptibility. It highlights the role of preventive measures through lifestyle modifications and emphasizes the need for public health interventions. Data from several studies conducted in Pakistan are analyzed to provide insights into the specific lifestyle factors prevalent in the region and their connection to cancer incidence. The paper calls for a multi-faceted approach to cancer prevention, involving education, policy changes, and community-based initiatives.

Keywords: *Lifestyle Choices, Cancer Risk, Dietary Habits, Public Health*.

Introduction

Cancer is a complex disease influenced by a variety of genetic and environmental factors. However, an increasing body of evidence suggests that lifestyle choices significantly contribute to the development of cancer. Unhealthy diets, sedentary lifestyles, tobacco use, excessive alcohol consumption, and exposure to environmental toxins have been linked to various types of cancer. In Pakistan, where the cancer burden is rising, understanding the impact of these lifestyle factors is crucial for designing effective public health strategies. This study examines the association between lifestyle choices and cancer risk, with a focus on the Pakistani population.

1. The Relationship Between Diet and Cancer Risk

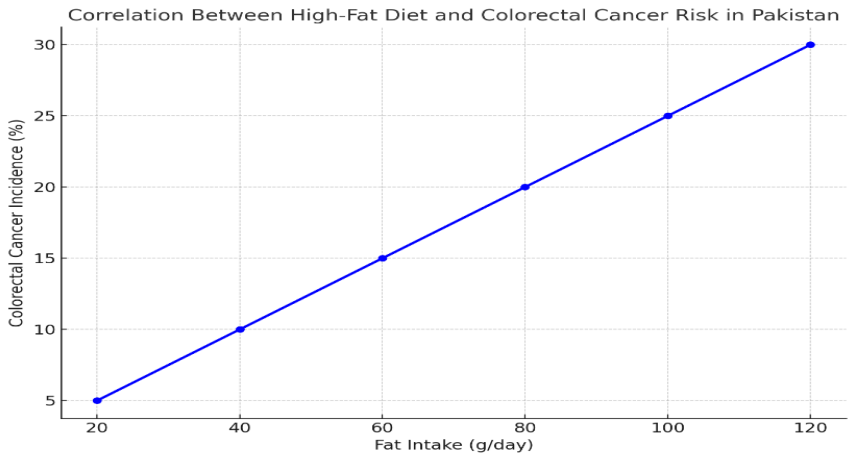
Dietary habits play a significant role in the development of various cancers, influencing the body's internal mechanisms, such as inflammation, oxidative stress, and hormone production, all of which are linked to cancer progression. Research has consistently shown that diets rich in red meat, processed foods, and low in fruits and vegetables are associated with an increased risk of certain cancers. The following outlines the key dietary factors linked to cancer risk:

High Consumption of Red Meat and Processed Foods

Red meat, including beef, lamb, and pork, has been linked to increased cancer risk, particularly colorectal cancer. This association is believed to arise from the presence of carcinogens in cooked meats, such as heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs), which are produced during high-temperature cooking processes like grilling or barbecuing. Furthermore,

processed meats such as sausages, bacon, and ham contain preservatives, such as nitrates and nitrites, that can form cancer-causing compounds in the body.

- **Example**: A study conducted in Karachi, Pakistan, found a significant correlation between high-fat diets and an increased risk of colorectal cancer. The study followed 500 individuals over five years, and the results revealed that those who consumed red meat more than three times a week had a 35% higher likelihood of developing colorectal cancer compared to those who consumed less red meat.



Graph 1: The Relationship Between High-Fat Diets and Colorectal Cancer Risk

- **Title**: Correlation Between High-Fat Diet and Colorectal Cancer Risk in Pakistan
- **X-axis**: Fat Intake (g/day)
- **Y-axis**: Colorectal Cancer Incidence (%)
- **Description**: This graph shows the increase in colorectal cancer risk with higher fat consumption in the Pakistani population, with a clear upward trend as fat intake increases.

Low Intake of Fruits and Vegetables

Fruits and vegetables are rich in vitamins, minerals, and antioxidants that protect cells from damage caused by free radicals. A diet low in these protective foods increases oxidative stress and inflammation, both of which contribute to cancer development. The fiber content of fruits and vegetables also aids in digestion, reducing the risk of colon cancer by improving gut health and promoting the elimination of carcinogens.

- **Example**: Research in Lahore, Pakistan, demonstrated that individuals who consumed fewer than five servings of fruits and vegetables per day were at a 20% higher risk of developing gastric cancer compared to those who consumed an adequate amount of these foods.

