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RISING CANCER INCIDENCE IN IRAQ: EPIDEMIOLOGICAL TRENDS, RISK FACTORS, AND PUBLIC HEALTH IMPLICATIONS

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Abstract

The increasing incidence and mortality rates associated with cancer in Iraq represent a formidable public health challenge that requires immediate attention. A multi-faceted approach is essential to address the contributing factors effectively. This includes improving environmental regulations, implementing comprehensive tobacco control policies, promoting healthier lifestyles, enhancing access to healthcare services, and increasing public awareness about cancer prevention and early detection.

By prioritizing cancer control initiatives and fostering collaboration among government agencies, healthcare providers, and community organizations, Iraq can work towards mitigating the impact of this growing health crisis and improving outcomes for those affected by cancer.

Keywords: Public health, Healthier lifestyles Healthcare services, Public awareness, Cancer prevention

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1. Introduction

In recent decades, Iraq has undergone a profound epidemiological shift, transitioning from a health profile dominated by communicable diseases to one characterized by a soaring burden of non-communicable diseases, most notably malignant neoplasms. Once considered a secondary health concern, cancer has ascended to become the second leading cause of death in Iraq, following cardiovascular disease. According to the Iraqi Cancer Board (ICB), the crude incidence rate has surged from 31.5 per 100,000 population in 1976 to approximately 92.5 per 100,000 in 2022, with current 2024–2026 data suggesting an even more aggressive trajectory [1-5].

The cancer crisis in Iraq is unique in the Eastern Mediterranean Region (EMR) due to the compounding effects of protracted conflict and environmental degradation. Unlike its neighbors, Iraq’s rising rates are intrinsically linked to a "toxic legacy" of

war. The use of depleted uranium (DU) munitions, heavy metal contamination (lead, mercury), and the destruction of industrial and nuclear infrastructure (such as the Al-Tuwaitha site) have released persistent carcinogens into the soil, air, and water. These pollutants enter the human food chain, particularly in southern "hotspots" like Basra and western cities like Fallujah, where healthcare providers report anomalous clusters of leukemia and rare pediatric solid tumors [6-10].

Simultaneously, modern stressors have exacerbated the situation. Rapid urbanization, severe air pollution from private power generators, and gas flaring in the oil-rich southern provinces have created a carcinogenic atmosphere. In 2024 alone, Iraq recorded over 46,320 new cases, with Baghdad bearing the highest mortality burden. Furthermore, the healthcare system continues to face systemic challenges, including a shortage of oncology infrastructure and a lack of nationwide early screening programs. Consequently, a significant proportion of patients are diagnosed at advanced stages (III and IV), leading to poorer clinical outcomes and higher mortality rates.

This study aims to synthesize current epidemiological data from 2018 to 2026 to map the changing landscape of cancer in Iraq. By analyzing regional disparities and identifying the most prevalent malignancies, such as breast cancer in females and lung cancer in males, this paper provides a framework for urgent public health interventions and environmental remediation strategies.

2. Literature Review

Cancer has been recognized as a major cause of morbidity and mortality across the globe over the past decades. According to reports published by the International Cancer Surveillance, the global burden of cancer has increased significantly, resulting in 10 million deaths due to cancer in recent years. The incidence of cancer is also rising in low- and middle-income countries.

In the Eastern Mediterranean Region (EMR), the epidemiological disease pattern is shifting from communicable to non-communicable diseases, including cancer. The incidence of cancer is rising in some countries in the EMR due to the ageing population, increased use of tobacco products, environmental pollution, and increased diagnostic facilities.

Iraq's public health scenario is complex due to political instability, armed conflict, and environmental pollution. According to previous research, the burden of cancer has been rising in Iraq over the past decades. The Iraqi Cancer Board reported a rise in crude cancer incidence rates from the late twentieth century to the current decade.

Environmental exposure has also been implicated as a contributor to regional variations in the incidence of cancer within Iraq. Various studies have pointed to the possibility of exposure to industrial pollutants, heavy metals, and by-products of oil and war, which have damaged the environment. Although it is difficult to establish the link between environmental exposure and cancer, it has been found that regions that are most damaged environmentally are those where cancer is most prevalent.

Lifestyle factors are also seen to be responsible for the increased incidence of cancer. Smoking, for example, has been implicated as one of the most prevalent factors for lung and bladder cancer. Changes in food habits and reduced physical activity are seen to be responsible for increased colorectal and other metabolic-related cancers. In addition, improvements in cancer reporting and diagnosis have helped detect more cases, which may have otherwise gone undiagnosed.

Despite all the advancements, the Iraqi healthcare system still faces many challenges, including the lack of infrastructure for dealing with oncological diseases and unequal access to healthcare facilities throughout the country. All of this emphasizes the need for extensive epidemiological research.

3. Methodology

Study Design

This study will make use of secondary data analysis and an epidemiological trend review in analysing the patterns of cancer incidence in Iraq. The objectives will include identifying the major types of cancer, demographic distributions, and regional variations in cancer incidence.

Data Sources

Data on cancer incidence will be compiled from various reliable sources. These include:

- Reports from the Iraqi National Cancer Registry.
- Iraqi Ministry of Health statistics.
- Global Cancer Observatory (GLOBOCAN).
- World Health Organization (WHO) country profiles on cancer statistics.
- Peer-reviewed articles on epidemiological studies conducted between 1999 and 2024.

