



Original Research

Epidemiology of Breast Cancer in Nineveh Province of Iraq: A Retrospective Study

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Abstract:

Background: For thirty years, breast cancer has been the leading cause of mortality of women in Iraq, and it is now a significant public health issue.

Objective: Finding out the prevalence of breast cancer among women throughout Iraq over 10 years beginning in was the goal of the study (2011 to 2020).

Material and Methods: The current research was conducted entirely retrospectively. The Iraqi Ministry of Health and Environment's records were used to perform this epidemiological study. The researcher followed up on all the records files in the department, and samples were gathered for a full month at the Nineveh Health Department (public sector) over a ten-year period. The study's time frame runs from January 1st to February 1st 2023. The Iraqi Nineveh Health Direction's review ethical committee gave its approval to this study.

Results: According to the study's findings, women between the ages of 40 and 49 were the most commonly affected by breast cancer in Mosul (43.40%), and the majority of them did not have any close family members who had the disease.

Conclusions: This study concluded that the indicate that in 2019 Iraqi women residing in Nineveh now have a higher prevalence of breast cancer, among the age group of (40-49) has the highest incidence rate of its between other age years.

Keywords: Breast Cancer, Epidemiology, Retrospective Study

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Introduction:

Cancer is considered one of the deadliest diseases in human life and usually affects women, as cancer is considered the fifth leading cause of death in women in particular. There are several types of cancer that affect women, especially cervical cancer (Cohen et al., 2019), ovarian cancer (Garcia

et al., 2023), breast cancer (Ye et al., 2023), endometriosis (Pant et al., 2023), and vaginal cancer (Kaltenecker et al., 2023), etc. According to projections, 2.3 million females will receive a breast cancer diagnosis in 2021, representing 11.7% of all cancer cases, and 685,000 will die

from the condition, representing 6.9% of all female cancer deaths (Morgan et al., 2023). It poses a significant challenge to our nation's healthcare infrastructure because it accounts for more than 24% of all cancer cases in Iraq (Mjali & Al Baroodi, 2020). The most prevalent form of cancer among all Iraqis is breast cancer, accounting for one-third of all female cancer cases recorded and almost one-fourth of all female cancer-related deaths (AL-Hashimi & Wang, 2014; *LOBOCAN 2008: Cancer Incidence and Mortality Worldwide – IARC*, n.d.). Breast cancer incidence rates have clearly increased over the past 20 years, making it one of the biggest risks to the health of Iraqi women. It typically affects middle-aged women, who frequently have advanced diagnoses and a high mortality incidence ratio due to a probable prevalence of aggressive behavior (Alwan, 2010). The most current "Iraqi Cancer Registry" shows that breast cancer is the most common cancer in women, accounting for about a third of all female cancer cases (Al-Naggar et al., 2016; Jassim et al., 2022). The most frequent malignant tumor, breast cancer is regarded as the second leading cause of mortality in Iraq, after cardiovascular diseases. Compared to males, its incidence rate is approximately 100 times greater (Alrawi, 2022). "Age, female gender, smoking, alcohol use, obesity, hormone replacement therapy, and family history" are just a few of the recognized risk factors for breast cancer. Understanding personal risks and being aware of these variables are crucial for disease prevention, early diagnosis, and effective management (Mjali et al., 2019). Due to the high mortality rates among breast cancer patients who receive a late diagnosis, extensive research is being done worldwide to avoid breast cancer (Celik et al., 2014). Breast tumors typically start as ductal hyper-proliferation and proceed to benign tumors or metastatic cancer as a result of ongoing stimulation from various carcinogens. Stromal effects, one type of tumor microenvironment, are crucial to the development and spread of breast cancer. When stroma, rather than extracellular or epithelium, is exposed to carcinogens, the mammary duct can develop into a tumor (Sonnenschein & Soto, 2016). Breast cancer