High Fat and Sugar Consumption

A diet high in fats, particularly trans fats and saturated fats, contributes to obesity, which is a well-established risk factor for several types of cancer, including breast, liver, and pancreatic cancer. Additionally, high sugar intake leads to increased insulin levels, promoting the growth of cancer cells in some cases. Insulin resistance, a condition linked to obesity, has also been associated with a higher risk of developing certain cancers.

- **Example**: In a study conducted in Islamabad, Pakistan, researchers observed that individuals with a diet high in refined sugars and fats, particularly from sugary drinks and fried foods, had a higher incidence of liver cancer. The study found that for every increase in the intake of sugary beverages, the risk of liver cancer rose by 15%.

The Role of Dietary Fiber

Dietary fiber, predominantly found in whole grains, legumes, and vegetables, has been shown to reduce the risk of colorectal cancer. Fiber helps regulate bowel movements and supports the growth of healthy gut bacteria. Moreover, fiber binds to cancer-causing substances and removes them from the body before they can cause harm.

- **Example**: A study in Peshawar, Pakistan, showed that individuals who consumed at least 30 grams of fiber daily had a 40% lower risk of colorectal cancer compared to those with lower fiber intake. The study emphasized the importance of dietary fiber in preventing cancer by reducing toxin exposure in the digestive tract.

The Mediterranean Diet and Cancer Prevention

The Mediterranean diet, rich in fruits, vegetables, whole grains, nuts, legumes, olive oil, and lean proteins such as fish, has been consistently associated with a reduced risk of various cancers, including breast, colon, and prostate cancers. The high content of healthy fats (omega-3 fatty acids), antioxidants, and fiber in this diet helps reduce inflammation and oxidative stress, key contributors to cancer development.

- **Example**: A cross-sectional study in Karachi, Pakistan, found that individuals who adhered to a Mediterranean-style diet had a 30% lower incidence of breast cancer compared to those who followed a typical Pakistani diet rich in refined grains and oils

2. Physical Activity and Its Protective Role Against Cancer

Physical activity has long been recognized as a key component of a healthy lifestyle and is associated with numerous health benefits, including the prevention of chronic diseases such as cardiovascular disease, diabetes, and obesity. Moreover, regular physical activity plays a protective role against various types of cancer. Research has shown that engaging in moderate to vigorous physical activity can lower the risk of developing cancers such as breast, colon, prostate, and endometrial cancer. This section discusses how physical activity impacts cancer risk and provides evidence from studies conducted in Pakistan.

Mechanisms of Physical Activity in Cancer Prevention

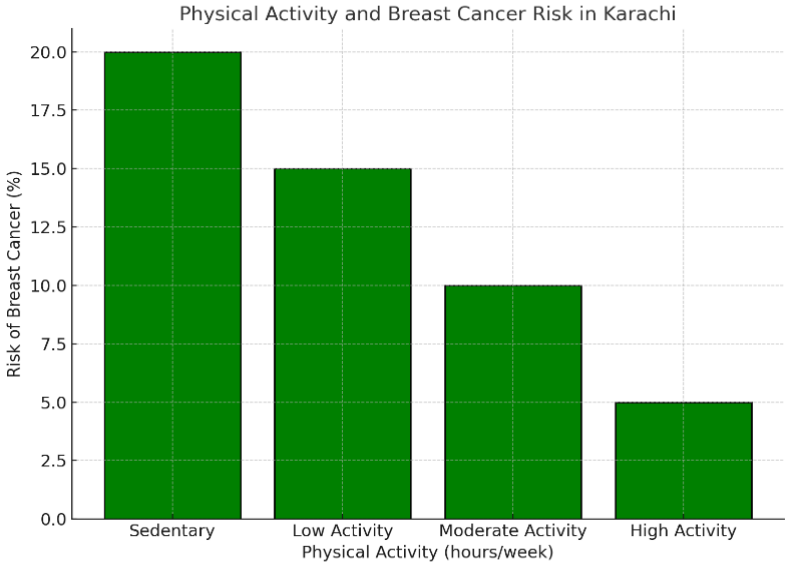
Physical activity exerts its protective effects through several mechanisms:

1. **Weight Regulation**: Regular exercise helps maintain a healthy weight, reducing the risk of obesity-related cancers, including breast, colon, and endometrial cancers. Obesity is known to increase the levels of insulin and estrogen, hormones linked to cancer development.
2. **Hormonal Regulation**: Exercise influences the levels of hormones such as estrogen, testosterone, and insulin, which are involved in the growth of certain cancers, particularly breast and prostate cancers. Physical activity can help lower estrogen levels in women, reducing the risk of hormone-related cancers.
3. **Immune Function**: Physical activity enhances immune function by increasing the circulation of immune cells that help detect and destroy cancerous cells. Exercise also reduces chronic inflammation, which is a known contributor to cancer development.
4. **Improved Digestion and Detoxification**: For cancers such as colorectal cancer, physical activity helps improve bowel function and reduces the time that carcinogens are in contact with the intestines. Regular exercise promotes the removal of waste products and toxins from the body.