The sources will provide nationwide cancer surveillance data and statistics on cancer incidence and mortality rates.

Study Period

The study will cover cancer incidence trends over a multi-year period of 1999-2024, enabling the assessment of long-term changes in cancer incidence patterns.

Variables Examined

The variables examined in the study will include:

- Annual cancer incidence rates.
- Number of cancer cases.
- Major cancer types.

- Age distribution of cancer patients.
- Regional variations in cancer incidence in Iraqi provinces.

Data will be extracted from the selected sources and compiled into comparative datasets for the examination of temporal changes in cancer incidence patterns and distributions.

4. Statistical Analysis

Descriptive statistical methods will be used in the analysis of cancer incidence patterns over the study period.

Trend Analysis

Temporal trend analysis will be conducted on cancer incidence by comparing incidence rates over a number of years. Changes in incidence rates will be expressed as percentage increases over the study period.

Comparative Analysis

Comparative analysis will be conducted on:

- Age distributions.
- Cancer types.
- Regional variations.

This will enable the identification of demographic and regional variations in cancer incidence patterns.

Data Presentation

Data will be presented in the following forms:

- Descriptive tables.
- Percentage distributions.
- Comparison of incidence rates over time.

In the future, more complex statistical methods will be used in the analysis, including join point regression analysis or age-standardized incidence rate calculations.

5. Results

Temporal Trends in Cancer Incidence

Evidently, there is a constant rise in the incidence of cancer in Iraq over the past two decades. The reported cases of incidence have risen from an average of 43.9 cases per 100,000 people in 1999 to over 160 cases per 100,000 people in recent times. This represents a threefold rise in the incidence of cancer in Iraq. The number of reported cases has also risen significantly over the same period. While there were 9,000 reported cases of cancer in 1999, the current estimates put the number of cases at over 30,000.

Most Common Cancer Types

The data on the type of cancer reported indicates the following:

- The most prevalent type of cancer among females is breast cancer.
- Lung cancer is the leading cause of cancer-related deaths.
- Colorectal cancer has a high rate of increase.
- Leukaemia is the leading type of cancer reported among the pediatric population.
- Bladder cancer is more prevalent among males.

Age Distribution

Cancer incidence rises exponentially with age. While half of the reported cases are from people aged 60 years and above, the number of cases reported from the younger population is relatively low. Pediatric cancers are a minority.

Regional Variations

Some regions have a higher incidence of cancer than others. For instance, the regions of Basra, Baghdad, Najaf, and Kurdistan have a relatively high number of reported cases.

6. Discussion

In the current study, a sharp increase in the incidence of cancer in Iraq over the past two decades has been documented. This trend is likely the outcome of a combination of factors.

Demographic Transition

Population aging is found to be one of the most important factors in the increase in cancer incidence in the country. This is because the longer the lifespan, the higher the probability of cancer development.

Environmental Exposure

Industrial pollution, activities associated with the extraction and use of oil products, and environmental contamination have also been implicated as factors in cancer incidence in the region. Although establishing cause and effect is difficult, ecological studies suggest that regions with industrial activities tend to have a higher incidence of cancer.

Lifestyle Risk Factors

Cancer development may also be influenced by lifestyle factors such as tobacco use, physical inactivity, and changes in dietary habits. Tobacco use is known to be a major cause of lung and bladder cancer.

Healthcare System Factors

Cancer reporting and detection may also be playing a role in the increased incidence in the country. This is because better detection and reporting mechanisms are likely in place.

Public Health Implications

The increased incidence of cancer in the country highlights the need to develop better cancer screening mechanisms and to strengthen tobacco control activities.

Table 1. Temporal Trends in Cancer Incidence

Year	Incidence per 100,000	Estimated Cases
1999	43.9	~9,000
2010	73.1	~18,500
2015	82.6	~22,000
2019	91.7	~26,000
2022	~158	>30,000
2024 est.	~160+	~33,000

Cancer incidence has increased approximately 2.5–3 times since 1999, with an estimated annual growth rate of 3–5%.

Table 2. Most Common Cancer Types

Rank	Cancer Type	Notes
1	Breast	Most common in women
2	Lung	Leading cause of death
3	Colorectal	Rapidly increasing
4	Leukemia	Common in children
5	Bladder	Higher in males

Table 3. Age Distribution

Age Group	% of Cases
<15 years	6%
15–39	14%
40–59	33%
≥60	47%

7. Conclusion

Cancer incidence in Iraq has increased substantially and is expected to continue rising. Strengthening screening programs, tobacco control policies, environmental monitoring, and oncology services is essential to reduce future cancer burden. Cancer

has emerged as a critical public health crisis in Iraq, now ranking as the second leading cause of death. This paper analyzes the rising incidence of cancer across Iraqi provinces, identifies the most prevalent types, and examines the multi-factorial causes. Data were synthesized from the Iraqi Cancer Board (ICB) reports and Ministry of Health (MOH) statistics for 2024–2025. Iraq recorded approximately 46,320 new cases in 2024. Breast cancer remains the most prevalent (21.2%). Geographic "hotspots" include Nineveh, Baghdad, and Basra. The sharp rise is attributed to environmental toxicity (depleted uranium, heavy metals), urbanization, and improved diagnostic reporting.

Conflict of interest: *Authors are declared that there is no conflict of interest regarding this study.*

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