Age: 14-18

Lopa's Angels:
Cancer Statistics: The Numbers Behind The Conditions

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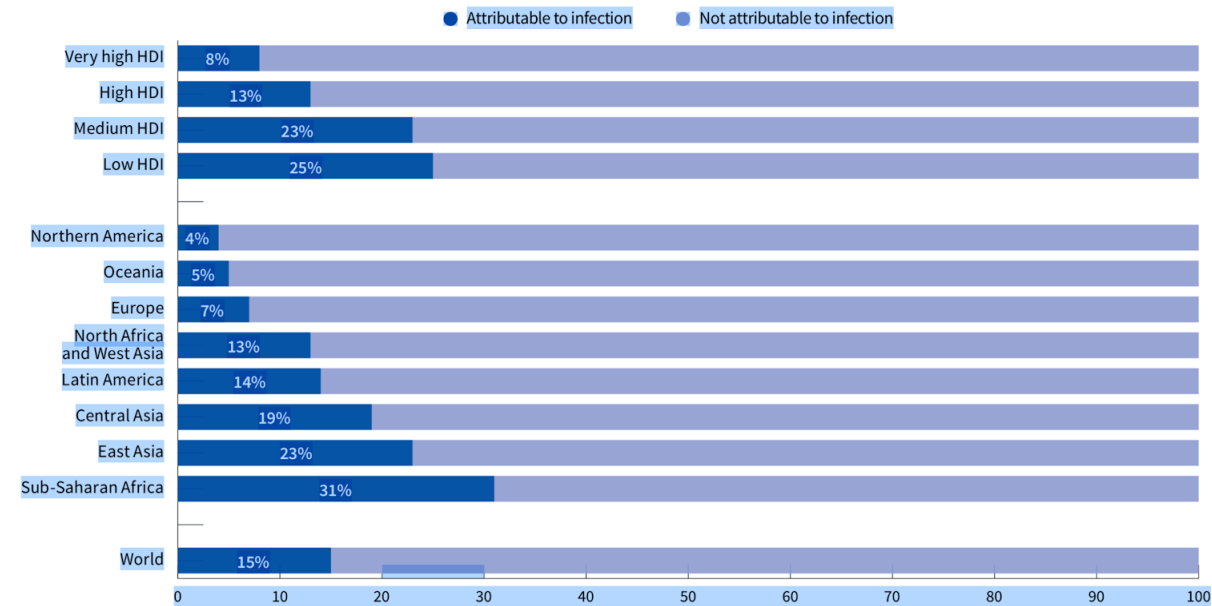*lopa@breastcancerhub.org*

Abstract

Cancer is a disease in which abnormal cells divide uncontrollably and destroy body tissues. The statistics show which demographics are affected and which cancer is most malignant. Our intention is to highlight the countries in greatest need of resources based on available statistics. Understanding the trends can help researchers learn how to mitigate the risk factors. References used include American Cancer Society, Globocan 2018, and World Health Organization. Using this data, we created visual representations of the information. We looked into the causes for each trend. Our findings helped us identify the most common cancer in men is lung cancer while the most common cancer in women is breast cancer. The developed countries have better health care models and better treatment options available. The goal of this presentation is to bring attention to the developing countries, which need more advanced medical treatment and attention. Additionally, this presentation aims to bring attention to the stigma associated with cancer in these developing countries, thereby preventing the patients from receiving the best possible medical care.

American Cancer Society Statistics

Figure 2. Proportion of Cancers Attributable to Infection by Human Development Index and World Region, 2012

● Attributable to infection   ● Not attributable to infection

Region	Attributable to infection
Very high HDI	8%
High HDI	13%
Medium HDI	23%
Low HDI	25%
Northern America	4%
Oceania	5%
Europe	7%
North Africa and West Asia	13%
Latin America	14%
Central Asia	19%
East Asia	23%
Sub-Saharan Africa	31%
World	15%

HDI = Human Development Index.

