



REVIEW ARTICLE

Global distribution and patterns of the most common cancers

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Article Info.	Abstract
<i>Article history:</i> Received: 09/10/2025 Accepted: 22/10/2025 Published: 23/10/2025	Cancer, a complex group of diseases, impacts millions of people annually. It poses a significant global health challenge that requires a comprehensive and interdisciplinary approach. To comprehend the complexities of cancer, one must delve into its various facets, from its molecular foundations to its diagnosis, treatment options, and the ongoing research and prevention efforts. This article, the first in a two-part series, provides an updated understanding of the distribution and patterns of the most prevalent cancers in Africa. Globally, lung, breast, and colorectal cancers are common and account for a third of the incidence and mortality burden of cancer. They rank within the top three incidences and the top five in mortality (first, fifth, and second, respectively). In one or more of the surveyed countries, 13 different cancers are the most diagnosed or cause of death. In several countries, the range of cancers, including breast, ovarian, and prostate cancer, account for most diagnoses or fatalities.
Keywords: Cancer, Mortality, Incidence, Statistics, Population.	

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INTRODUCTION

Cancer, a heterogeneous and multifaceted class of diseases, remains a major threat to global health, with millions of lives lost each year [1]. This worst enemy arises when the normal regulatory processes governing cells' growth and division completely shut down, leading to uncontrolled growth and the formation of malignant tumors. One must understand cancer by looking at its different aspects, from its molecular basis to diagnosis and different treatment modalities as well as combative efforts through research and prevention [2].

At its base, cancer is a genetic disease. It is from mutations or other alterations of the DNA sequence of certain genes regulating the progression of the cell cycle, apoptosis, and DNA repair. These aberrations originate either from exposure to carcinogenic agents, inherited in most cases through familial predisposition, or random errors in the replication process of DNA [3]. All these mutations tend to corrupt the balance between cell growth and cell death, which makes the cells escape from the standard regulatory mechanisms, resulting in the uncontrolled proliferation of cells that characterize cancer.

More than 100 different types of cancer exist. Although cancers may be broadly categorized according to their site of origin or behavior into tissue cancers or blood-borne cancers, other practical categorizations would be to have these tumors classified according to their degree of tissue heterogeneity and their molecular basis and genetics. The commonest types of cancer include breast, lung, colorectal, and prostate cancers [4]. Due to the many differing characteristics of cancers, designing effective treatment protocols has become quite a problem; different cancers, with their unique molecular and genetic characteristics, may need very different treatment regimens.

The process of carcinogenesis differs from stage to stage—from initiation through the clinical manifestation of the disease. Carcinogenesis, classified broadly as initiation-promotion-progression, represents the introduction of mutations as an initiator activity, promotion encourages the proliferation of the mutated cell population, and finally, progression gives rise to the phenomenon of invasiveness and metastasis that result in the spread of neoplasm to other organs and tissues [5].

Early detection is one of the critical components of cancer control. The innovations in screening modalities and diagnostic tools have opened the door to identifying cancers early when they are more amenable to intervention. Commonly used screening methods are mammography for breast cancer, colonoscopy for colorectal cancer, and Pap smears for cervical cancer [6]. Besides these, the emergence of liquid biopsy techniques has allowed cancer detection via circulating tumor cells or circulating DNA fragment identification based in the blood, affording a less invasive and more convenient window for cancer monitoring [7].

The treatment landscape for cancer has significantly changed over the years with the presentation of a multidisciplinary approach combining surgery, chemotherapy, radiotherapy, immunotherapy, and targeted therapies. Surgical intervention continues to be the mainstay of treatment for localized tumors aimed at the excision of cancerous tissue along with, in some rare situations, the dissection of lymph nodes in the vicinity. Chemotherapy is a systemic treatment delivered mostly through rapidly dividing cells targeting methods, often compromising even the healthy ones. In radiation treatment, high doses of radiation are inflicted on the cancer cells so that the DNA of these cells is damaged, and they can no longer replicate [8].

Immunotherapy is one of the phenomenal techniques where the immunity of the body is trusted to detect and destroy the cancer cells. Between other innovative immunotherapeutics will be checkpoint inhibitors, CAR-T cell therapy, and cancer therapy vaccines, which are bound to change the treatment accessibility [9]. Targeted therapies have focused on specific molecular imperfections in cancer so that one could block or destroy these pathways. Personalized Precision medicine means that treatment starts being individualized on the basis of the cancer's genetic profile of an individual [10].