prevalence rates are gradually increasing globally, making it one of the most prevalent cancers in women. Because they adopted Western lifestyles for sexual behavior, the number of women affected by this disease is still rising, particularly in those nations with historically low rates of breast cancer (Balekouzou et al., 2017). Environmental variables, behavioral patterns, social norms, reproductive factors, early menstruation, menopause, age of women at first pregnancy, and miscarriages are all strongly associated with the high incidence of breast cancer (Arnold et al., 2017). Numerous additional variables, such as genetic predisposition, contemporary living, diet, obesity, alcohol use, smoking, and first childbearing at a later age, have been the focus of recent studies (Thakur et al., 2017). Breast cancer is the most common form of cancer in women, accounting for over one-third of all known cases, according to Iraq's most recent cancer registry. This indicates that among Iraqis, breast cancer is more common than bronchogenic carcinoma (Al-Hashimi, 2021; Layth Mula-Hussain et al., 2021). The main objective of the research was to determine the epidemiology of breast cancer prevalence in Iraqi women over a ten-year period beginning in (2011 to 2020).

Method and Materials:

The current research is conducted entirely retrospectively. The Iraqi Ministry of Health and Environment's records were used to perform this epidemiological study. Nineveh Health Department (public sector) for ten years in a row, with samples continuing to be collected for an entire month while the researcher followed up on all the records registered in the department. The study's time frame was from January 1st, to February 1st, 2023. The sample was split into two groups, with the first group's demographic data being as follows: "age, gender, educational attainment, housing, marital status, occupation and family history of breast cancer". The second squad was composed of (the stage of cancer and epidemiology of breast cancer over ten years). Age-specific incidence rates (ASR) and age-standardized rates (ASIRs) for the age ranges of 20 to 29, 30 to 39, 40 to 49, 50 to 59, and 60 and over

were used to indicate the incidence of breast cancer. Utilizing the global standard population, the ASIRs were computed. The incidence rate was calculated for each year, for 10-year intervals, and for the entire study time. The Iraqi Nineveh Health Direction's review ethical committee gave its

approval to this research. For the study of frequency and percentage data as well as the calculation of the disease incidence rate, descriptive statistics are used.

Results:

Table 1. Participants' sociodemographic characteristics

Variables	Frequency	Percent
Age (Year)		
20-29	776	17.62
30-39	1188	26.97
40-49	1912	43.40
50-59	442	10.03
60-69	87	1.97
Marital Status	No.	%
Single	277	5.15
Married	3715	84.33
Widow	147	3.34
Divorced	266	6.04
Educational Level	No.	%
Illiterate	1601	36.34
Primary school	699	15.87
Secondary school	661	15
Graduate degree	1444	32.78
Residence	Frequency	Percent
Urban	3008	68.28
Rural	1397	31.72
Occupation	No.	%
Employed	1209	27.45
Unemployed	3196	72.55
Family History of Breast Cancer	No.	%
Yes	1087	24.67
No	3318	75.33
Total	4405	100

Table 2. Breast cancer epidemiology with for the years (2011–2020)

Variables	Breast Cancer	
	Frequency	Percent
2011	244	5.53%
2012	315	7.15%
2013	285	6.47%
2014	413	9.38%
2015	261	5.92%

2016	394	8.95%
2017	535	12.15%
2018	611	13.87%
2019	703	15.96%
2020	644	14.62%
Total	4405	100%

The highest infection rate during the ten years that the study samples were gathered was in 2019, and the lowest rate was in 2011 (Table 2).

Table 3: Risk factors among breast cancer women

Risk factors		No	Percentage
Family history of breast cancer	Yes	1032	23.42%
	No	3373	76.57%
Menopause	Yes	2458	55.8%
	No	1947	44.2%
Age at menarche	Less than 12	988	22.42%
	More than 12	3417	77.58%
Age of menopause	Less than 55	1870	42.45%
	More than 55	2535	57.55%
Use of contraceptives	Less 1 years	3112	70.64%
	More 1 years	1293	29.36%
Relative degree	No relative	3003	68.17%
	First degree relative	955	21.68%
	Second degree relative	447	10.15%

