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Article

The Prevalence of Breast Cancer an Iraq and its Associated Risk Factors and Challenges in Early Detection (Article Review)

Yasser Ali Hussein[1]

1. *College of applied sciences, University of technology, Baghdad, Iraq*
Correspondance: yasser.a.hussein@uotechnology.edu.iq

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Abstract: Breast cancer is a serious health issue for females in Iraq as it remains the most common form of cancer among women in Iraq. The most recent epidemiological information has indicated a major rise in the rates of breast cancer over recent decades, particularly among women diagnosed before 50 years of age. The emergence of breast cancer is the outcome of various factors relating to genetics, reproduction, hormones, demographics, and lifestyle. Studies that have been conducted in Iraq have found different associations relating to family history, obesity, smoking, reproductive history, and other social and lifestyle factors. Despite the growing capacities of breast cancer diagnosis, delayed diagnosis of the disease remains a serious challenge for Iraq. Low level of awareness regarding breast cancer symptoms, lack of engagement in the screening process, financial concerns, access to healthcare services, and socio-cultural aspects are the reasons for delayed diagnosis. Mammography continues to be an essential screening tool in breast cancer detection, while ultrasound, MRI, physical examination, and histopathological analysis play an additional role in breast cancer diagnosis. New studies in Iraq have revealed differences with respect to clinical and molecular aspects, such as hormone status or molecular shapes. In order to achieve early detection, it is vital to raise awareness about and properly assess breast symptoms, use imaging efficiently, and refer individuals early on for the right tests and treatment. It is of paramount importance to enhance cancer registration and conduct population-based research to fully grasp regional differences and trends. As a result, the increase in early detection will lead to fewer obstacles in receiving a diagnosis.

Keywords: *Breast cancer; Risk factors; Early detection; Screening.*

Introduction

Breast cancer constitutes a critical issue in public health worldwide for being the most commonly diagnosed type of cancer among women globally. As of 2024, there are an estimated 2.4 million cases of breast cancer diagnosed among women worldwide along with an estimated 694,000 deaths due to the disease. Although breast cancer may occur in women at any age after puberty, the risk for developing the disease increases with age. Nevertheless, although the diagnosis and treatment of breast cancer have improved significantly, there are still marked differences between the populations in breast cancer outcomes, especially concerning early diagnosis and comprehensive cancer treatment [1].

Breast cancer is a prevalent disease in Iraq. Leaded by International Agency for Research on Cancer, breast cancer was the topmost cancer found in Iraqi females as per the GLOBOCAN 2022 data. Studies based on Iraqi cancer registry data showed that the incidence of breast cancer in Iraq was on the rise in women. A total of 72,022 cases of breast cancer were recorded in the country between the year 2000 and 2019, displaying an alarming increase in the number of cases year by year [2]. More recently, the data studied from the Iraqi cancer registry from the year 2012 to 2022 has shown that there have been 63,446 newly diagnosed cases of breast cancer in Iraq and an increase in the incidence rate has been witnessed, where the rate increased from 36.61 cases to 61.89 cases per 100,000 women from 2012 till 2022.

The occurrence of breast cancer is determined by a mix of unchangeable and changeable factors. The major risk factors include age, genetic predisposition, and reproductive and hormonal characteristics [3]. Moreover, causes of breast cancer also cover lifestyle-related factors, such as obesity, lack of exercise, use of alcohol, and smoking; these risk factors differ by their potency and consistency. The research undertaken in Iraq shows that the occurrence of breast cancer is related to various demographic, familial, reproductive, and lifestyle factors, as well. The recent case-control studies conducted in Al-Najaf confirmed the relationships of breast cancer occurrence with such factors as age, social status, smoking, obesity, diet, and submission to breast examinations [4]. However, the conclusions expressed in different Iraqi studies should be perceived with reference to the specifics of these studies (research design, sample size, and geographical context), rather than considered universally applicable to all Iraqi population.

It is important to emphasise that early detection is vital for breast cancer control because the earlier the diagnosis is made, the better the chances for successful treatment are. However, delayed diagnosis continues to be a major problem in Iraq [5]. An investigation conducted on patients of a breast diseases treatment clinic in Sulaimani Governorate revealed major relationships between delayed diagnosis and various factors associated with health behaviours and awareness of breast cancer symptoms [6]. Delayed diagnosis was also found to correlate with advanced clinicopathological features of the disease, such as lymph-node involvement, and a more advanced stage of the tumour. Furthermore, in a 2024 Iraqi study on breast self-examination, it was shown that despite the fact that a number of survey participants are aware of breast self-examination, a significant proportion of them do not conduct it due to lack of knowledge regarding its correct technique [7].