Alongside advances were made in the cancer treatment procedure; some issues still remain unresolved. Challenges such as drug resistance, side effects, and recurrence all pose worries in cancer therapy. Moreover, it is global health disparities that cause differences in cancer services, diagnostic services, and therapeutic offerings worldwide [11]. Such considerations include improving research, collaborative engagement among healthcare workers and researchers, as well as improving healthcare infrastructure and access [12].

Cancer research is an ever-evolving interdisciplinary field that currently draws from genetics, molecular biology, epidemiology, and clinical trials. With targeted therapies and precision medicine emerging from increased understanding of the genetic basis of cancer, genomic sequencing of cancer genomes is uncovering important driver mutations so as to open up new therapeutic targets. Certain advances in cancer immunology—with the advent of immune checkpoint inhibitors—have greatly transformed the treatment for some cancers [13].

In these trials, the utmost importance rests in the confidence of safety and efficacy for proposed treatments against cancer. They are conducted through several phases and constitute a rigorous means of examination by human attendees in regard to the treatment potential of more or less untried drugs or interventions. Academic institutions, the pharmaceutical industry, and regulatory agencies will collaborate in moving forward research discoveries from bench to bedside—into clinically relevant therapies. A constant endeavor will be made to refine current therapeutic approaches and develop innovative means of improving patient outcomes and quality of life [14].

Prevention plays a pivotal role in combating cancer. Changes in lifestyle, like adhering to a nutritious diet, engaging in regular physical activity, and abstaining from tobacco and excessive alcohol, can substantially lower the risk of cancer [15]. Vaccines for certain viruses, including human papillomavirus [HPV] and hepatitis B, can help prevent infections that are associated with a heightened risk of particular cancers. Public health campaigns and education initiatives aim to raise awareness about cancer risk factors, promote early detection, and encourage healthy behaviors [16].

Cancer represents a complex challenge that demands a comprehensive and multidisciplinary approach. From understanding its molecular basis to implementing effective prevention and treatment strategies, the global community continues to strive for advancements in cancer research and care [17]. While progress has been made, the journey to conquer cancer requires ongoing commitment, collaboration, and innovation. The evolving landscape of cancer research and treatment offers hope for a future where cancer becomes a manageable and, ultimately, preventable disease [18].

1. CANCER DATA ACROSS THE GLOBE

Cancer is becoming a severe threat all over the globe, affecting millions of people in all developing and developed countries. In 2020; 18,06,590 new cancer cases were reported in the United States[19]. Out of them, 43% of these cases were from lung, colorectal, and prostate cancer in men and 50 % of these cases were from colorectal, lung, and breast cancer in women. In 2020; 6,06,520 cancer patients died in the US. Not only the adults, 16,580 children were also diagnosed with cancer in a single year in the United States while 1730 children died[20].

Statistics suggest that every four years, 443 men and women per lakh population are tested for active cancer or cancer incidence is 443/100000 population per four years, while 159 men and women per lakh population are dying every 4 years or cancer mortality is 159/100000 population per 4 years. According to a study by the National Cancer Institute, the gross number of cancer cases or survivors is expected to increase up to 222 lakhs by 2030. According to a study by the National Cancer Institute, there will be 295 lakh active cancer cases per year worldwide by 2040. Figure 1 shows the number of cancer incidences in 2020 and their projections up to 2040. In 2020, cancer incidences were 19.3 million, while it will increase up to 28.9 million active cancer cases by 2040. Figure 2 shows the deaths due to this multitargeted disease in the year 2020 which will increase to 16.2 million by 2040. Figures 3 and 4 show the values of death and active cancer incidences in different continents as Asia, Europe, Africa, Latin America, North America, and Oceania, and their projections up to 2040. Figures 5 and 6 depict logarithmic values of the estimated number of cancer cases and deaths from 2020 to 2040 in various continents as Asia, Europe, Africa, and America[21],[8].