Source: Plummer M, de Martel C, Vignat J, Ferlay J, Bray F, Franceschi S. Global burden of cancers attributable to infections in 2012: a synthetic analysis. *Lancet Glob Health*. 2016;4:e609-616.
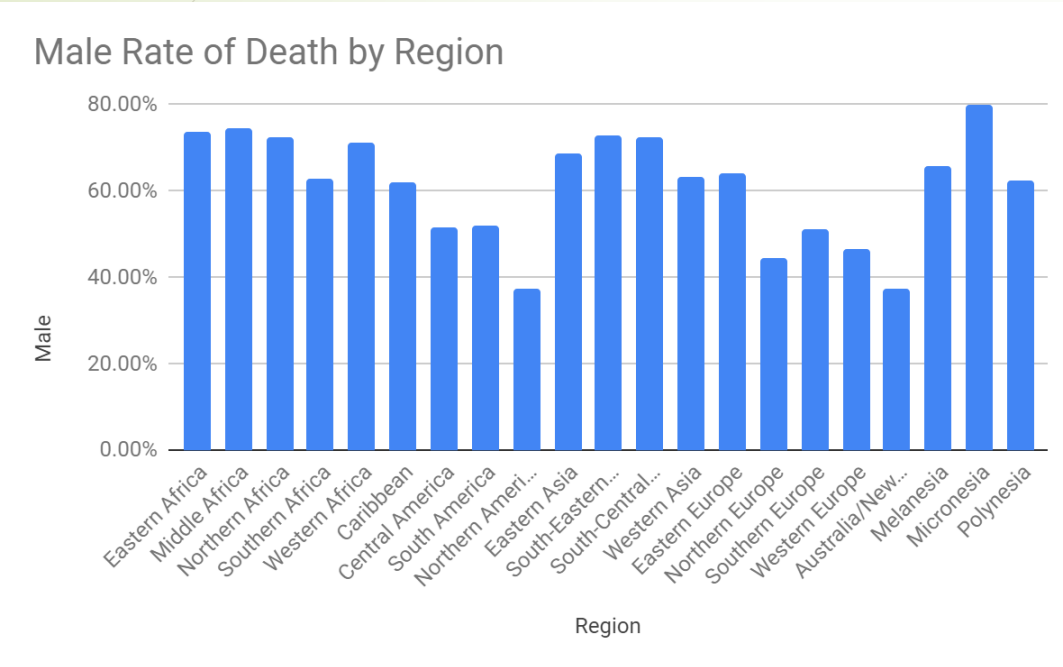
©2018, American Cancer Society, Inc., Surveillance Research

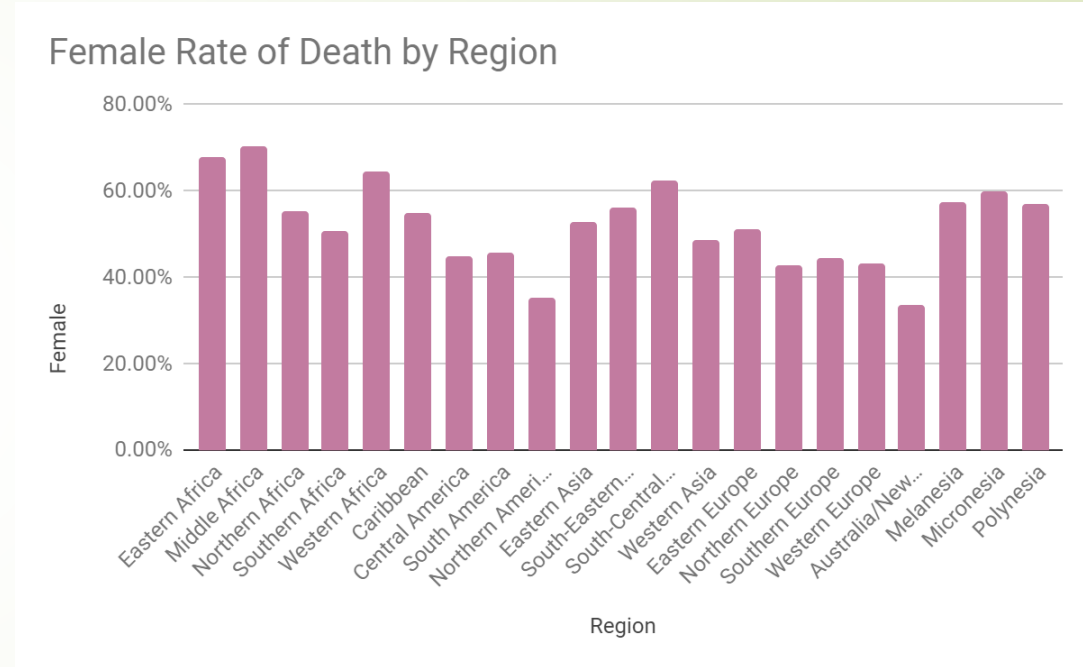Retrieved from American Cancer Society: Cancer Facts and Figures[1]

