



Cancer Incidence in Libya Using Estimates from GLOBOCAN 2020

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Abstract

Background: Cancer represents a public health problem worldwide. Cancer incidence rates were estimated worldwide by the GLOBOCAN 2020 study. Cancer statistics in Libya indicate an increasing disease burden. However, comprehensive epidemiological data in Libya is sparse or non-existent.

Objective: To describe and discuss cancer incidence in Libya based on GLOBOCAN Libya 2020 estimates.

Methods: A descriptive review of published visualized cancer data through the Global Cancer Observatory (GCO), a web-based platform that provides interactive features and presents comprehensive global cancer statistics.

Results: According to GLOBOCAN 2020 findings, the estimated number of new cancer cases in Libya in 2020 was 7,661, including cases of both sexes. Of these, 3,913 were women and 3,748 were men. The most common malignancies in Libyan men occur in the lungs at 21.3%, followed by colon cancer at 11.3%, prostate cancer at 10.7%, bladder cancer at 10%, and leukemia at 4.4%. The most common cancers among Libyan women were breast cancer at 31.4%, followed by colon cancer at 12.3%, cervical cancer at 6.1%, thyroid cancer at 4.8%, and leukemia at 4.3%. Lung cancer accounted for a significant number of cases in Libya, of which 770 (16.2%) died, followed by breast cancer with 459 (9.7%).

Conclusion: The GLOBOCAN findings have provided useful indicators of cancer incidence in Libya, although some limitations were noted due to the weakness of national cancer registrations. Healthcare policies are needed for the management and control of the more prevalent and pressing cancers in Libyan society.

Keywords: cancer, Libya, GLOBOCAN, incidence, mortality

Abbreviations: GCO: Global Cancer Observatory, BCR: Benghazi Cancer Registry, IARC: International Agency for Research on Cancer, WHO: World Health Organization

1. Introduction

Cancer incidence rates were estimated worldwide using GLOBOCAN 2020 data. In 2020, a total of around 19.3 million new cancers were registered globally, with the exception of non-melanoma skin cancer. Breast cancer in females is the most frequently detected form of cancer, followed by lung, colorectal, prostate, and stomach cancers [1]. In 2020, there were an estimated 11.1 million new cases of cancer, and 711,429 deaths from neoplasms in Africa [2].

Cancer is a growing public health concern in Libya, as the country has experienced a change in the incidence of various types of cancer over the past two decades. In Libya, there are limited cancer registries available to study cancer epidemiology. Existing registries include the Benghazi Cancer Registry (BCR), the first population-based cancer registry in Libya, covering a

population of 1.58 million people in the east of the country [3]. Other registries in the country are hospital registries. For example, the Misurata Cancer Registry is part of a cancer epidemiology study in Misurata that aims to determine the extent and patterns of cancer incidence in the region [4]. The Tobruk Medical Center Cancer Registry collects and manages data on cancer patients in the Tobruk region of eastern Libya [5]. In addition, the Tripoli pathology-based cancer registry is located at the Tripoli Medical Center, the largest teaching hospital in Libya with a bed capacity of around 1200 beds, and the majority of cancer cases in this registry were from the northwestern region of Libya [6]. The available studies provide partial insights into the cancer burden in Libya. However, no updated comprehensive cancer statistics for Libya based on any of the above-mentioned cancer registries have been published after 2020. More research is needed to obtain accurate and up-to-date data on cancer incidence nationwide. This

paper describes the incidence of cancer in Libya based on estimates from GLOBOCAN Libya 2020.

2. Methods

A descriptive review of published visualized cancer data through the Global Cancer Observatory (GCO), an interactive web-based platform for presenting global cancer statistics [7]. The GCO is a resource of the International Agency for Research on Cancer (IARC), founded in 1965 by the World Health Organization (WHO). The GCO includes subsites such as Cancer Today, a global data visualization tool that provides interactive opportunities to explore the changing extent and profile of the global cancer burden. Methods used in the GLOBOCAN 2020 estimates are described online at the GCO [7].