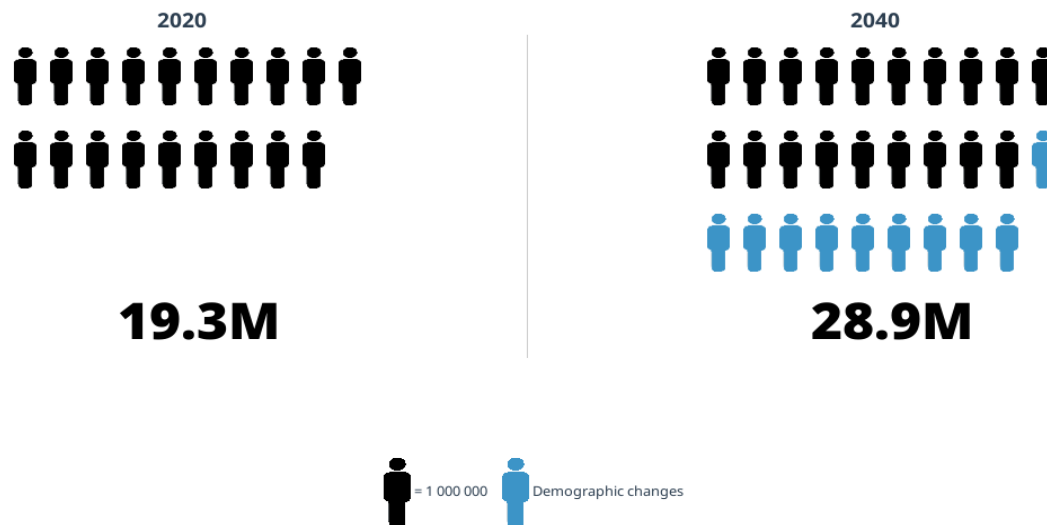


Figure 1 Cancer Demographics and its projections



Figure 2 Cancer Mortality Demographics and its projections

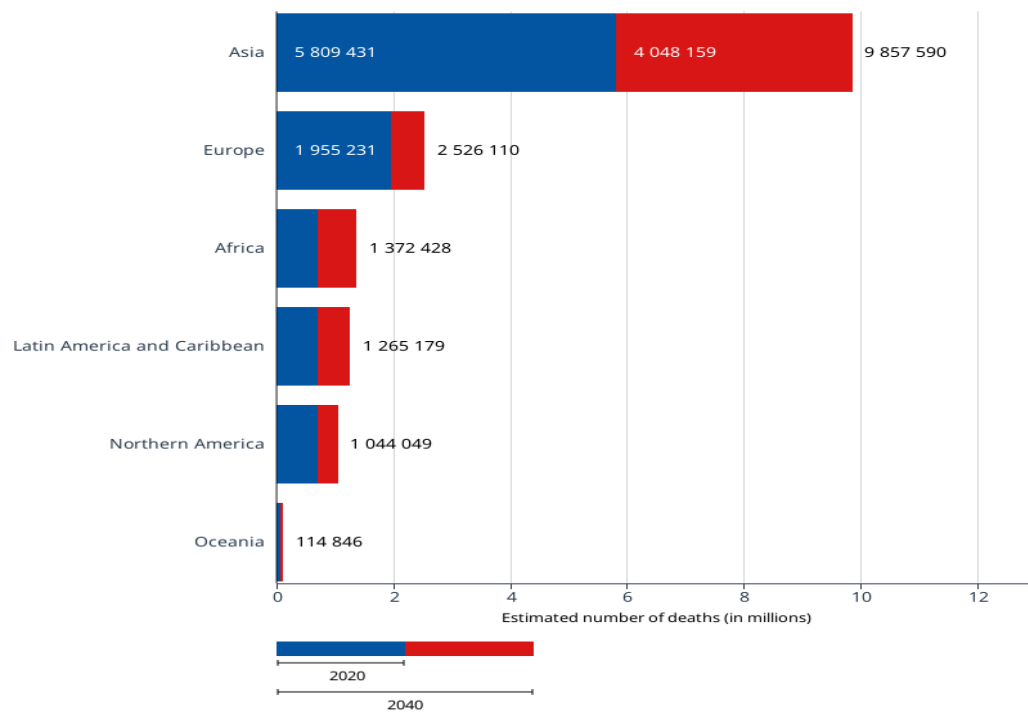


Figure 3 Cancer mortality according to Continents

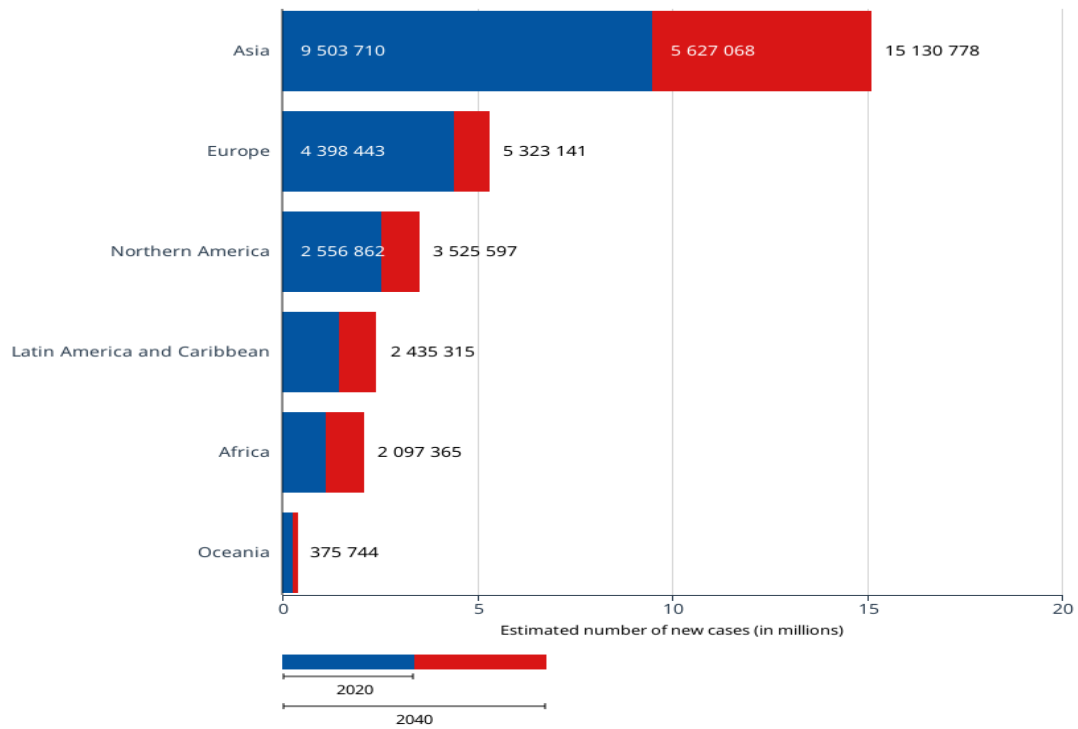


Figure 4 Cancer demographics according to Continents

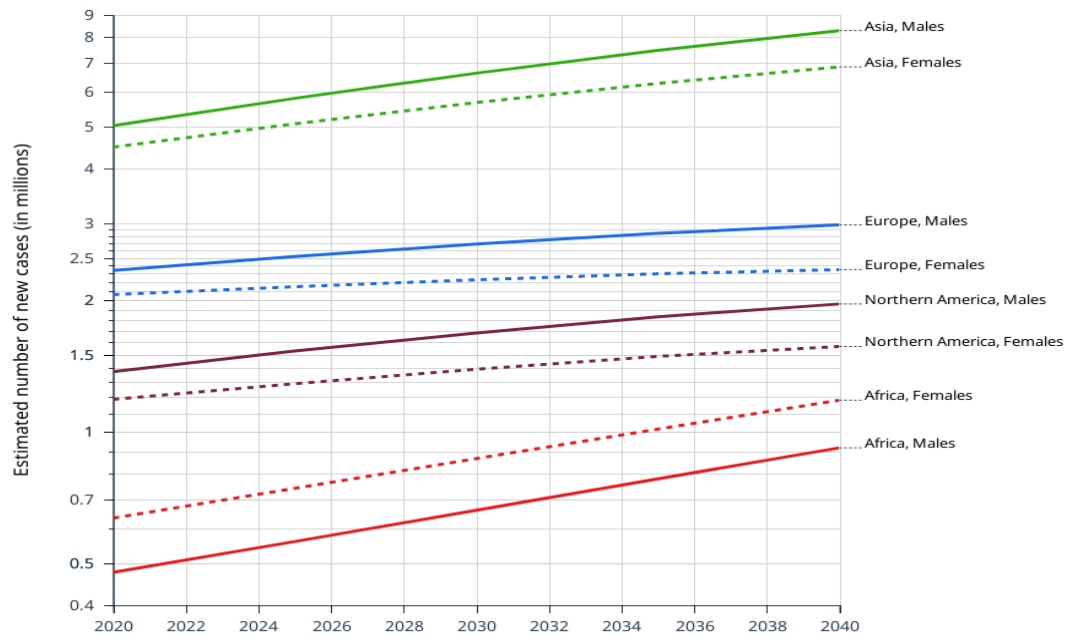


Figure 5 Cancer incidences

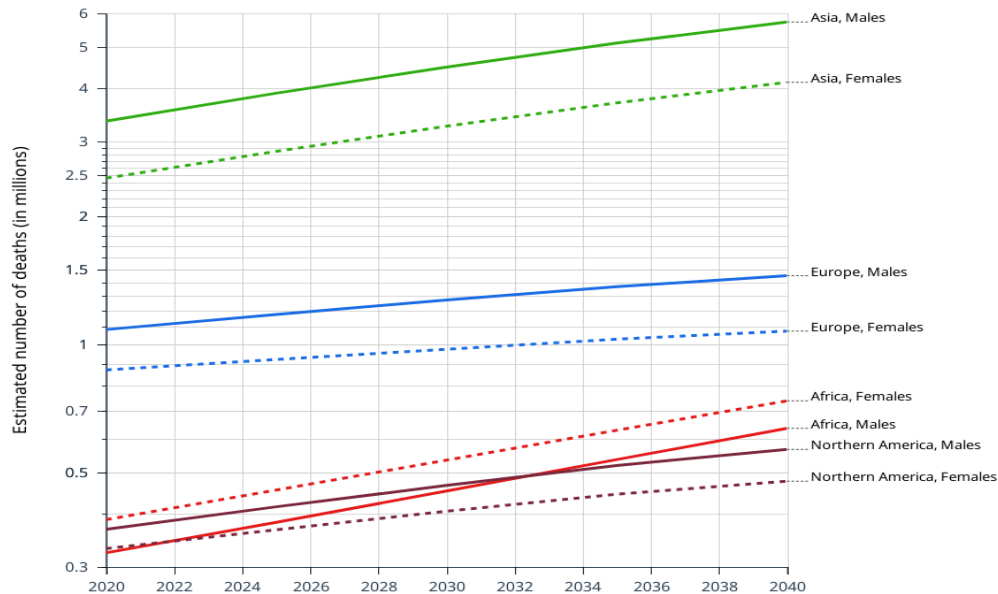


Figure 6 Cancer mortality

Table 1 shows the number of deaths that occurred due to cancer in 2020 and its projections up to 2040. The study has been summarized continent-wise in the following table. Africa continent has been reported to have the highest hike of 92% in mortality caused by cancer as compared to 2020. The rate of mortality is also higher in Asia, it's projected to increase up to 69% by 2040 of the number of deaths in 2020. The data for other continents has been summarized in the following table[22]

Table 1 Contains cancer statistics

Population	Number of new cases		Change in the number of cases
	2020	2040	
Africa	711429	1372428	+92.9%
Asia	5809431	9857590	+69.7%
Europe	1955231	2526110	+29.2%
Northern America	699274	1044049	+49.3%
Totals	9175365	14800177	+61.3%

Table 2 contains the number of new cases in different continents. In all the continents as the population is increasing, the number of active cancer incidences is also touching the limit of sky. In Africa, there is a projection of an 89.1% hike in active cancer cases. Asia [led by China and India] also has been projected for an increase of up to 59.2% in active cancer incidences by 2040. The data for other continents is mentioned in the given table.

