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A Geographical Review of Risk Factors and Causes of Cancer

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Abstract:

Cancer is a leading cause of death worldwide, with varying incidence rates across different geographical regions. This paper reviews the current literature on the geographical distribution of cancer risk factors and causes, highlighting the role of environmental, lifestyle, and genetic factors in shaping cancer incidence and mortality rates. The results suggest that geographical variations in cancer incidence and mortality rates are influenced by a complex interplay of factors, including environmental exposures, lifestyle choices, and access to healthcare.

Keywords: 1. Cancer, 2. Causes 3. Risk Factors.

Introduction:

Cancer is a major public health concern worldwide, accounting for millions of deaths each year. The incidence and mortality rates of cancer vary significantly across different geographical regions, with some regions experiencing higher rates of certain types of cancer. This paper aims to review the current literature on the geographical distribution of cancer risk factors and causes, highlighting the role of environmental, lifestyle, and genetic factors in shaping cancer incidence and mortality rates.

Objective:

To study the Cancer Causes and Risk Factors.

Statistical data collection and research methods:

For the related research work, data is, primary and secondary information in the research field has been collected.

Environmental Risk Factors

Environmental risk factors play a significant role in shaping cancer incidence and mortality rates. Some of the key environmental risk factors include.

Pollution:

This includes air, water and soil pollution with carcinogenic chemicals. Exposure to these chemicals can occur through air and drinking water. Chemicals like arsenic cause contamination of drinking water and can lead to lung cancer. Indoor air is polluted by coal fires and causes lung cancer. In addition, aflatoxin contamination of food can also cause cancer.

1) Air pollution: Exposure to air pollution has been linked to an increased risk of lung cancer and other types of cancer.

2) Water pollution: Exposure to water pollution has been linked to an increased risk of certain types of cancer, including bladder and kidney cancer.

3) UV radiation: Exposure to UV radiation from the sun or tanning beds increases the risk of skin cancer.

Lifestyle /Dietary Risk Factors

Lifestyle risk factors also play a significant role in shaping cancer incidence and mortality rates. Dietary factors are also Risk Factors of Cancer Like, Meat, energy balance, fat, protein, alcohol, nitrates. These include unhealthy eating habits and lack of physical activity. A high body mass index is associated with cancer of the esophagus, colorectal, breast, endometrium, etc. Excessive consumption of red meat is associated with colon and rectal cancer. A healthy diet, including vegetables, salads and fruits, has been found to reduce the risk of some cancers.

1) **Meat:** Meat intake is associated with the risk of digestive tract cancer. Intake of red and white meat known to increase the risk of colon cancer. A high intake of fish sauce may be a risk factor for stomach cancer.
2) **Energy Balance:** The relationship between body weight, body mass index or relative body weight and site-specific cancer was found to be positively associated with breast, endometrial, gallbladder and kidney cancers. Physical inactivity, high energy intake and high body mass are associated with an increased risk of colon cancer in both men and women.
3) **Fat:** A high intake of saturated fat increases the risk of prostate cancer. Obesity - refers to excessive accumulation of fat. If the body mass index (BMI) is higher than 25, the person is overweight. People with a BMI greater than 30 are called obese. It is associated with an increased risk of heart disease, diabetes, and cancers such as endometrial, colon, breast, esophagus, pancreatic, etc. Apart from increasing the risk

of developing such cancers, obesity is also associated with increased chances of dying from these cancers. A proper healthy diet and regular exercise are necessary to reduce the threat of obesity.

4) **Protein:** Increased meat intake has been found to be associated with an increased risk of colon cancer and advanced prostate cancer.
5) **Tobacco:** Tobacco use is the most important preventable risk factor for cancer mortality worldwide. According to the WHO, it causes an estimated 22% of cancer deaths annually. Most lung cancers are linked to smoking. Second-hand smoke is also associated with cancer in non-smoking adults. The risk increases with the amount of smoking. Smokeless tobacco use is prevalent in the Indian subcontinent. These include the use of gutkha, pan masala, masheri, raw tobacco, betel quid, etc. Tobacco is associated with cancer of the lung, oral cavity, throat, esophagus, bladder, pancreas, kidney, liver, stomach, bowel, cervix, ovary, nose and sinuses as well as some types of leukemia.
6) **Alcohol:** Alcohol itself is associated with several types of cancer, the risk of which increases with increasing amounts of alcohol consumed. Together with smoking, they act synergistically, and if a person consumes alcohol and tobacco, then the risk of developing cancer is much higher than the risk associated with their independent consumption. Alcohol use is a risk factor for many types of cancer including cancer of the oral cavity, pharynx, larynx, esophagus, liver, colorectal and breast cancer.
7) **Areca Nut:** It is also called supari in India. It can be chewed alone or in combination with betel leaf, catechu and slaked lime – called Pan or betel quid. Powdered areca nut in ready-to-eat mixtures with other ingredients is called Pan Masala. If tobacco is added to them, then it is called Gutkha. It is associated with submucosal fibrosis, a precancerous condition in which the mouth of the masticator gradually shrinks. It has been classified as a group I carcinogen by the International Agency for Research on Cancer (IARC). Its use has been found to lead to oral cancer. It can also lead to liver and pancreatic cancer.
8) **Nitrates:** Nitrates are present in a variety of foods, and the main dietary sources are vegetables and drinking water. Sodium and potassium nitrates are used in the processes of salting, pickling and preserving food. Nitrosamines are present in tobacco and tobacco smoke. Nitrosamines, related to nitrates and nitrates, are potent carcinogens.

Genetic Risk Factors:

Genetic risk factors also play a significant role in shaping cancer incidence and mortality rates. Some of the key genetic risk factors include:

1) **Heredity:** A number of specific cancers have been linked to human genes: breast, ovarian, colorectal, prostate, skin and melanoma. The higher the amount or level of cancer-causing materials a person is exposed to, the more likely they are to develop cancer. Additionally, people with a genetic link to cancer may not develop it for similar reasons (lack of stimulus to make the genes work). In addition, some people may have a heightened immune response that controls or eliminates cells that are or could potentially become cancer cells.
2) **Family history:** A family history of cancer increases the risk of developing certain types of cancer.
3) **Genetic mutations:** Certain genetic mutations, such as BRCA1 and BRCA2, increase the risk of breast and ovarian cancer.

Conclusion

Geographical Variations in Cancer Incidence and Mortality Rates Cancer incidence and mortality rates vary significantly across different geographical regions. Some of the key geographical variations include, Regional variations: Cancer incidence and mortality rates vary significantly across different regions, with some regions experiencing higher rates of certain types of cancer. Urban-rural variations: Cancer incidence and mortality rates also vary between urban and rural areas, with some studies suggesting that rural areas experience higher rates of certain types of cancer.The geographical distribution of cancer risk factors and causes is complex and influenced by a range of environmental, lifestyle, and genetic factors. Understanding these factors is critical for developing effective cancer prevention and control strategies.

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