3. Results and Discussion

3.1 Cancer incidence in Libya 2020

According to GLOBOCAN 2020, the estimated number of new cancer cases in Libya in 2020 was 7,661, including cases of both sexes (**Figure 1**).

Compared to men, women are more likely to get cancer. Of these, 3,913 were women and 3,748 were men. Breast cancer has overtaken colon cancer as the most commonly diagnosed cancer. Followed by lung, bladder, and prostate cancer as the most common cancers.

Based on GLOBOCAN 2020, the most prevalent malignancies in Libyan males occur in the lungs, followed by colorectum, prostate, bladder cancers, and leukemia, as shown (**Figure 2**).

Whereas the most prevalent cancer in Libyan females was breast cancer, followed by colorectum, cervix uteri, thyroid, and leukemia (**Figure 3**).

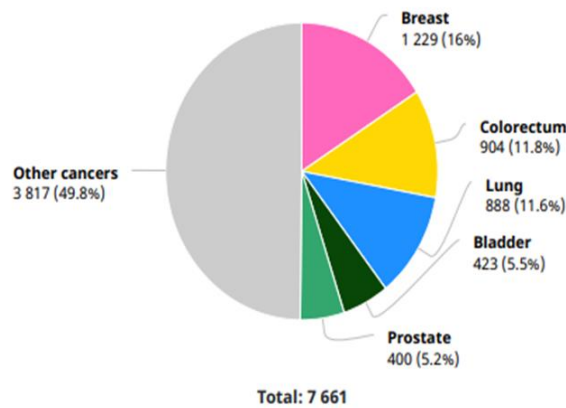


Figure 1: Number of new cases in 2020, both sexes, all ages [7].

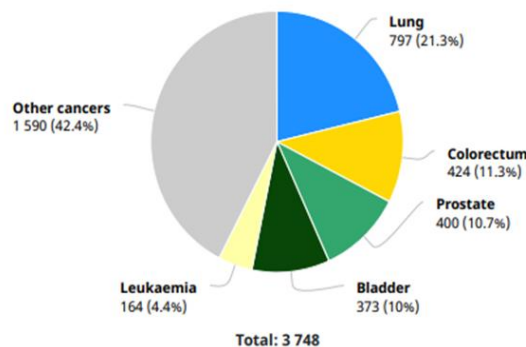


Figure 2: Number of new cases in 2020, males, of all ages [7].

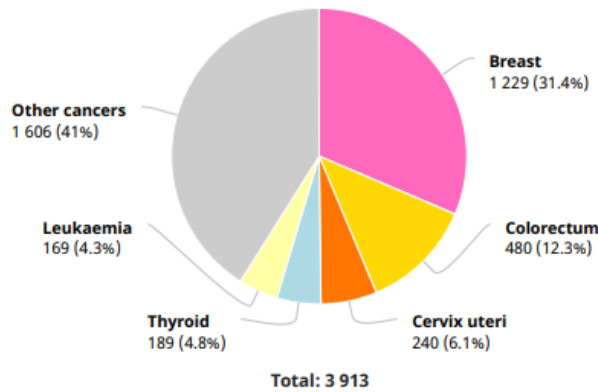


Figure 3: Number of new cases in 2020, females, of all ages [7].

Some regional studies and reports provide partial information on cancer incidence in Libya. The most common cancers in Eastern Libya are breast, colorectal, and lung cancers. Libya also had the highest rate of colorectal cancer in North Africa in 2012 [8]. The finding on males is comparable with local previous studies. In the east of Libya, colorectal cancer was more diagnosed in men [9]. However, reports from the western region [6] were consistent with the GLOBOCAN estimate. On the other hand, for females, breast cancer remains the most prevalent malignancy [4–6, 10].