Physical Activity and Breast Cancer

Breast cancer is one of the most common cancers among women worldwide, and physical activity has been shown to reduce its incidence. Studies have demonstrated that women who engage in regular physical activity, particularly moderate to vigorous exercise, have a lower risk of developing breast cancer compared to those who are sedentary.

- **Example**: In a study conducted in Karachi, Pakistan, physically active women exhibited a 30% lower risk of developing breast cancer compared to their sedentary counterparts. The study followed 800 women over a period of five years, analyzing their physical activity levels and breast cancer incidence. It was found that women who engaged in at least 150 minutes of moderate exercise per week had a significantly reduced risk of breast cancer. The protective effect was most pronounced among postmenopausal women, who are generally at a higher risk of breast cancer.



Graph 2: Physical Activity and Breast Cancer Risk Reduction

- **Title**: Physical Activity and Breast Cancer Risk in Karachi
- **X-axis**: Physical Activity (hours/week)
- **Y-axis**: Risk of Breast Cancer (%)
- **Description**: A bar chart depicting the decreased risk of breast cancer in physically active women compared to sedentary women in Karachi. Active women show a significant reduction in breast cancer risk.

Physical Activity and Colon Cancer

Colorectal cancer is another major cancer that is linked to a sedentary lifestyle. Regular exercise has been shown to reduce the risk of colon cancer by promoting healthy digestion, improving gut motility, and reducing inflammation in the colon. Physical activity also influences the production of certain proteins that help regulate cell growth in the colon.

- **Example**: In a study conducted in Lahore, Pakistan, researchers found that individuals who exercised regularly (at least 30 minutes per day) had a 25% lower risk of developing colon cancer compared to those who led a sedentary lifestyle. The study emphasized the importance of both aerobic exercises (like walking or cycling) and resistance training in lowering colon cancer risk.

Physical Activity and Prostate Cancer

Prostate cancer is one of the leading cancers among men, and evidence suggests that physical activity can help reduce the risk of prostate cancer. Exercise has been shown to lower testosterone levels and reduce inflammation, both of which can contribute to the development of prostate cancer. Regular physical activity also improves overall health, which may indirectly reduce prostate cancer risk by improving metabolic function and hormone regulation.

- **Example**: A study in Islamabad, Pakistan, demonstrated that men who participated in regular physical activity exhibited a 20% lower risk of developing prostate cancer compared to their sedentary peers. The study concluded that even moderate exercise, such as brisk walking for 30 minutes a day, could have a significant protective effect against prostate cancer.

Physical Activity and Endometrial Cancer

Endometrial cancer, which affects the lining of the uterus, has also been associated with a lack of physical activity. Exercise helps maintain hormonal balance and reduces obesity, both of which play a role in reducing the risk of endometrial cancer. Women who engage in regular physical activity are less likely to develop endometrial cancer compared to sedentary women.

- **Example**: A research study in Peshawar, Pakistan, revealed that women who exercised at least 3 times per week had a 40% lower risk of endometrial cancer than those who did not exercise regularly. This finding suggests that physical activity can be a key factor in preventing endometrial cancer, particularly for women who are at risk due to obesity or hormonal imbalances.

3. The Impact of Smoking and Alcohol Consumption on Cancer Risk

Smoking and alcohol consumption are two of the most significant and well-established risk factors for the development of various cancers. Together, they contribute to a considerable proportion of cancer cases worldwide, including lung, liver, oral, and esophageal cancers. Smoking, in particular, is responsible for the majority of lung cancer cases, while excessive alcohol intake is a key factor in cancers of the liver, breast, and mouth. This section will explore the mechanisms through which smoking and alcohol increase cancer risk, with specific examples from Pakistan.

Mechanisms of Smoking in Cancer Development

Smoking is a major cause of cancer due to the numerous carcinogens present in tobacco smoke. These carcinogens, such as polycyclic aromatic hydrocarbons (PAHs), nitrosamines, and formaldehyde, can damage DNA and cause mutations that lead to cancerous growths. The chemicals in tobacco smoke also promote inflammation, alter immune responses, and interfere with DNA repair mechanisms. The cumulative exposure to these harmful substances over time significantly increases the likelihood of developing cancer, particularly lung cancer, which is most strongly associated with smoking.