As a result, learning the epidemiology of breast cancer as well as its risk factors and barriers to early detection in Iraq serves the purpose of recognizing areas where research is necessary and enhancing existing cancer-control approaches. This article seeks to analyze the incidence and prevalence of breast cancer in Iraq, make a list of the major factors associated with the disease and emphasize the difficulties linked to early detection of breast cancer among women in Iraq [8].

Methods

Review design

This article is a narrative (non-systematic) review. It does not follow a formal systematic-review protocol and no meta-analysis was performed. Its aim is to summarize and compare what has been published on the epidemiology, risk factors and early detection of breast cancer among women in Iraq, in line with the aim stated in the Introduction.

Sources of evidence

The review draws on three groups of sources, which are listed in the References: (i) national and international cancer statistics, namely GLOBOCAN 2022, World Health Organization material and analyses of the Iraqi Cancer Registry; (ii) observational studies of Iraqi women, including registry-based, hospital-based, cross-sectional and case-control studies from Baghdad, Al-Najaf, Sulaimaniyah, Erbil, Duhok and other

settings; and (iii) international reviews, guidelines and technical documents, which are used to place the Iraqi findings in context. The publications date from 2014 to 2026. Studies were used when they reported incidence or registration data, age at diagnosis, geographical variation, risk factors, clinical or molecular characteristics, barriers to early diagnosis, or screening and diagnostic methods.

Data extraction and synthesis

For each source the study design, population, period, sample size and main findings were noted. The findings were grouped into the themes that form the structure of the Results: incidence and trends, comparison with other cancers, age distribution, geographical distribution, risk factors, clinical characteristics, challenges in early detection, and screening and early detection methods. They were summarized descriptively and presented in tables. Counts, rates and percentages are reported as given by the original authors; they were not pooled or recalculated, because the studies differ in period, population and method.

Appraisal of the evidence

The studies differ in design, and no formal quality scoring was applied. The findings are interpreted with attention to study design, sample size and setting: registry-based figures describe registered cases, hospital-based samples are not representative of all Iraqi women, and regional results are not generalized to the whole country. These points are discussed in Section 4.

Results

Incidence and trends of breast cancer in Iraq

Breast cancer is a significant cancer type in the overall cancer burden among women in Iraq. According to the International Agency for Research on Cancer, the estimated number of new breast cancer patients diagnosed in Iraq in 2022 reached the remarkable number of 8,626 cases, making this cancer type the most prevalent among Iraqi women. Breast cancer constituted about 40% of all diagnoses made among females in Iraq that year. The above finding indicates the importance of breast cancer in achieving the total cancer burden and the need for continued monitoring of the epidemiological situation [9].

Numerous studies conducted on registrations from the Iraqi Cancer Registry display an upward trend when it comes to breast cancer incidences. According to Habib et al., in the interval from 2000 to 2009, there were around 23,792 breast cancer cases found among women aged between 15 and older that were documented by a registration of cancer cases [10]. The breast cancer number accounted for 33.8% of all cases observed for the specified interval. The authors also reported on 49 years as the median age at which individuals got breast cancer and a mean age of 52 [11].

Another study which lasted longer confirmed the growth of breast cancer cases. In the study done by Al-Hashimi from 2000 to 2019, the total number was 72,022 breast cancer cases found that were registered in the Iraqi Cancer Registry. The average age-standardized incidence rate (ASIR) equaled 37.883, with a clear annual increase observed in the statistical data presented and average annual percentage change (AAPC) being 3.192% [12].

More recent findings suggest an increase in the incidence rate. Al-Asadi studied the Iraqi Cancer Registry from 2012 to 2022 and discovered 63,446 newly diagnosed women with breast cancer. The overall adjusted incidence rate in this interval was 46.68 per 100,000 women, increasing from 36.61 per 100,000 women in 2012 to 61.89 per 100,000 women in 2022. The research discussed the average annual percentage change of 4.83%, which suggests the increasing trend of the disease occurrence [13].

A similar conclusion could be drawn from the larger study of cancer occurrence trends in Iraq in the period from 2000 to 2016, which showed that the incidence of breast cancer grew significantly. For instance, the analysis of the Iraqi Cancer Registry data from 1999–2019 revealed that breast cancer was diagnosed at the highest rate among the major cancers in Iraq in 2019 (the incidence rate was 18.17 per 100,000 population and the age-specific rate was 29.93 per 100,000 population) [14].