3.2 Incidence, mortality, and prevalence by cancer site

The cancer incidence, mortality, and prevalence by cancer site in Libya vary across different regions and periods. In Misurata, the major city in the middle region of Libya, the estimated cancer incidence was 71.7 per 100,000 population, with breast, colorectal, lung, and prostate cancers being the most prevalent types [4]. In the Tobruk region, breast and uterine cancers were the most common in women, while bladder and colorectal cancers were the most common in men [5]. Eastern and Western Libya showed a higher incidence of pancreas, stomach, liver, mouth, pharynx, and colorectal cancers, with men being more likely to develop tumors in the western region of Libya, breast, colorectal, lung, lymphoma, and leukemia were the most frequent cancers in both genders [11]. The incidence of colon and esophagus cancers in Libya was relatively high, with the western and southern parts of the country being at higher risk [12]. These findings underscore the importance of understanding the regional variations in cancer incidence to inform targeted screening and treatment efforts.

Regarding GLOBOCAN estimates on Libya released in 2020, as shown in the table (**Table 1**), lung cancer in Libya accounts for a significant number of cases

and deaths, followed by breast cancer with increasing trends and a high mortality rate. Other common cancers in Libya include rectal, bladder, and prostate cancers.

Critically, cancer incidence is expected to double in light of a recent report from Benghazi Medical Centre indicating higher admission of patients to the oncology unit during 2021 [13]. More importantly, the top cause of death was listed as cancer. Cancer patients in Libya frequently have advanced stages when they are first diagnosed, and their death rates are high because of factors like delayed diagnosis, limited access to healthcare, missing necessary treatment regimens, and treatment interruptions. Previous studies indicated a high mortality rate for cancer in Libya [14].

A study that analyzed cancer data from 1991 to 1996 reported cancer mortality rates per 10 person-years at risk for males, females, and both sexes as 39.8, 26.5, and 33.3, respectively [15].

According to the GLOBOCAN 2020, there was no country-specific data source on mortality. Therefore, mortality data was estimated from national incidence estimates by modeling, using incidence·mortality ratios derived from cancer registry data in neighboring countries [7].

Despite these findings, it is essential to note that the lack of comprehensive cancer registries and ongoing political challenges make it difficult to obtain accurate and up-to-date cancer incidence data in Libya. The GLOBOCAN 2020 study has provided insight into cancer statistics in Libya. However, some limitations were reported. This can be explained as mentioned before by the lack of accurate cancer registrations and electronic medical documentation and data linkage with cancer registries in the Libyan health system [16]. Additionally, place distribution of cases is needed to show areas with high and low concentrations of cases and map spots.

Cancer	New cases				Deaths				5-year prevalence (all ages)	
	Number	Rank	(%)	Cum.risk	Number	Rank	(%)	Cum.risk	Number	Prop. (per 100 000)
Breast	1 229	1	16.0	3.65	459	2	9.7	1.65	3 546	104.22
Lung	888	2	11.6	1.93	770	1	16.2	1.74	917	13.35
Colon	577	3	7.5	1.08	356	3	7.5	0.62	1 301	18.93
Bladder	423	4	5.5	0.93	242	4	5.1	0.41	1 087	15.82
Prostate	400	5	5.2	2.01	188	9	4.0	0.31	1 293	37.28
Leukaemia	333	6	4.3	0.56	235	5	4.9	0.46	915	13.32
Rectum	311	7	4.1	0.62	185	10	3.9	0.33	768	11.18
Non-Hodgkin lymphoma	295	8	3.9	0.56	182	11	3.8	0.36	798	11.61
Brain, central nervous system	243	9	3.2	0.41	205	8	4.3	0.37	633	9.21
Cervix uteri	240	10	3.1	0.89	141	13	3.0	0.58	613	18.02
Liver	228	11	3.0	0.52	213	6	4.5	0.48	235	3.42
Thyroid	220	12	2.9	0.31	38	22	0.80	0.05	672	9.78
Pancreas	214	13	2.8	0.48	205	7	4.3	0.47	189	2.75
Stomach	204	14	2.7	0.40	165	12	3.5	0.33	274	3.99
Kidney	175	15	2.3	0.33	89	17	1.9	0.16	450	6.55
Larynx	160	16	2.1	0.35	116	14	2.4	0.24	413	6.01
Ovary	158	17	2.1	0.50	107	15	2.3	0.37	395	11.61
Gallbladder	129	18	1.7	0.20	99	16	2.1	0.13	146	2.12
Nasopharynx	127	19	1.7	0.22	74	18	1.6	0.16	333	4.85
Hodgkin lymphoma	121	20	1.6	0.13	38	21	0.80	0.04	401	5.84
Multiple myeloma	72	21	0.94	0.16	58	19	1.2	0.13	162	2.36
Corpus uteri	67	22	0.87	0.41	14	24	0.29	0.09	209	6.14
Lip, oral cavity	60	23	0.78	0.15	29	23	0.61	0.07	150	2.18
Oesophagus	53	24	0.69	0.10	52	20	1.1	0.09	56	0.81
Testis	23	25	0.30	0.06	4	33	0.08	0.01	88	2.54
Salivary glands	20	26	0.26	0.03	8	29	0.17	0.01	54	0.79
Melanoma of skin	19	27	0.25	0.03	9	26	0.19	0.01	52	0.76
Anus	16	28	0.21	0.02	10	25	0.21	0.01	39	0.57
Vulva	13	29	0.17	0.03	8	28	0.17	0.02	30	0.88
Kaposi sarcoma	12	30	0.16	0.04	7	30	0.15	0.01	31	0.45
Mesothelioma	9	31	0.12	0.01	8	27	0.17	0.01	9	0.13
Hypopharynx	8	32	0.10	0.00	3	34	0.06	0	10	0.15
Vagina	8	33	0.10	0.02	5	31	0.11	0.01	19	0.56
Oropharynx	6	34	0.08	0.02	4	32	0.08	0.01	15	0.22
Penis	0	35	0	0	0	35	0	0	0	0
All cancer sites	7 661	-	-	13.51	4 750	-	-	8.71	17 531	255.1