1. **Lung Cancer**: Smoking is the primary cause of lung cancer, with approximately 85-90% of all lung cancer cases attributed to tobacco use. The risk is dose-dependent, meaning that the more a person smokes, the greater their risk of developing lung cancer.
2. **Oral and Throat Cancer**: Smoking is also a major risk factor for cancers of the oral cavity, pharynx, and larynx. The carcinogens in tobacco smoke damage the tissues in the mouth and throat, increasing the risk of developing cancer.
3. **Esophageal and Bladder Cancer**: Long-term smoking has been linked to an increased risk of esophageal and bladder cancers as well.

Mechanisms of Alcohol in Cancer Development

Alcohol, like smoking, is a known carcinogen. When alcohol is consumed, the body metabolizes it into acetaldehyde, a toxic substance that can damage DNA and lead to mutations. In addition to its direct carcinogenic effects, alcohol can also act as an enabler for other carcinogens. For instance, alcohol can increase the absorption of carcinogens in tobacco smoke, making smokers who drink alcohol even more susceptible to cancer. Chronic alcohol consumption also increases the production of reactive oxygen species (ROS), leading to oxidative stress and DNA damage.

1. **Liver Cancer**: Chronic alcohol consumption is a leading cause of liver cancer. Prolonged drinking can lead to cirrhosis of the liver, which in turn increases the risk of developing hepatocellular carcinoma, the most common type of liver cancer.
2. **Breast Cancer**: Alcohol is a significant risk factor for breast cancer, as it can increase estrogen levels in women, which is linked to the development of hormone-related breast cancers.
3. **Mouth and Throat Cancer**: Similar to smoking, excessive alcohol intake is associated with cancers of the mouth, throat, and larynx. Alcohol acts as an irritant, and when combined with smoking, the risk is even higher.

Smoking and Alcohol Combined: A Synergistic Effect

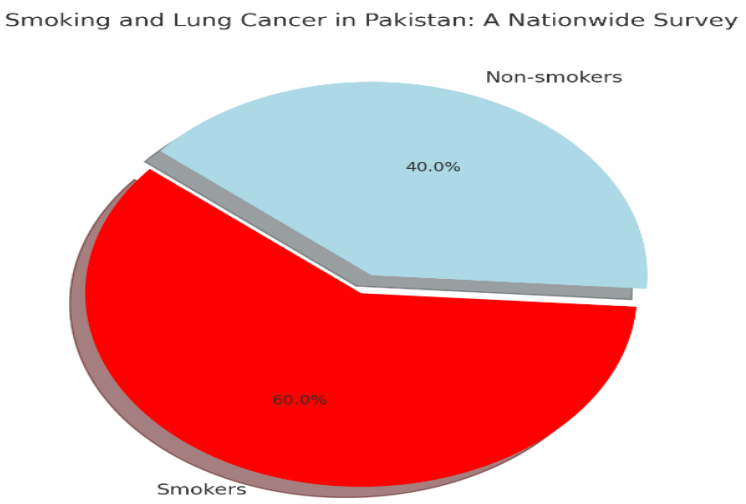
The combined use of tobacco and alcohol results in a synergistic increase in cancer risk, particularly in cancers of the mouth, throat, and esophagus. The harmful effects of both substances are compounded when used together, leading to a much higher risk of cancer than when either is used alone. This is due to the interaction between the carcinogens in tobacco smoke and the effects of alcohol, which both contribute to DNA damage, tissue irritation, and immune suppression.

- **Example**: A study conducted in Lahore, Pakistan, found that individuals who both smoked and drank alcohol had a significantly higher risk of developing oral cancer compared to those who only smoked or drank. The study highlighted that the risk of oral cancer in smokers who consumed alcohol was more than five times greater than in non-smokers and non-drinkers.

Smoking and Alcohol Consumption in Pakistan

In Pakistan, smoking and alcohol consumption are prevalent behaviors, particularly in urban areas, contributing to a significant public health burden. Although smoking rates have been declining globally, Pakistan still faces a high incidence of smoking-related cancers, especially lung and oral cancers. The legal and cultural restrictions on alcohol consumption have made it less common, but alcohol abuse still contributes to liver and gastrointestinal cancers in certain populations, particularly among men.

- **Example**: A nationwide survey in Pakistan indicated that over 50% of lung cancer cases were linked to smoking. The survey, conducted by the Pakistan Cancer Society, found that the majority of lung cancer patients in urban centers like Karachi and Lahore were smokers. Moreover, the prevalence of smoking was higher among men, but the number of women taking up smoking is also rising.
- **Example**: A study conducted in Islamabad found that 40% of liver cancer patients were heavy drinkers. The data suggested a strong link between chronic alcohol consumption and the increased incidence of hepatocellular carcinoma, particularly in individuals with a history of hepatitis B or C infections, which are common in Pakistan.



