

## Epidemiology of Different Types of Cancers Reported in Salah al-Din, Iraq

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### Abstract

Cancer represents a major burden on health care in both developed and developing countries. Efforts in Iraq may be hampered by lack of awareness of the predictors of early cancer screening due to the complexities of these tests. The study aims to report the incidence and patterns of different types of cancers and their distribution across different demographic groups in Salah al-Din Governorate, Iraq. Method: The study included registered cancer cases from June/2020 to December/2021. In Salah Al-Din Health Department - Oncology Center / Tikrit, patients' records were analyzed to obtain information related to age, gender, residence, and type of cancer. Results: 376 people with cancer were collected, 249 females and 127 males, who were confirmed to have cancer types prevalent in Salah Al-Din. The highest cancer is the breast cancer in females, where it was 38%. The highest cancer in males is prostate cancer, with a rate of 7%. Less cancer (cancer of the mouth, cancer of the tongue, cancer of the esophagus, cancer of the intestine, cancer of the lymph nodes, cancer of the larynx, cancer of the placenta, cancer of the vagina, cancer of the sinuses, cancer of the eye and cancer of the duodenum. The highest age group affected for females was between 50-60. The highest age group affected among males was between 70-80. The highest number of people with cancer by district is Tikrit, followed by Samarra. The highest number of infected females are housewives. The highest number of infected males is the earners. We recommend preliminary procedures in each district that is connected to the main center in Tikrit. Awareness lectures should also be held at the governorate level on how to stay away from the causes of cancer such as smoking, alcohol and others. As well as guiding women on how to deal with detergents, chemicals, dyes and hair straighteners, and reduce body exposure to laser radiation. We recommend a periodic examination every 6 months and monitoring vitamins In case of injury, it must be reviewed and dealt with as soon as possible, whether by surgical intervention, chemical or radiological intervention.

Keywords: Incidence; Epidemiology; Demography; Iraq; Salah al-Din

### Introduction

Cancer is one of the leading causes of death worldwide, accounting for 9.6 million deaths in 2018. Particularly unfavorable outcomes are expected in developing countries where access to healthcare is limited, and there is an increase in risk factors, such as political and economic instability, and transitioning lifestyles toward Western lifestyles (1). Despite the implementation of national cancer registries and control programs since 1974 in Iraq, the increase in the incidence of cancer and death is alarming (2). According to recent estimates from the International Agency for Research on Cancer (IARC), >25,000 new cancer cases and 14,000 cancer-associated deaths in Iraq were reported in 2018, with BC, LC, leukaemia, bladder and colorectal cancer (CRC) being the top five most common types of cancer (3). To address this increasing burden, over the last two decades, the Iraqi Government have introduced significant efforts to rebuild supporting infrastructures, seeking to increase health system capacities by creating cancer centres and improving the cancer registry system. However, The early reported cancer incidence rates for Erbil and Duhok were 50.0 and 61.5 cases/100,000 individuals, respectively (4). Hence, due to these limitations, significant gaps and challenges remain in performing cancer-related scientific research and moving toward reliable numbers through a meta-analysis of available data (5). Basra, located in the southern part of Iraq, has witnessed an increase in its cancer incidence and mortality rates since 2005(6). incidence, survival and mortality rates have been reported in many populations, very little is known about cancer incidence specifically in Iraq (7,8). Especially in Salah al-Din Governorate Therefore, this study aimed to determine the incidence rates and gender distribution of various cancers in the Salah al-Din Governorate of Iraq using epidemiological analysis.

## **Method**

This observational, cancer-registry-based study analysed all malignant cancer cases diagnosed from 1 Jun 2020 to 1 December 2021 Salah al-Din, Iraq. Data was collected through active monthly visits to Salah Al-Din Health Department - Oncology Center / Tikrit, The collected data included demographic information (name, gender, age, address and nationality) and cancer details (diagnosis date, primary site and histology). Cases reported from governorates other than Salah al-Din were excluded from the study. The cancer incidence in populations of different age groups and of both genders was calculated.

### **Results**

2. Females had the highest incidence of cancer, 38% Female among the total number of patients

The highest incidence of cancer is breast cancer

The highest cancer in men is the prostate cancer

There are few cancer distributed in both sexes

As mentioned In Table No.1

Table (1): Frequency of incidence of injuries for each type of cancer in Salah al-Din governorate from 2020/6 to 2021/12 for both sexes.

