

Systematic review

Cancer Prevalence in Libya: A Systematic Literature Review

Ahmed Atia*^{ID}, Nisrin Essam^{ID}, Maysa Fathi^{ID}, Nasib Abdullah^{ID}, Rayan Ahmed^{ID}

Department of Anesthesia & Intensive Care, Faculty of Medical Technology, The University Tripoli, Tripoli, Libya

Corresponding Email. ah.atia@uot.edu.ly

Abstract

For local epidemiological data, cancer registries and cancer incidence are crucial. There is a dearth of data regarding incidence rates and distribution in Libya. As a result, this study presents the results of a review of available data on cancer prevalence in Libya over the last 16 years (from 2006 to 2022) to aid understanding of the current cancer prevalence situation in this portion of the continent. Articles related to the topic were researched using databases and search engines such as PubMed, Google Scholar, and ResearchGate. These articles were selected based on predetermined inclusion and exclusion criteria. The type of cancer from the total number of patients for each reported study was used. Studies published in the last 16 years, representing reports of 6158 cancer cases in 7 studies, showed that the final selected articles were published in the year of 2006 to 2015 (n=4, 57.14%) and a high number in east area (n=5, 71.4%), with the small number in west area (2, 14.28%). The total number of cancer cases in the east was (n=4958, 79.86%), in which the most common cancer type in the east region was breast cancer (n=1203, 24.26%), followed by lung cancer (n=738, 14.9%), and colorectal cancer (n=716, 14.4%). Whereas, in the western region was (n=1250, 20.14%), and the common cancer type was breast cancer (n=237, 18.96%), followed by colorectal cancer (n=223, 17.8%), and lung cancer (n=200, 16%). In both of them, the most common cancer type was breast cancer (n=1440, 23.2%), followed by lung cancer (n=938, 15.1%), and colorectal cancer (n=939, 15.1%). This report provides a clue on the most common type of cancer in Libya. An educational program is very important to the public to spread awareness of the risk of cancer to limit the prevalence and provide early management for this type of disease.

Keywords. Cancer, Libya, Malignancy, Colorectal, Breast, Lung.

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Introduction

Over the past few decades, cancer has emerged as a significant public health issue in Africa and is a leading cause of morbidity and mortality globally [1]. It is the first or second leading cause of premature death in 134 out of 183 countries. In 2022, the continent experienced approximately 20 million new cancer cases and 9.7 million deaths from cancer. According to estimates, one in five men and women will get cancer at some point in their lives, while one in nine men and one in twelve women will pass away from the disease [2]. Predictably, there will be a 70% rise in new cancer cases by 2030 because of factors like aging, population growth, exposure to carcinogens, unhealthy lifestyles, and the use of alcohol and tobacco [3].

In both economically developed and less developed nations, cancer is a major burden on society. The population's aging and growth, along with the rising prevalence of known risk factors like smoking, obesity, physical inactivity, and shifting reproductive patterns brought on by urbanization and economic development, are all contributing factors to the rising incidence of cancer [4].

Despite the significance of the problem, there is a lack of data on Libya, and the last age-standardized rates (ASRs) for this region were established almost ten years ago. Accurate cancer incidence statistics are crucial for developing effective cancer control programs.

Despite the importance of the issue, data concerning Libya is notoriously scarce, and the last time age-standardized rates (ASRs) were determined for this region was nearly a decade ago. To establish proper cancer control programs, accurate statistics for cancer incidence are vital [5]. In Libya, hospital-based cancer registries do not provide geographical information, making it difficult to calculate cancer incidence rates based on the population in the hospital's area. Therefore, we used data from the literature to gather information to estimate the prevalence of cancer in Libya, as well as clarifying other epidemiological features such as gender and type distribution.

Methods

Data source and retrieval

Free-text web searches using PubMed, Google Scholar, and ResearchGate were searched for articles on cancer published in Libya from 2006 through 2022. The retrieving process and data inclusion strictly followed PRISMA guidelines (Figure 1).

To retrieve all relevant articles from the above-mentioned databases, relevant MeSH terms and keywords were applied. The following keywords and MeSH terms were used: “systematic review in cancer”, “cancer incidence in Libya”, “prevalence of cancer in Libya”, “cancer Libya”, and “cancer types in Libya”. These search keywords were entered in the above-mentioned searching engine, respectively. All articles on cancer in Libya were then retrieved. The same search strategy was repeated for the second round of the search with the use of the same key words but with the name of each Libyan city added next to it with each search.