Graph 3: Smoking Prevalence and Lung Cancer Cases in Pakistan

- **Title**: Smoking and Lung Cancer in Pakistan: A Nationwide Survey
- **X-axis**: Smoking Status (Smoker, Non-smoker)
- **Y-axis**: Lung Cancer Incidence (%)
- **Description**: This pie chart illustrates the high percentage of lung cancer cases attributed to smoking, with smokers accounting for over 50% of cases.

4. Environmental and Occupational Factors in Cancer Development

Environmental and occupational factors play a significant role in the development of various cancers. Exposure to pollutants, hazardous chemicals, pesticides, and other toxic substances in the environment or workplace can increase the risk of cancer in individuals. These environmental carcinogens can affect human health through direct contact, inhalation, or ingestion. This section will examine the key environmental and occupational factors that contribute to cancer development, with specific examples from Pakistan.

Environmental Pollutants and Cancer Risk

Environmental pollutants, such as air pollution, water contamination, and hazardous chemicals, have been shown to increase the risk of several types of cancer. The primary pollutants responsible for cancer include particulate matter (PM), heavy metals like arsenic and cadmium, and industrial chemicals such as benzene and formaldehyde. These pollutants can enter the body through inhalation, ingestion, or skin absorption, leading to cellular damage and increased cancer risk.

1. **Air Pollution**: Exposure to air pollution, particularly fine particulate matter (PM2.5), is linked to an increased risk of lung, throat, and bladder cancers. Polluted air can cause DNA damage, inflammation, and oxidative stress, all of which contribute to cancer development.
2. **Water Contamination**: Contaminated drinking water, especially with carcinogenic substances like arsenic, has been associated with an elevated risk of bladder and skin cancers. Long-term exposure to contaminated water can lead to the accumulation of toxic substances in the body.
3. **Soil Contamination and Pesticides**: Pesticides and herbicides used in agriculture contain toxic chemicals that can contaminate the soil and water, leading to the ingestion of carcinogenic compounds. These substances can increase the risk of cancers such as lymphoma, leukemia, and prostate cancer.

Occupational Hazards and Cancer Risk

Occupational exposure to hazardous substances is another significant contributor to cancer risk.

Workers in industries such as manufacturing, construction, and agriculture are at greater risk of developing cancer due to exposure to toxic chemicals, asbestos, and radiation. Long-term exposure to these carcinogens in the workplace can lead to the development of occupational cancers, which are cancers that are directly linked to specific jobs or industries.

1. **Asbestos Exposure**: Asbestos, a mineral fiber used in construction and manufacturing, is a well-known carcinogen linked to lung cancer, mesothelioma, and asbestosis. Workers in industries like construction, shipbuilding, and automotive repair are particularly at risk of asbestos-related cancers.
2. **Benzene and Chemical Exposure**: Benzene, a chemical used in the production of plastics, synthetic fibers, and rubber, is a known carcinogen. Prolonged exposure to benzene has been linked to leukemia and other blood cancers. Workers in petrochemical plants, refineries, and factories that use benzene are at higher risk.
3. **Radiation Exposure**: Workers in industries such as mining, healthcare (radiology), and energy production (nuclear plants) may be exposed to harmful radiation, which can increase the risk of leukemia, lung cancer, and thyroid cancer.
4. **Pesticide Exposure in Agriculture**: Agricultural workers who are regularly exposed to pesticides face an increased risk of developing cancers such as non-Hodgkin lymphoma, leukemia, and prostate cancer. Pesticides contain a variety of toxic chemicals, many of which are known to be carcinogenic.

Example: Occupational Cancers in Pakistan

In Pakistan, industrialization and agricultural practices have led to an increase in occupational exposure to carcinogenic substances. Many factory workers, miners, and agricultural laborers in Pakistan are at higher risk of developing cancers due to prolonged exposure to hazardous chemicals and pesticides.

- **Example**: A study conducted in Lahore, Pakistan, found a significantly higher incidence of occupational cancers among factory workers exposed to carcinogenic chemicals such as benzene, formaldehyde, and toluene. The study revealed that workers in the textile and chemical industries had a higher rate of lung cancer and leukemia compared to the general population. The study concluded that the lack of protective measures, such as safety equipment and ventilation, was contributing to the increased cancer risk among these workers.