- In 2019, The American Cancer Society[1] estimated that by 2040, there will be about 27.5 million new cancer cases and 16.3 million cancer deaths simply due to the growth and aging of the population
- Approximately 21 out of 100 men and 18 out of 100 women will develop cancer by the age of 75, globally
- Leukemia is the most common type of cancer in children in all parts of the world, accounting for about 32 percent of all childhood cancers

Cancer Rate of Death by Gender and Region

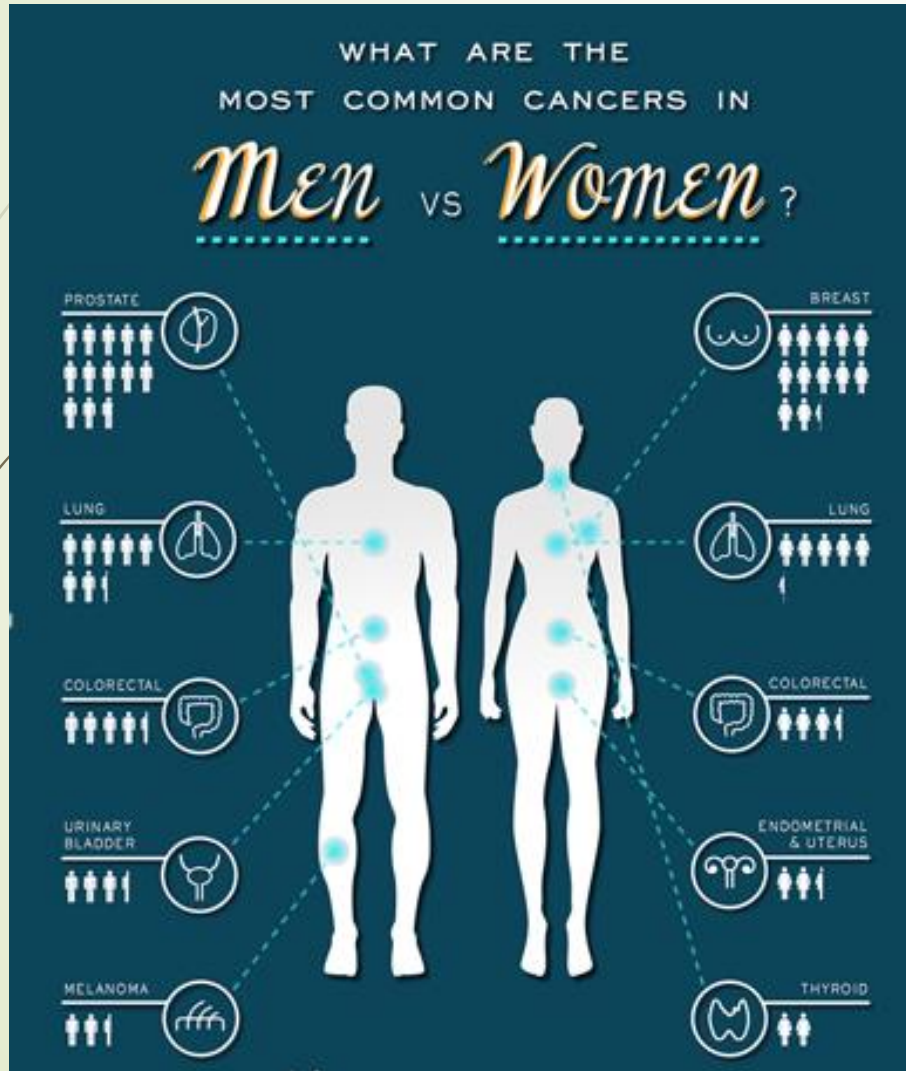**Data from Cancer Facts and Figures[1]**