Inclusion and exclusion criteria

For the identification of eligible articles, we used predefined set of inclusion and exclusion criteria. Articles were retrieved if they met and fulfilled the following criteria for inclusion: published between 2006 and 2022; full text only available in Libya; reporting cancer research data in humans; conducted in Libya; free access to abstracts and full texts; providing information of cancer types; and were observational studies (cross-sectional) that reported the proportion of prevalence of cancer. Conversely, any studies that did not comply with the above criteria were excluded. Furthermore, reference lists of potential research articles kept at this stage were examined for inclusion criteria, and those that met the criteria were added to the final list of potential research articles to be reviewed and included in this report.

Selection procedure

From the initially retrieved 80 articles, 20 were excluded because they were either a report or duplicate; 6 articles were excluded because they did not fit in our review topic or lacked free full text versions. At the next stage, a total of 48 articles were subsequently excluded because they were review or case report, not related to cancer, missed some details. Another one article was retained because they were identified from all their respective reference lists. This yielded a total of 7 articles that were analysed in this review. A detailed description of all steps taken to select the final articles that were included in this report are shown in figure 1.

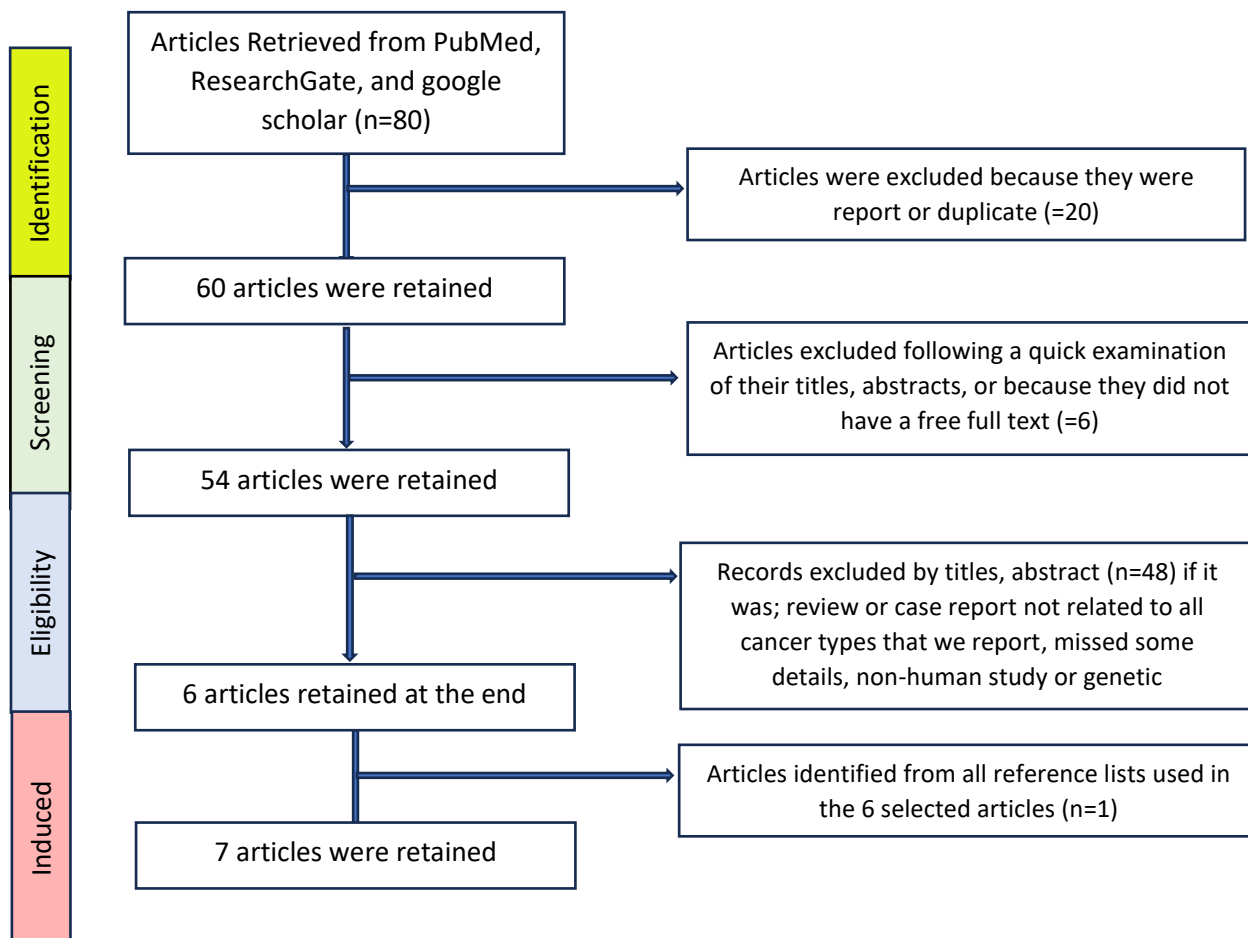


Figure 1 Illustration of the search and inclusion/exclusion process.