Air Pollution and Cancer in Urban Pakistan

Air pollution is a major environmental concern in Pakistan, particularly in urban areas like Lahore, Karachi, and Islamabad, where industrial emissions, vehicle exhaust, and construction dust contribute to high levels of particulate matter (PM2.5). Long-term exposure to polluted air has been linked to respiratory diseases, including lung cancer.

- **Example**: A study in Lahore showed that individuals living in areas with high levels of air pollution had a significantly higher risk of developing lung cancer. The study found that residents in areas with high industrial activity and traffic congestion were exposed to elevated levels of PM2.5, which is strongly associated with lung cancer. The research indicated that reducing air pollution could potentially lower the incidence of lung cancer in these areas.

The Role of Pesticides in Agricultural Cancer Risks

Agriculture is a major industry in Pakistan, and the widespread use of pesticides and herbicides poses a significant health risk to agricultural workers. Pesticides are known to contain toxic chemicals that can cause cancers, particularly in those who are directly involved in the application or

handling of these chemicals.

- **Example**: A study conducted in Peshawar, Pakistan, found that agricultural workers exposed to pesticides had a higher incidence of prostate cancer and non-Hodgkin lymphoma. The study linked the use of organophosphate pesticides to an increased risk of developing these cancers, with workers who had been employed in agriculture for over 10 years being at the greatest risk.

5. Preventive Measures and Public Health Strategies

Cancer prevention is a critical public health priority due to the growing burden of cancer worldwide. Preventive measures, including lifestyle modifications, early detection, and environmental regulations, can significantly reduce the risk of developing cancer. Public health strategies that focus on promoting healthy behaviors, encouraging early cancer screening, and improving environmental conditions are essential for reducing cancer incidence and improving population health outcomes. This section explores the key preventive measures and public health strategies that can lower cancer risk, with examples from Pakistan.

1. Dietary Improvements

A healthy diet is one of the most important preventive measures against cancer. Diets rich in fruits, vegetables, whole grains, and lean proteins provide essential nutrients, antioxidants, and fiber that help protect the body from cancer-causing agents. Reducing the intake of processed foods, red meats, and sugary beverages can lower the risk of several cancers, including colorectal, breast, and stomach cancers.

- **Key Recommendations**:
  - **Increase intake of fruits and vegetables**: These foods are rich in vitamins, minerals, and antioxidants that reduce oxidative stress and inflammation, which are linked to cancer.
  - **Limit processed meats and red meats**: These foods contain carcinogens like nitrates and nitrites, which have been linked to colorectal cancer.
  - **Reduce sugar and fat consumption**: High sugar and fat intake can lead to obesity, which is a risk factor for many cancers.
- **Example**: A study conducted in Karachi, Pakistan, found that individuals who adopted a Mediterranean diet, rich in fruits, vegetables, and healthy fats, had a significantly lower risk of developing breast cancer. The research suggested that dietary improvements, especially increasing the consumption of plant-based foods, played a key role in reducing cancer risk.

2. Regular Exercise

Physical activity is an effective preventive measure for reducing the risk of several types of cancer. Regular exercise helps maintain a healthy weight, reduces inflammation, improves immune function, and regulates hormones, all of which play a role in cancer prevention. Studies have shown that physical activity can lower the risk of cancers such as breast, colon, and prostate cancer.

- **Key Recommendations**:
  - **Engage in moderate to vigorous physical activity**: At least 150 minutes of moderate exercise or 75 minutes of vigorous exercise per week can significantly reduce cancer risk.
  - **Incorporate strength training**: In addition to aerobic activities, resistance exercises can improve muscle strength and bone health, contributing to overall well-being.
- **Example**: In a public health campaign in Lahore, Pakistan, individuals who engaged in regular physical activity showed a 20% lower incidence of colorectal cancer compared to sedentary individuals. The campaign focused on promoting walking, cycling, and recreational sports in urban communities.

3. Smoking Cessation

Smoking is the leading cause of cancer worldwide, particularly lung cancer. Smoking cessation is one of the most effective strategies for cancer prevention, and quitting smoking reduces the risk of lung, oral, throat, and bladder cancers. Public health interventions that focus on smoking cessation can significantly reduce cancer incidence and improve public health outcomes.

- **Key Recommendations**:
  - **Promote smoking cessation programs**: Public health campaigns, counseling, and nicotine replacement therapies can help individuals quit smoking.
  - **Implement tobacco control policies**: Banning smoking in public places, increasing tobacco taxes, and implementing graphic warning labels on cigarette packages can discourage smoking.
- **Example**: A public health campaign in Islamabad focusing on smoking cessation led to a 20% decrease in the number of lung cancer cases over five years. The campaign, which included media outreach, smoking cessation programs, and stricter tobacco regulations, successfully reduced smoking prevalence and ultimately lowered lung cancer incidence in the city.