Table 2 Contains cancer mortality data

Population	Annual population		Number of new cases		Change in the number of cases
	2020	2040	2020	2040	
Africa	1340598085	2076749596	1109209	2097365	+89.1%
Asia	4639847461	5187624848	9503710	15130778	+59.2%
Europe	748843406	729134396	4398443	5323141	+21.0%

Northern America	368869644	410177116	2556862	3525597	+37.9%
Totals	7098158596	8403685956	17568224	26076881	+48.4%

1. CANCER BURDEN IN ASIA

Non-communicable diseases [NCDs], including cancer, are currently the primary cause of mortality worldwide. In 2008, out of the total 57 million global deaths, 36 million [63%] were attributed to NCDs. Approximately one-third of these deaths were reported in the Asia Pacific region, with cancer being a significant contributor among NCDs [23].

Asia, home to 60% of the world's population, carries half of the global cancer burden. It is forecasted that the number of cancer cases will rise from 6.1 million in 2008 to 10.6 million in 2030. This increase is attributed to factors such as an aging and growing population, lifestyle changes, and socioeconomic shifts [7].

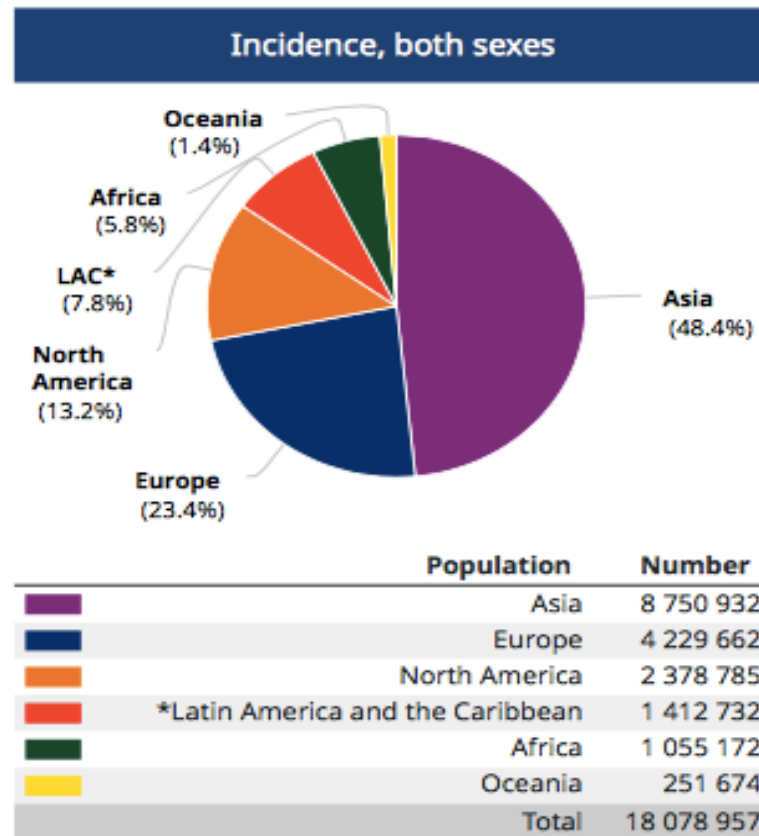


Figure 7 Cancer Incident

Estimated number of new cases in 2018, Asia, both sexes, all ages