Created by Aditi Sengupta

Created by Aditi Sengupta
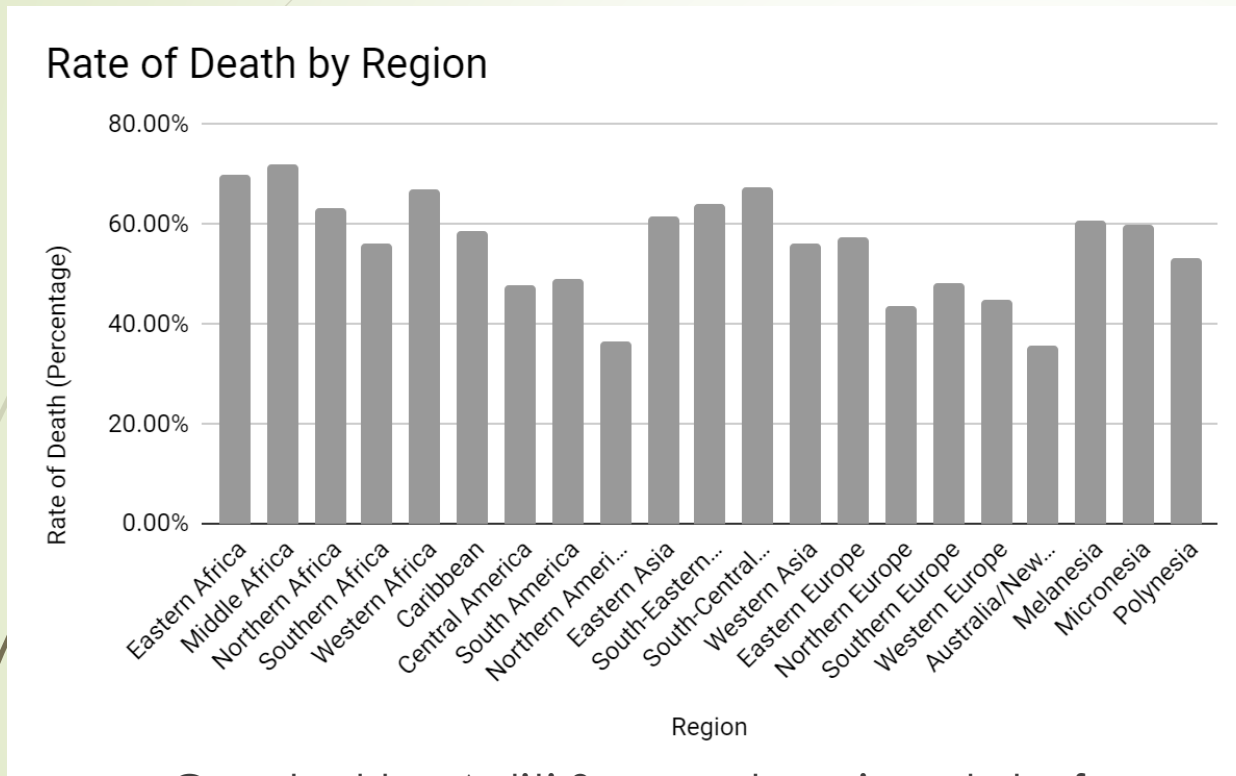
Cancer – Men vs Women

Women vs. Men Infographic[3]

Why are men more likely to develop cancer than women?