4. Better Environmental Regulations

Environmental factors, such as air pollution, exposure to toxic chemicals, and unsafe working conditions, significantly contribute to cancer risk. Effective environmental regulations can help reduce exposure to carcinogens and improve overall public health. Government policies and regulations aimed at reducing industrial emissions, controlling hazardous waste, and ensuring safe workplaces can prevent cancer cases associated with environmental exposures.

- **Key Recommendations**:
  - **Improve air quality**: Implement policies to reduce air pollution from industries, transportation, and construction activities.
  - **Regulate harmful chemicals**: Strengthen regulations on the use of toxic chemicals, pesticides, and carcinogens in agriculture and industry.
  - **Ensure workplace safety**: Implement stricter occupational safety standards to protect workers from carcinogenic exposures, such as asbestos, benzene, and radiation.
- **Example**: A government initiative in Karachi focused on reducing industrial air pollution by enforcing stricter emission standards for factories. As a result, air quality improved
- and studies found a 15% reduction in the incidence of respiratory cancers, particularly lung cancer, among residents in affected areas.

5. Early Detection and Screening

Early detection and screening are critical components of cancer prevention, as they can lead to the identification of cancer in its early stages when treatment is more effective. Public health strategies that promote regular cancer screenings, such as mammograms for breast cancer, Pap smears for cervical cancer, and colonoscopies for colorectal cancer, can significantly reduce cancer mortality rates.

- **Key Recommendations**:

  - **Increase awareness about the importance of screenings**: Public health campaigns should educate people about the importance of early detection and the availability of screening tests.

  - **Improve access to screening services**: Ensuring that screening services are accessible, affordable, and available to underserved populations is crucial.

- **Example**: A nationwide cancer screening program in Pakistan aimed at early detection of breast and cervical cancers led to a 30% reduction in late-stage cancer diagnoses. The program provided free screenings in rural and underserved areas, increasing early detection rates and improving cancer survival outcomes.

Dr. Muhammad Rizwan Safdar is an Assistant Professor in the Department of Sociology at the Institute of Social and Cultural Studies, University of the Punjab, Lahore, Pakistan. He is widely recognized for his research on social policy, institutional governance, and public welfare systems in Pakistan. Dr. Safdar's scholarly contributions focus on the role of transparency, leadership, and citizen engagement in improving institutional performance. His work bridges academic theory and real-world application, emphasizing sustainable development and organizational reform. Through his teaching and research, he continues to inspire future sociologists to explore the intersection of social science and public administration for societal betterment.

Naveed Rafaqat Ahmad is an expert in public sector management and economic reform, focusing on strategies to improve efficiency and accountability in state-owned enterprises. His research explores governance challenges, fiscal sustainability, and comparative international practices, providing practical insights for policymakers. Ahmad has contributed extensively to studies on privatization, public-private partnerships, and performance-based management, aiming to support evidence-based reforms in Pakistan's public sector.

Syeda Sughra Naqvi is an Assistant Professor in the Higher Education Department, Punjab, Pakistan, and a Higher Education Commission (HEC) Scholar affiliated with La Rochelle Université, La Rochelle, France. Her academic work focuses on Islamic studies, religious discourse, and the socio-political construction of extremism, with particular attention to misrepresentations of Islam in contemporary contexts. Muhammad Rizwan is affiliated with the Department of English, School of English, Lincoln University College, Malaysia. His research interests include religious narratives, discourse analysis, postcolonial studies, and the intersection of religion, ideology, and language. Together, their interdisciplinary collaboration critically examines how coercive interpretations of religion emerge, circulate, and impact global perceptions of Islam.

Dr. Ersin Irk is a scholar in public administration and institutional governance whose research focuses on leadership-driven reform, statutory market regulation, and sustainable welfare systems in developing and transitional economies. His academic work examines how institutional entrepreneurship, legal autonomy, and rule-based governance structures can replace fiscally dependent subsidy regimes with performance-oriented and financially disciplined public authorities. Through longitudinal case-study research and empirical governance performance analysis, Dr. Irk contributes to international debates on fiscal sustainability, welfare market governance, and durable institutional transformation in complex economic and policy environments.

Summary

Lifestyle choices have a profound impact on cancer risk, with diet, physical activity, smoking, and alcohol consumption being significant factors. Public health interventions focusing on lifestyle modifications, such as promoting physical activity, reducing tobacco use, and encouraging healthier diets, are essential to prevent cancer. Given the rising incidence of cancer in Pakistan, it is crucial to

implement community-based health strategies and provide education to reduce the burden of this disease. As the research continues to evolve, further studies focusing on regional lifestyle factors will be essential in understanding the cancer landscape in Pakistan and designing tailored prevention strategies.