Data extraction

Required data from the seven retained papers was extracted in an Excel database 2016 that was designed for this review report and then further verified for consistency and quality of the data. The variables extracted included the author's name, year of publication, Libyan region, study design, type of cancers, and age group.

Data analysis

Data were presented as descriptive statistics using numbers and percentages.

Results

Reviewed articles and main data characteristics

This systematic review included a total of 80 articles reviewed from the three scientific databases, as described above, and the selection process yielded a total number of 7 articles that met the inclusion criteria, representing reports of 6208 cancer cases and were included in the analysis. The characteristics of the collected data, such as publication year, study area, and the mean ages, were presented in Table 1.

Samples from a total of 6208 patients were analysed in the selected local studies. The maximum number of the final selected articles were published in the year of 2006 to 2015 (4/7, 57.14 %), and a high number of the reviewed articles were conducted in the East part of Libya (5/7, 71.4 %) while the smallest number of studies were from the west district (2/7, 14.28%), and the mean age of the study sample was 54.6±2 (Table 1).

Table 1. Characteristics of the articles included in the systematic review

Characteristics	No of studies	References
Publication year		
2006-2015	4 (57.14%)	[17] [19] [20] [21]
2017-2022	3 (42.86%)	[18] [22] [23]
Study area		
East	5 (71.43%)	[17] [18] [19] [20] [21]
West	2 (28.57 %)	[22] [23]
Age (Mean±SD)	54.6±2	-

Prevalence of cancer based on different clinical diagnosis

The type of cancer from the collected data are presented in table 2. The total number of cases of cancer types (Breast, Lung, Colorectal, Uterus, Bladder, Thyroid, Liver, Ovary, Pancreas, Kidney, Stomach, Brain, Prostate) were 6208, in which the total number of females was (3248, 51.77%), and the most common cancer type in females was the breast cancer (n=1423, 43.8%), followed by colorectal cancer (n=458, 14.1%), and uterus cancer (n=326, 10%). The total number of males was 2960, with the most common cancer type being lung cancer (n=820, 27.7%), followed by colorectal cancer (n=481, 16.25%), and prostate cancer (n=447, 15.1%). In both of them, the most common cancer type was breast cancer (n=1440, 23.2%), followed by lung cancer (n=939, 15.1%), and colorectal cancer (n=939, 15.1%).

Prevalence of cancer based on the region of the study

The type of cancer from the collected data are presented in table 3. Based on the region of study the total number of cancer cases in eastern part of Libya was (n=4958, 79.86%), in which the most common cancer type in eastern region was breast cancer (n=1203, 24.26%), followed by lung cancer (n=738, 14.9%), and colorectal cancer (n=716, 14.4%). In the western part of Libya, the total number of cancer cases was (n=1250, 20.14%), and the common cancer type was breast cancer (n=237, 18.96%), followed by colorectal cancer (n=223, 17.8), and lung cancer (n=200, 16%).

Discussion

Throughout the next several decades, cancer will become a more significant health issue in developing countries. Population aging and growth, rising tobacco use, and exposure to other recognized risk factors (such as industrialization and westernization of lifestyle and nutrition) will all significantly raise the incidence of new cancer cases, particularly in African nations [7]. The current review describes data that have been extracted and analyzed from a total of 7 articles published between 2006 and 2022 prevalence cancer in Libya.



Table 2 Types of cancer from the collected data as a number (% of all of studies) in different clinical diagnosis

Types	Breast	Lung	Colorectal	Uterus	Bladder	Thyroid	Liver	Ovary	Pancreas	kidney	Stomach	Brain	Prostate	Total
Males	17 (0.57%)	820 (27.7%)	481 (16.25%)	0	379 (12.8%)	31 (1.05%)	135 (4.56%)	0	137 (4.6%)	117 (3.95%)	185 (6.25%)	211 (7.1%)	447 (15.1%)	2960
Females	1423 (43.8%)	118 (3.6%)	458 (14.1%)	326 (10%)	73 (2.2%)	154 (4.7%)	87 (2.7%)	188 (5.9%)	84 (2.7%)	80 (2.5%)	16 (3.57%)	141 (4.34%)	0	3248
Both	1440 (23.2%)	938 (15.1%)	939 (15.1%)	326 (5.3%)	452 (7.3%)	185 (2.9%)	222 (3.6%)	188 (3%)	221 (3.6%)	197 (3.17%)	01 (4.8%)	352 (5.7%)	447 (7.2%)	6208