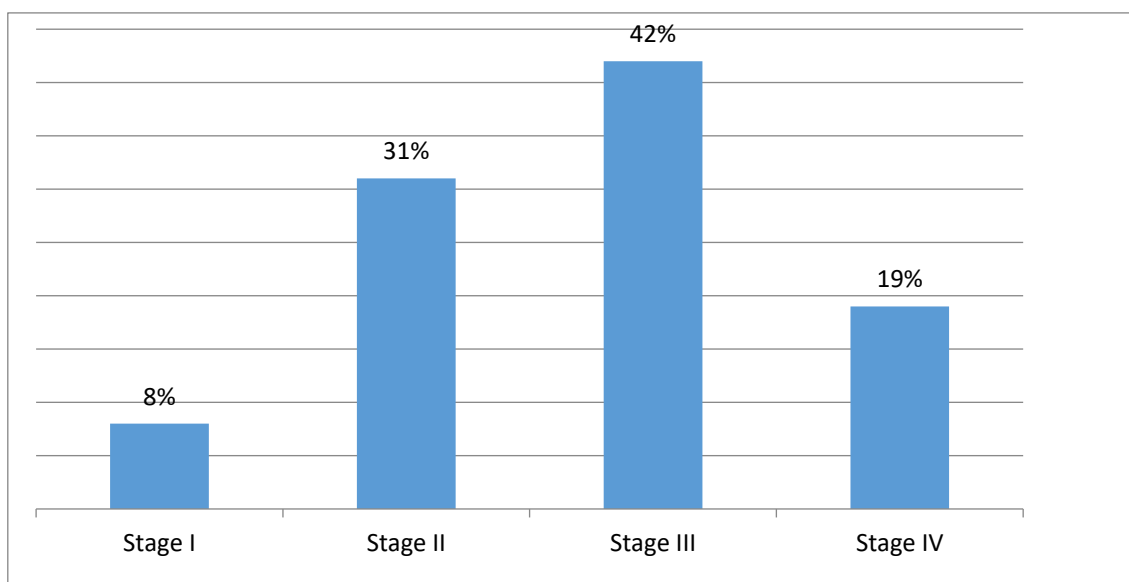


Figure 1. Distribution of presenting stages among studied population

Discussion:

According to the World Health Organization, by 2021, 13% of all new cancer cases will be breast

cancer (Al-Hashimi, 2021). Epidemiology is essential to the prevention and control of cancer because it identifies cancer risk factors and

explains how cancer spreads. Descriptive, ecological, cross-sectional, and analytical "cohort, case-control, and intervention" studies are a few examples of epidemiologic research designs (Khalifa, 2022). The current research, which has a descriptive design, aims to demonstrate the epidemiology of breast cancers among Iraqi women by examining the incidence between 2011 and 2020 in Nineveh City. According to statistics from the Iraqi Cancer Registry, the prevalence of all female breast cancer increased in Iraq between 2000 and 2009 (R et al., 2017). Table 1 show that the findings outline the demographics of the study sample, which included women, aged 40 to 49, who were most likely to develop breast cancer. Married women were also more likely to develop the disease than unmarried women (84.33%), and the majority of the sample was obese and lived in urban areas. Several of the women had a history of breast cancer as well. Finally, the distribution of educational standing was between not being able to read or write (36.34%) and having a university education (32.78%) (Roth et al., 2011). Treatment of cancer patients is a serious problem because these patients frequently present with a variety of symptoms and complications (Levy et al., 2014). Early illness detection, prior to the development of symptoms and signs, significantly improves outcomes (Levy et al., 2014). In the second table, which shows the prevalence of breast cancer over ten years, the year 2019 appeared to have the greatest rate (15.96%), and the year 2011 had the lowest rate. Numerous studies have suggested that the epidemiology of breast cancer in women in Europe and Asia may vary. Blacks and Whites experience the illness differently in terms of how risk factors like menopause, oral contraceptive use, smoking, and family history of breast cancer are connected to it (Sonnenschein & Soto, 2016). The third stage had the highest prevalence rate among the other stages (Table 2), and the primary reason for this is that it is thought to be the stage where breast cancer spreads the slowest.

Conclusions:

This study concluded that the age of (40-49) years old, has the highest incidence rate of breast cancer compared to other age ranges, indicating that Iraqi

women living in Nineveh now have a higher prevalence of the disease in 2019.

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