This is because women have a second set of protective genes, due to their double XX's compared to men's XY, making women less susceptible to cancerous cells. The X chromosome carries the DNA for cancer. If there are two X chromosomes, there is a second gene which may block the cancer. The Y chromosome carries no such gene, meaning a single gene for cancer can cause the disease in a male.[2]

Cancer Survival Rates by Region

Rate of Death by Region

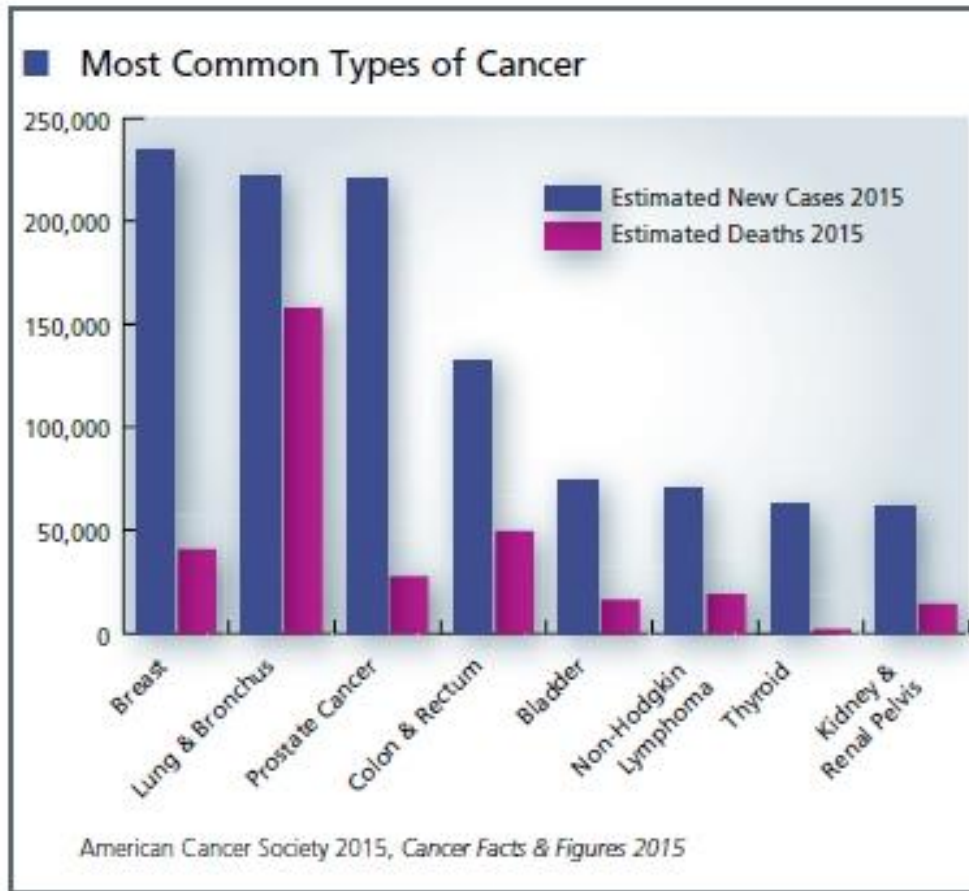Created by Aditi Sengupta using data from Cancer Facts and Figures[1]

Lowest Mortality Rate: Australia/New Zealand

According to the Australian Government's Department of Health, "Medicare covers all of the cost of public hospital services. It also covers some or all of the costs of other health services."[4] This makes cancer care more accessible to patients.

Highest Mortality Rate: Middle Africa

According to the National Center for Biomedical Information, "Extreme regional differences seem to be a distinctive feature of African mortality". The environment and poverty levels are a major cause of why African mortality rates are high.[5]

Most Prevalent Type of Cancer

Most Common Types of Cancer

- Estimated New Cases 2015
- Estimated Deaths 2015

Breast, Lung & Bronchus, Prostate Cancer, Colon & Rectum, Bladder, Non-Hodgkin Lymphoma, Thyroid, Kidney & Renal Pelvis

American Cancer Society 2015, Cancer Facts & Figures 2015

Retrieved from Cancer Facts and Figures, 2015[7]

The most common type of cancer is **breast cancer**. It is predicted that there will 271,270 new cases in 2019. In men, the most prevalent type will be lung cancer, which accounted for15.5% of new cases in 2018. Roughly 80% of lung cancer cases were caused by smoking and exposure to secondhand smoke. Additionally, in women the most common type of cancer will be breast cancer, which contributed to 25.4% of new cases in 2018. This was because of the changes in lifestyle for women, such as increased life expectancy and growing alcohol consumption.[6]