Table 3. Types of cancer from the collected data as a number (% of all of studies) based on the region of the study

Types	Breast	Lung	Colorectal	Uterus	Bladder	Thyroid	Liver	Ovary	Pancreas	kidney	Stomach	Brain	Prostate	Total
East	1203 (24.26%)	738 (14.9%)	716 (14.4%)	242 (4.9%)	364 (7.3%)	145 (2.9%)	194 (3.9%)	159 (3.2%)	212 (4.3%)	162 (3.3%)	191 (3.9%)	275 (5.5%)	357 (7.2%)	4958 (79.9%)
West	237 (18.96%)	200 (16%)	223 (17.8%)	84 (6.7)	88 (7%)	40 (3.2%)	28 (2.2)	29 (2.3)	9 (0.72%)	35 (2.8%)	110 (8.8%)	77 (6.2%)	90 (7.2%)	1250 (20.1%)
Both	1440 (23.2%)	938 (15.1%)	939 (15.1%)	326 (5.3)	452 (7.3%)	185 (2.9%)	222 (3.6)	188 (3%)	221 (3.6%)	197 (3.17%)	301 (4.8%)	352 (5.7%)	447 (7.2%)	6208



Findings in this study revealed that lung cancer was the most common cancer type in males (n=820, 27.7%). Similar to our study, a previous study conducted in England between 2009 and 2013 [8], found that the lung cancer was the most common type in males (55.3%), because a cancer. The most common cause of lung cancer in men was smoking, and men had higher rates of smoking than women. It is also the leading cause of cancer death among men. Lung cancer mortality rates in the United States are highest among males, blacks, people of lower socioeconomic status, and in the mid-South (e.g., Kentucky, Mississippi, Arkansas, and Tennessee). Globally, rates are highest in countries where smoking uptake began earliest, such as those in North America and Europe [9].

In females, as exhibited in our study, breast cancer was the commonest type of cancer presented in (n = 1423, 43.8%) females, which was similar to an earlier study carried out in the USA that found that breast cancer is the most common in females (44.5%) [10]. Another study in European registry areas found that the most common type was breast cancer (34%) of all prevalent cancers in females [11], because a family history of breast cancer increases the likelihood of breast cancer development. Although women have many more breast cells than men, the main reason they develop breast cancer more often is because their breast cells are constantly exposed to the female hormone's estrogen and progesterone, which promote cell growth [12].

Out of the total (n=4958, 79.86%) cancer patients in the east region of Libya (n=1203, 24.26%) were breast cancer, followed by lung cancer (n=738,14.9%), and colorectal cancer (n=716,14.4%). In the west, the majority of (n=1250,20.14%) cancer patients were breast cancer (n=237,18.96%), followed by colorectal (n=223,17.8%), and lung cancer (n=200, 16%). Similarly, previous studies had reported the same type of cancers predominated their patients; breast cancer is the leading cause of cancer-related deaths among women. Many of the established risk factors are linked to estrogens. Obesity in postmenopausal women, early menarche, and late menopause all raise the risk, and prospective studies have linked elevated endogenous estrogen levels to increased risk.

The little increase in breast cancer risk associated with oral contraceptives and hormone therapy for menopause seems to go away if usage is discontinued. While physical activity is likely beneficial, alcohol raises risk [13]. According to research, women who inherit BRCA1 or BRCA2 gene abnormalities have an 85% lifetime probability of having breast cancer, indicating that BRCA gene mutations significantly enhance the risk of breast cancer [14].

Smoking was the leading cause of lung cancer in men, and men smoked at higher rates than women. It is also the main reason why men die from cancer. In the United States, males, Black people, and those from poorer socioeconomic backgrounds had the greatest lung cancer mortality rates [15]. An ageing population, poor modern dietary practices, and elevated risk factors like obesity, smoking, and inactivity are all contributing factors to the high rates of cancer-related death in Western nations [16].

Limitation

The data presented in the current review did not include the not open-access articles, which may provide more data on the topic, which could be considered as a limitation of the study. Additionally, the few published articles that included the epidemiology of cancer may limit our results. In some studies, authors reported only one or two types of cancer and lacked some other details, which we have categorized as exclusion criteria in the current study. Our research, on the other hand, provides an exclusive aspect of the prevalence of cancer in Libya, and researchers must keep track of all the gaps in future studies.

Conclusion

This report provides a clue on the most common type of cancer in Libya. These findings are very important for clinicians to provide an early screening. Educational programs are very important to the public about the risk of cancer to limit the prevalence and provide an early management for this type of disease.

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