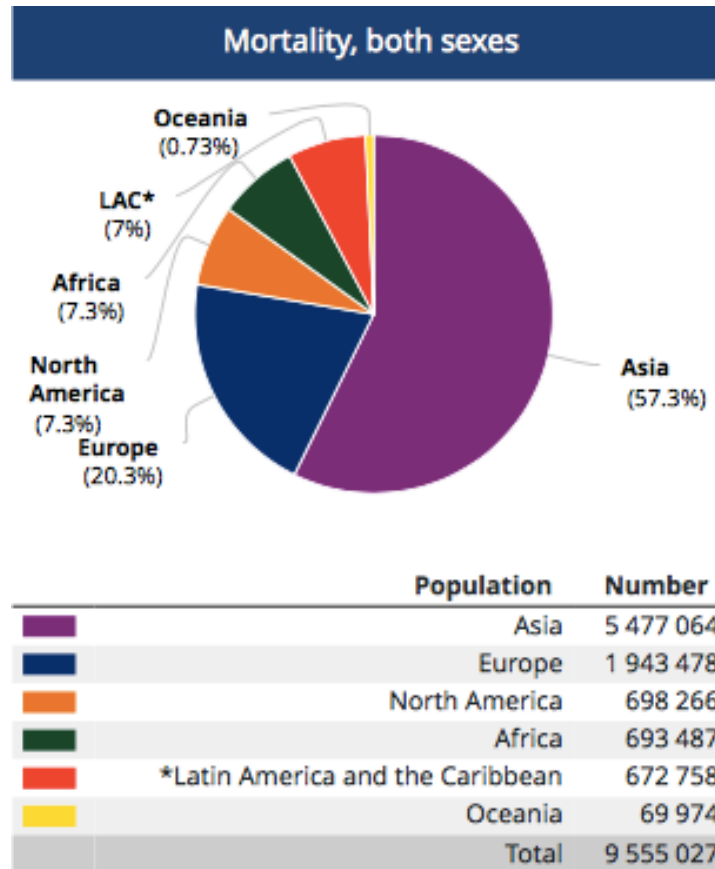


Figure 8 Cancer Mortality Rate

2. CANCER BURDEN IN INDIA

The five most prevalent cancers in both men and women constitute 47.2% of all cancer cases. These cancers can be prevented, detected early through screening, and treated at an initial stage, significantly reducing the mortality rate associated with these cancers[24]. Cervical cancer is one of the most common types of cancer in India, contributing to 27% of the global cervical cancer burden [25].

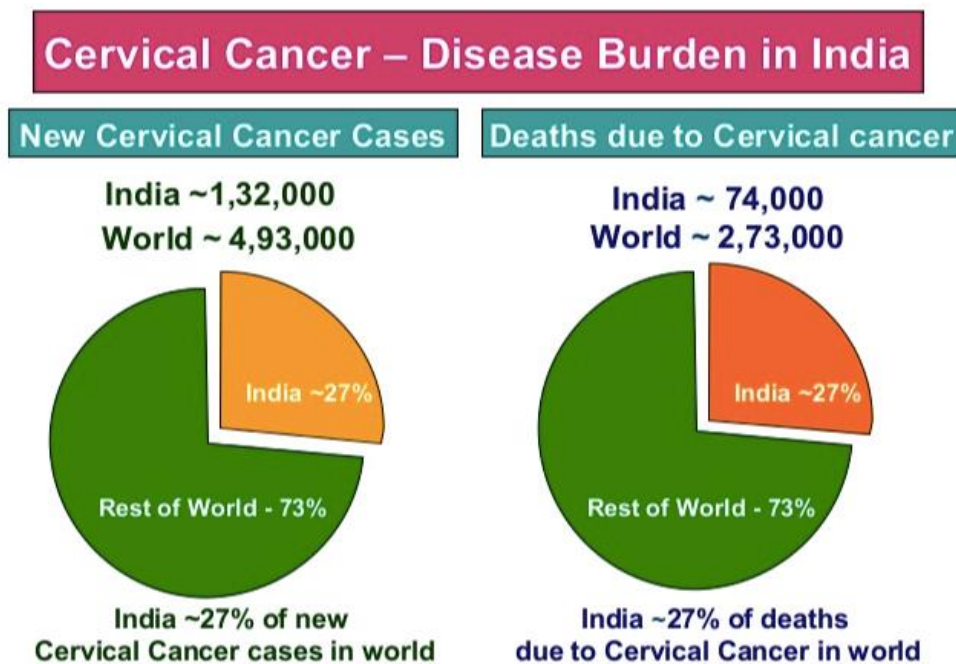


Figure 8 Cervical Cancer burden in India

3. CANCER BURDEN IN AFRICA

Cancer, often overshadowed by the significant burden of communicable diseases, is a pressing issue in Africa. Annually, cancer is diagnosed in 650,000 individuals out of a population of 965 million. Furthermore, the lifetime risk of cancer in women aged between 0 and 64 years is approximately 10 percent, which is only about 30 percent lower than the risk in developing countries. Among females, the average risk of dying from cancer in Africa is nearly twice that of developing countries. This article, the first in a two-part series, provides an updated understanding of the distribution and patterns of the most prevalent cancers in Africa [4] [18] [26].