Cancer Type with Highest Survival Rate

Retrieved from US Department of Veteran Affairs[11]

While it is the second most common cancer in men, the cancer with the highest survival rate is **prostate cancer** at 85.59%.[1]

The prostate gland is a reproductive organ in males which secretes prostate fluids, a part of semen. The National Cancer Institute finds that prostate cancer is slow in development; cells may mutate for up to 30 years before causing symptoms in the individual.[8]

80% of all American men over the age of 80 have some cancerous cells in their prostate gland[9]; however, these cases rarely cause symptoms or pose health problems. Some risk factors of prostate cancer include

- Age (50 or older are at a higher risk),
- Race (Africans are at a higher risk than other ethnicities),
- Diet (high fat diets contribute to prostate cancer risk), Genetics (men with family history are 2-3 times more likely)[10].

Cancer Type with Lowest Survival Rate

Retrieved from Medical News Today[13]

The cancer with the lowest survival rate is **Pancreatic cancer** at 6.60%.[1] The pancreas creates enzymes which help digestion and also produces insulin and other hormones.

Pancreatic cancer begins when some liver cells develop mutations in their DNA, causing them to grow out of control. The direct causes of pancreatic cancer are unclear. However, some risk factors include chronic pancreatic inflammation, obesity, family history, diabetes, and smoking.

Treatment includes surgery, chemotherapy, targeted therapy, immunotherapy, and radiation therapy. Currently, there is no tool to detect early pancreatic cancer; however, surgery is not an effective treatment for later stages because the entirety of the tumor cannot be removed. Current treatment methods cannot fully cure the pancreas in later stages of cancer.[12]

Cancer Details by Countries

Suriname (Developing)
New Cases: 1,042(.183%) **Deaths:** 624(59.9%)
Most Prevalent Cancers and Why:
1. Prostate cancer (17%): Improper diets, hormone levels, and social determinants.[14]
2. Breast cancer (16.2%): Lack of screenings and early detection programs for diagnosis.[15]
3. Lung cancer (9.9%)[16]: Smoking habits, lack of therapeutic options, etc.[17]
Screening and Treatment: Suriname has the availability of radiotherapy, oral morphine, chemotherapy, and home care but they are not widely accessible.[18]
Additional Information: Bone tumors, soft-tissue sarcomas, and carcinomas are the most common non-hematological malignancies in Suriname.

New Zealand (Developed)
New Cases: 35,897(.756%) **Deaths:** 9,747(27.2%)
Most Prevalent Cancers and Why:
1. Prostate cancer (10.6%): Environmental (exposure to certain chemicals) and hormonal influences. [19]
2. Breast cancer (9.8%): Genetics.[20]
3. Colorectal cancer (9.6%)[21]: Late diagnosis, lack of awareness[22]
Screening and Treatment: New Zealand has a variety of resource such as various types of chemotherapy, monoclonal antibodies, bisphosphonates and etc.[23]
Additional Information: The number of people affected by this cancer is expected to increase by 50% by 2035. They spend about $55 million a year on skin cancer alone.[24]

Cancer Details by Countries

Haiti (Developing)

New Cases:12,366(.111%)**Deaths:** 8,914(72.1%)
Most Prevalent Cancers and Why:
1. Prostate Cancer (16.2%): Limited access to screening due to financial burdens or perceived embarrassment.
2. Breast Cancer (8.9%): Limited screening, financial burdens, and subpar infrastructure.
3. Stomach Cancer(7.8%)[25]: Increased anemia and H. pylori bacteria, due to poor diet and living conditions, causing stomach cancer.[26]
Screening and Treatment: Cancer screening guidelines are not followed.[27] Treatment is also subpar with only four chemotherapy facilities in the country.[28]
Additional Information: Cervical cancer is the second most prevalent cancer in females.[28]

Australia (Developed)

New Cases: 97,876(.799%)**Deaths:**49,500(25.0%)
Most Prevalent Cancers and Why:
1. Breast Cancer(9.4%): Lifestyle factors, age
2. Prostate Cancer(9.2%): Lack of proper screening technology necessary to detect early stages of prostate cancer for men.
3. Colorectal Cancer(9%)[29]: Lifestyle changes[30]
Screening and Treatment: Hospitals provide free screening for breast cancer for women over the age of 45. There is also forms of home screening. Australia doesn't have the technology to screen for all types. General practitioners set up treatment procedures.
Additional Information: Australia has free breast cancer screenings for women; men do not receive free screening.[31]