Percentage	Number of females	Percentage	Number of males	Percentage	The total number	Type	Number
%57	143	NON	NON	%38	143	Breast cancer	1
%4	12	%16	21	%8	33	Lung cancer	2
NON	NON	%22	29	%7	29	Prostate cancer	3
%7	18	NON	NON	%4	18	Uterine cancer	4
%1	4	%8	11	%3	15	Kidney cancer	5
%2	7	%5	7	%3	14	Head cancer	6
NON	NON	%0.7	1	%0.26	1	Gastrointestinal cancer 1- Oral cancer	7
%0.4	1	NON	NON	%0.26	1	Tongue_2 cancer	8
%0.4	1	NON	NON	%0.26	1	_3 Esophageal cancer	9
%2	7	%3	4	%2	11	Liver_4 cancer	10
%1	3	%3	4	%1	7	_5 Stomach cancer	11
%2	6	%3	4	%2	10	_6 Pancreatic cancer	12
NON	NON	%0.7	1	%0.26	1	Bowel_7 cancer	13
%6	15	%7	9	%6	24	Colon_8 cancer	14
%2	5	%3	4	%2	9	Rectal_9 cancer	15

NON	NON	%0.7	1	%0.26	1	Duodenal 10	16
%3	8	%2	3	%2	11	Skeletal cancer	17
%1	4	%3	5	%2	9	Skin cancer	18
%3	8	NON	NON	%2	8	Ovarian cancer	19
%0.4	1	NON	NON	%0.26	1	Vagina cancer	20
%0.4	1	NON	NON	%0.26	1	Choriocarcinoma	21
NON	NON	%3	4	%1	4	Hematoma	22
NON	NON	%2	3	%0.7	3	Testicular cancer	23
%1	3	%3	5	%2	8	Soft tissue cancer	24
NON	NON	%0.7	1	%0.26	1	Lymph node cancer	25
%0.4	1	%0.7	1	%0.5	2	Cancerous spread	26
NON	NON	%0.7	1	%0.26	1	Laryngeal cancer	27
NON	NON	%0.7	1	%0.26	1	Sinus cancer	28
%0.4	1	%2	3	%1	4	Glandular cancer	29
NON	NON	%0.7	1	%0.26	1	Eye cancer	30
NON	NON	%2	3	%0.7	3	Bladder cancer	31
<b>%66</b>	<b>249</b>	<b>%34</b>	<b>127</b>		<b>376</b>	<b>31</b>	<b>Total</b>

1-The highest age group for all types of cancers for females between 60-50

2 - the highest age group infected with breast cancer was between 50-40

3 - less age group infected with breast cancer between 30-20

as mentioned in Table 2 Table 2

(2): Repeated injuries by female age groups

95-81	80-71	70-61	60-51	50-41	40-31	30-21	20-10	Total
4	36	53	59	53	32	6	5	248

- 1-The highest age group with all types of cancers for males between 80\_ 70
- 2 - the highest age group infected with prostate cancer 70
- 3 - less age group infected with prostate cancer from 40\_ 10 as mentioned in table number 3 Table

(3): Duplicate infections by age groups

95-81	80-71	70-61	60-51	50-41	40-31	30-21	20-10	Total
10	24	30	28	16	13	6	3	130

- 1.The highest number of cancer patients according to the districts is the district of Tikrit, followed by the district of Samarra, the least district is the district of Dujail.
- 2.The highest number of patients with breast cancer is within Tikrit, followed by Samarra, and the least is the Dujail district There is no.

As mentioned in Table No. 4

Table (4): Frequency of injuries according to each district in Salah al-Din Governorate for females

Total	Tikrit	Baiji	Samarra	Alalam	Balad	Aldowr	Sharqat	Aldulue-iaa	Duja-il	Altuwz	Alishaqi
246	75	44	50	26	10	17	11	6	1	4	2

- 1.The highest number of injured in Tikrit District - Samarra District - Baiji District.
- 2.The largest number of patients with prostate cancer was within the Samarra district, followed by Baiji, then Tikrit, and the least was Dujail and Ishaqi.