Table 1: Incidence, mortality, and prevalence by cancer site [7].

Yet, the survival of cancer patients in Libya has not been largely investigated. According to the available search results, the survival rates for cancer patients in Libya are low and vary depending on the type of cancer. A study conducted in Eastern Libya included cases diagnosed from 2003 to 2005, and reported a 5-year relative survival rate of 22.3% for all cancers combined, with survival being lower in men (19.8%) than in women (28.2%) [11]. Malignancies with poor prognosis in both sexes include lung cancer showing a 5-year relative survival of 2.3%, followed by liver cancer with a 5-year relative survival of 2.4%, and stomach cancer with a 5-year relative survival of 3.3%. Whereas the best prognosis was reported for thyroid, breast, and colorectal showing a 5-year relative survival of 64.9%, 56%, and 29.5%, respectively [11]. Regarding international comparison, another study conducted on breast cancer patients diagnosed during the years 2002–2006, found that the survival rate for breast cancer patients in Libya ranks between the rates of survival in Nigeria (lowest) and Finland (highest) [17]. In light of the existing literature, there is a need to update survival statistics and investigate factors contributing to this lower survival. Survival analysis in epidemiology is important for examining the effectiveness of cancer health care and treatment options offered to cancer patients, including surgery, chemotherapy, and radiotherapy. Therefore, we need an adjusted survival analysis of all prognostic factors to give an informative

estimate in Libya. More recently, the National Center for Disease Control in Libya has announced through social media the current cancer statistics in Libya, however, these statistics have not been officially published yet [18].

4. Conclusion

The GLOBOCAN 2020 estimates included in this study offered helpful indications of Libya's cancer incidence, although some limitations were noticed due to limited data available and the absence of national cancer registrations. Libya is experiencing a significant shift in cancer incidence rates, with the most prevalent cancers being breast, colorectal, and lung cancers. Urban-rural differences are seen when different districts are analyzed, highlighting the need for healthcare policies to be adjusted to take into account the more prevalent and pressing cancers in Libyan society.

To address these issues and enhance Libya's oncology services, government, and private sector cooperation can help the Libyan healthcare industry. It is advised that national cancer screening programs, awareness campaigns, enhanced access to care, and the creation of a national cancer registry be established. In addition, the development of epidemiological methods, both analytical and descriptive, to investigate the cancer burden and risk factors in Libya.

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