Cancer Details by Countries

Peru (Developing)

New Cases:66,627(.205%)**Deaths:**33,098(49.7%)

Most Prevalent Cancers and Why:

1. Stomach Cancer(8.6%): No screening devices available for the early detection of stomach and other gastric cancers.

2. Lung Cancer(4.8%): No formal lung cancer screening program in Peru.[32]

3. Prostate Cancer(11.4%): No prostate cancer screening in early stages.[33]

Screening and Treatment: Most hospitals lack actual screening technology, and if the hospital has it, it is very expensive and free screening isn't available. Treatment facilities are also not as developed.

Additional Information: Kids as young as ten years old can be found smoking, leading to a massive increase of lung cancer cases.[34]

United Kingdom (Developed)

New Cases:446,942(.671%)**Deaths:**178,473(39.9%)

Most Prevalent Cancers and Why:

1. Prostate Cancer (12.6%): Less exercise, eating a diet high in fats, which affects the levels of testosterone.

2. Breast Cancer (12.4%): Recent changes in lifestyle for women

3. Lung Cancer (11.4%)[35]: Smoking.[36]

Screening and Treatment: Everyone is treated by a cancer specialist. Treatments consists of immunotherapy, chemotherapy, surgery, cancer therapy, and gene therapy.

Additional Information: Someone in the UK is diagnosed with cancer every 2 minutes. 50% of people survive cancer for 10 years or more.[37]

Cancer Details by Countries

India (Developing)

New Cases:1,157,294(.085%)**Deaths:**784,821(67.8%)

Most Prevalent Cancers and Why:

1. Breast Cancer (14%): Lack of awareness and screenings[38], late diagnosis[39]

2. Oral Cancer (10.4%): 80-90% caused by tobacco use.[40]

3. Cervical Cancer (8.4%)[41]: Risk factors include unsafe sex and no screening. One woman dies every 8 minutes due to it.

Screening and Treatment: Screening is not completed often due to stigmas. Treatment is often cost prohibitive and inaccessible but chemotherapy is mostly available[42]

Additional Information: India will account for 8.17% of global deaths caused by cancer[43] due to changing lifestyles, smoking, alcohol consumption, urbanization, and pollution.

United States of America (Developed)

New Cases:2,129,118(.652%) **Deaths:**616,714(28.9%)

Most Prevalent Cancers and Why:

1. Breast Cancer (11%): Recent changes in lifestyle for women.

2. Lung Cancer (10.7%): Increased smoking, exposure to second hand smoke

3. Prostate Cancer (10%): Increased diet of fats and red meats, lack of exercise[44]

Screening and Treatment: Treatment in America includes chemotherapy, stem cell transplant, and photodynamic therapy.[45]

Additional Information: Cancer causes nearly 1 out of every 4 deaths. There are more skin cancer cases because of tanning than lung cancer cases because of smoking.[46]

Special Attention Countries

Due to the lack of urbanization, certain undeveloped countries are not able to provide statistics on cancer.[47] They lack resources and do not have the access to the recent screening methods.[48] For example, countries like the Philippines, Brazil, and Argentina have had studies done to demonstrate their mortality rates are highly associated with socio-economic status and lack of resources. They served as proxy states for countries missing data, such as Guinea.

Haiti- Haiti is a one of the less developed countries in which diseases, disabilities, and other health risks are a high factor. Due to the high level of poverty and lack of medical resources, Haitians have a high risk of cancer.[49]

Bangladesh- The Bangladesh Bureau of Statistics states that cancer is the sixth leading cause of death. Due to their severe shortage of radiotherapy machines and other equipment, they would need a lot more attention and care from countries who would be able to supply these resources.[50]

Liberia- Liberia suffers from epidemic diseases as their Ministry of Health has failed to provide adequate health care. They have also yet to create a correct guide to cancer planning which is also failing to contribute to cancer care.[51]

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