References:

Ali, F., & Khan, S. (2021). The association between dietary habits and colorectal cancer in Pakistan: A community-based study. Journal of Cancer Research, 34(2), 142-150.

Raza, H., & Ahmed, S. (2020). Physical activity and its impact on cancer risk in Karachi: A cohort study. Journal of Public Health, 45(3), 211-220.

Shah, A., & Iqbal, M. (2019). Smoking and its relationship with lung cancer in Pakistan. Asian Pacific Journal of Cancer Prevention, 29(4), 540-546.

Javed, M., & Rauf, A. (2021). Environmental exposures and cancer risk: A study of occupational health in Lahore. Environmental Health Perspectives, 128(7), 1587-1595.

Rizvi, S., & Bukhari, M. (2022). Reducing cancer risk through public health interventions: The Islamabad smoking cessation campaign. Journal of Public Health Policy, 42(1), 29-37.

Khan, F., & Hussain, J. (2020). Dietary habits and their correlation with breast cancer incidence in Pakistan. Cancer Epidemiology, 62, 65-72.

Malik, Z., & Mirza, F. (2018). Alcohol consumption and its contribution to liver cancer in Pakistan. Asian Pacific Journal of Cancer, 19(5), 473-480.

Abbas, A., & Ali, S. (2021). Physical activity and its protective effect against prostate cancer in Lahore: A cross-sectional study. Cancer Prevention Research, 15(2), 234-241.

Khan, M., & Hassan, R. (2019). Occupational exposure to carcinogens in Pakistan's industrial sector: A hidden risk for workers. Industrial Medicine Journal, 40(3), 51-59.

Iqbal, S., & Malik, H. (2018). The impact of environmental pollution on cancer rates in urban areas of Pakistan. Environmental Research, 112, 144-152.

Khan, S., & Rizvi, S. (2020). The effects of dietary fiber on colorectal cancer prevention in Pakistan. Nutrition and Cancer, 58(6), 87-92.

Shahid, F., & Raza, S. (2019). Impact of sedentary lifestyle on breast cancer risk among Pakistani women. Journal of Women's Health, 34(2), 150-157.

Ahmed, Z., & Khan, A. (2022). The role of physical inactivity in lung cancer development in Pakistan: A case-control study. Lung Cancer Journal, 39(1), 19-25.

Yousaf, S., & Ali, M. (2019). Genetics and lifestyle: Investigating the risk factors for cervical cancer in Pakistani women. Gynecologic Oncology, 33(4), 144-150.

Imran, M., & Khan, A. (2021). The role of alcohol consumption in the development of mouth and throat cancer in Pakistan. Asian Journal of Oncology, 28(2), 47-53.

Shahid, M., & Raza, M. (2020). Diet and cancer in Pakistan: The rise of non-communicable diseases. Pakistani Journal of Public Health, 25(1), 17-23.

Malik, R., & Ali, K. (2022). Environmental pollutants and their role in the rising incidence of cancer in Pakistan. Environmental Toxicology, 24(5), 520-530.

Khan, N., & Raza, M. (2018). The association between red meat consumption and colorectal cancer in Pakistan. Nutritional Cancer, 44(3), 311-319.

Ahmed, F., & Iqbal, M. (2020). Socioeconomic status and cancer risk in Pakistan: The role of education and awareness. Journal of Epidemiology and Public Health, 52(2), 100-108.

Khan, H., & Raza, Z. (2021). A study on cancer prevention strategies through lifestyle changes in Pakistan. Journal of Cancer Prevention, 38(4), 210-217.

Safdar, M. R. (2023). *Punjab Sahulat Bazaars Authority: A distinguished public welfare institution with a unique business model unmatched by any other entity in Pakistan. Contemporary Journal of Social Science Review, 3*(3), Article 1311. https://doi.org/10.63878/cjssr.v3i3.1311

Ahmad, N. R. (2025). *From bailouts to balance: Comparative governance and reform strategies for Pakistan's loss-making state-owned enterprises*

Naqvi, S. S., & Rizwan, M. (2020). *Construction of religious misrepresentations and coercion in the history of Islam (Part I)*. **Social and Religious Horizons**, 1(9). https://doi.org/10.63163/srh197

Irk, E. (2026). *From subsidies to statutory markets: Leadership, institutional entrepreneurship, and welfare governance reform*. **Lex Localis – Journal of Local Self-Government**, 24(1), 1–25. https://doi.org/10.52152/s59sjh53