Estimated number of new cases in 2018, Africa, both sexes, all ages

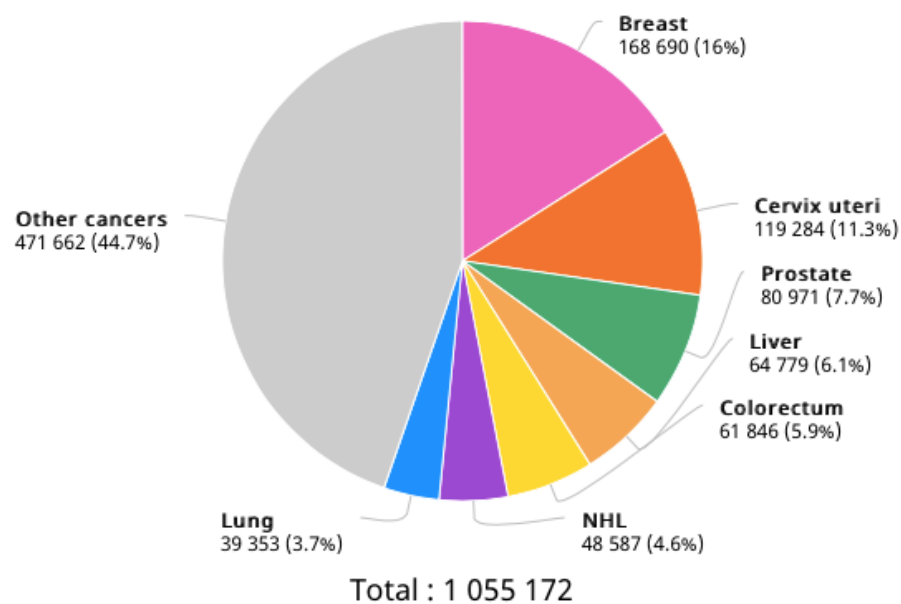


Figure 9 Cancer cases in Africa

DISCUSSION

There are significant regional variations in cancer incidence, mortality, and risk factors, making it a growing public health concern in Asia, India, and Africa. Africa has a lower incidence of cancer but a much higher death rate because of its poor healthcare system and delayed diagnosis. In contrast, Asia accounts for almost half of all cancer cases worldwide due to its large population, urbanization, and changing lifestyle. India, which is a transitional country in Asia, has to deal with lifestyle-related cancers like lung and breast cancer as well as infection-related cancers like cervical and oral cancer. In contrast to developed Asian countries like Japan and South Korea, where organized screening and improved access to care improve outcomes, socioeconomic disparities, cultural beliefs, and insufficient screening programs further exacerbate the burden in India and Africa. In all three regions, tobacco use, infections [HPV, HBV, and HCV], and environmental exposures continue to be important determinants. In general, reducing cancer disparities between Asia, India, and Africa requires bolstering preventive measures, encouraging early detection, and enhancing access to reasonably priced treatment through region-specific policies.

CONCLUSION

Cancer, a significant source of illness and mortality, is a global concern affecting every region of the world. Regardless of the level of human development index [HDI], the statistics are alarming. On average, 1 in 8 men and 1 in 10 women will develop cancer over their lifetime. This highlights the pervasive nature of cancer and underscores the need for widespread awareness and preventive measures.

The complexity of cancer is further highlighted by the variations in severity and characteristics of the disease both within and across different regions. This complexity is not just in terms of the type of cancer but also in its progression, response to treatment, and ultimate prognosis. It's a testament to the intricate nature of the disease and the challenges it poses to medical science.

Globally, certain types of cancer are more prevalent: lungs, breast, and colorectal cancer. These three types alone account for one-third of the global incidence and mortality burden of cancer. They rank as the top three in terms of incidence and within the top five in terms of mortality [first, fifth, and second, respectively]. This indicates the widespread nature of these cancers and the significant impact they have on global health.

In one or more of the surveyed countries, 13 different types of cancer are the most common in terms of diagnosis or cause of death. This suggests a diverse range of cancers affecting different populations, possibly due to varying genetic, environmental, and lifestyle factors. It underscores the need for a comprehensive approach to cancer prevention and treatment that takes into account these diverse factors.

In conclusion, the fight against cancer requires a multi-faceted approach that includes prevention, early detection, effective treatment, and ongoing research. Understanding the global and regional patterns of cancer can help guide these efforts and contribute to reducing the significant burden of this disease.

CONFLICT OF INTEREST:

The authors have no conflicts of interest regarding this investigation.

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