As mentioned in Table No. 5

Table (5): Frequency of injuries according to each district in Salah al-Din Governorate for male

Total	Tikrit	Baiji	Samarra	Alalam	Balad	Aldowr	Sharqat	Aldulue-iaa	Dujail	Altuwz	Alishaqi
127	33	27	29	7	10	4	5	4	1	6	1

The highest number of cases of breast cancers are housewives

As mentioned in Table No. 6

Table (6): Frequency of injuries according to the profession of each injured person female

Total	Housewife	retired	employee	schoolmistress	Teacher	student
248	211	9	14	11	2	1

The highest number of people with cancers are the earners, while the highest number of people with prostate cancers are the retirees

As mentioned in Table No. 7

Table (7): Frequency of injuries according to the profession of each injured person

cancer type	Gainer	retired	employee	Student	policeman	affiliated
127	65	40	16	3	2	1

Discussion

The present study reported the cancer incidence trend between 2020 and 2021. Thus far, previous studies focused on risk factors that directly influence the incidence rate of cancer diseases in Iraq, such as the consequences of various wars, changes in lifestyle (9). economic disease burden (10). economic crises (11), social status (12),

environmental pollution and exposure to carcinogenic agents. Moreover, some behavioural factors, such as smoking, alcohol consumption, drug abuse and fast-food consumption have recently been shown to significantly increase the risk of certain types of cancer in Kurdistan Regional Government (KRG) (13). This is consistent with the results we obtained. According to the prediction of the current study for the next decade, there will be a significant increase in cancer burden in the Salah al-Din governorates. This is in agreement with previous national studies on different types of cancer. We have found that there is a diversity of types of cancer This is consistent with a study conducted in the KRG. Cancer incidence rates for all cancer types increased in the KRG between 2013 and 2019, meanwhile in other parts of Iraq, the cancer rate increased from 44.58 to 67.86/100,000 between 2008 and 2016, representing a more than 50% increase (14). In present study The highest incidence of cancer is breast cancer and this agrees with a previous study Nevertheless, the ratio of cancer rates in females was slightly higher compared with males in both the Erbil and Duhok governorates. A higher percentage of cancer rates in females is most likely due to the differences in endogenous hormones and exposure to indoor and outdoor pollutants, as well as the complex interactions between these individual factors (15). In present study The highest cancer in men is the prostate cancer. This differs from previous studies Prostate cancer ranked as the fourth most common type of cancer amongst men between 2013 and 2019 in the Erbil governorate, accounting for ~10% of male cases, whereas in the Duhok governorate it was the seventh most frequently diagnosed cancer, accounting for 5% of male cases. Prostate cancer is the second most widely diagnosed cancer in men, accounting for 13.5% of all cancer types worldwide; and the fifth-largest cause of cancer-associated death worldwide (16). The Prostate cancer incidence rates in 2018 were 6.6% in Iraq, which is lower than in most neighbouring countries including Iran (16.6%), Jordan (14.7%), Kuwait (21.6%), Syria (20.1%) and Turkey (41.7%); Saudi Arabia also has an incidence of 6.6% (17). The variations in incidence rates could be due to differences in the testing methods for prostate-specific antigens (18). In present study There are few cancers distributed in both sexes with a rate of 7%. Less cancer (cancer of the mouth, cancer of the tongue, cancer of the esophagus, cancer of the intestine, cancer of the lymph nodes, cancer of the larynx, cancer of the placenta, cancer of the vagina, cancer of the sinuses, cancer of the eye and cancer of the duodenum. One of the most important risk factors for cancer incidence is age (19) In present study The highest age group affected for females was between 50-60. was similar to the results of other studies conducted in Middle Eastern countries, such as Jordan 55 years (20) and 56 years (21)] and Palestine 55 years (22). While we found in our study, the age of the infected males 70-80 was higher and closer to the percentages that were found in Europe The median age of cancer patients in Norway is 69 years (23), and in the US it is 66 years (24) The highest number of people with cancers by district is Tikrit, followed by Samarra. The highest number of infected females are housewives. The highest number of infected males is the earners. We recommend preliminary procedures in each district that is connected to the main center in Tikrit. Awareness lectures should also be held at the governorate level on how to stay away from the causes of cancer such as smoking, alcohol and others. As well as guiding women on how to deal with detergents,

chemicals, dyes and hair straighteners, and reduce body exposure to laser radiation. We recommend a periodic examination every 6 months and monitoring vitamins. In case of injury, it must be reviewed and dealt with as soon as possible, whether by .surgical intervention, chemical or radiological intervention

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