It should be noted, though, that the rising incidence figures based on registries should be interpreted carefully. An increased number of recorded cases can reflect both a real increase in the incidence of the illness and possible improvements or alterations in diagnostic methods, health services used, population composition, and registration of cancer. Thus, trends in registries must not necessarily be assumed to represent the corresponding rise in the biological risk of breast cancer [15].

Table 1. Selected national indicators of breast cancer incidence in Iraq

Indicator	Finding	Study period
Registered breast cancer cases	23,792	2000–2009
Breast cancer as a proportion of female cancers	33.8%	2000–2009
Registered breast cancer cases	72,022	2000–2019
Average ASIR	37.883/100,000	2000–2019
AAPC	+3.192%	2000–2019
Newly diagnosed breast cancer cases	63,446	2012–2022
Overall ASIR	46.68/100,000	2012–2022
ASIR in 2012	36.61/100,000	2012
ASIR in 2022	61.89/100,000	2022
AAPC	+4.83%	2012–2022

Breast cancer compared with other cancers in Iraqi women

When compared to other types of cancers among women in Iraq, the epidemiological relevance of breast cancer becomes more evident. In its 2022 assessment, GLOBOCAN found over 21,558 new cases of uterine cancer diagnosed among Iraqi women, of which over 8,626 were breast cancer cases, indicating that breast cancer was the most diagnosed cancer with approximately 40% of all new cancer cases reported in 2022 [16].

In examining the incidence of breast cancer in Iraq, the Iraqi cancer control programme also reported it as one of the leading causes of cancer. This was supported by the 1999-2019 national cancer report where breast cancer rates were found to be the highest among other types of cancers in Iraq in 2019 [17].

Table 2. Selected leading cancer types among Iraqi females according to GLOBOCAN.

Cancer type	Estimated new cases	Percentage of female cancer cases
Breast	8,626	40.0%
Thyroid	1,241	5.8%
Leukemia	1,066	4.9%
Colorectum	1,008	4.7%
Ovary	1,002	4.6%
Other cancers	8,615	40.0%
All cancer sites	21,558	100%

The predominance of breast cancer in Iraqi women is also evident in regional populations. For instance, a population-based survey conducted in Erbil and Duhok between 2013 and 2019 noted that female breast cancer is the most significant one among women in both governorates . This shows that breast cancer is important in the cancer profile of Iraqi women, however, caution should be exercised while generalizing regional registry results to the whole country [18].

Age distribution of breast cancer in Iraqi women

Age remains one of the significant epidemiological features of breast cancer. Through the investigation of the national Iraqi Cancer Registry from 2000 to 2019, the rise in breast cancer diagnosis among those aged 40–49, 50–59, 60–69, and 70 and above has been remarkably significant. The scale of the increase reached its highest level among the older population, especially among women aged 70 and more (+7.943%) followed by women aged 60–69 years (+5.551%) [19] .

In previous national reports, breast cancer diagnosis was more prevalent in women aged below 50. In the time frame of 2000-2009, the mean age at diagnosis was representative of 52 years in total, while the median age was at 49 years. Base on the conducted research on Kurdish women from Sulaimaniyah, the mean age at diagnosis reached 49.42 years and the largest incidence rate was accounted for women at 45-49 years' age group [20].

A study that was hospital-based was carried out at the National Center of Cancer in Iraq in 2018 and it showed that 45% of the patients who took part in the study were those who were younger than 50 years of age and 25% of the patients were younger than 45 and below twenty since it was carried out in a hospital which means that this percentage cannot be considered as representative of the age distribution of breast cancer cases in Iraq.

Table 3. Age-related characteristics of breast cancer reported in Iraqi studies

Study population	Study period	Main age-related finding
Iraqi women	2000–2009	Median age at diagnosis: 49 years; mean age: 52 years
Iraqi women	2000–2019	Significant incidence increases in age groups 40–49, 50–59, 60–69 and ≥70 years
Iraqi Kurdish women in Sulaimaniyah	2011–2013	Mean age at diagnosis: 49.42 years; peak incidence at 45–49 years
Patients at National Center of Cancer	2018	45% were <50 years and 25% were <45 years

Evidence suggests that the condition of breast cancer affects Iraqi females regardless of their age. It seems that the age may play an important role in terms of increasing the incidence rate, but studies on particular regions/areas in Iraq show that quite a number of patients are diagnosed at ages below 50 years out of those women who experience the disease. This is vital information when dealing with early detection and control of cancer [21].

Geographical distribution of breast cancer in Iraq

In Iraq, discrepancies in cancer incidence have been noted. A review of data collected from the Iraqi cancer registry during the years of 2013 to 2018 indicates that cancer cases are not uniformly distributed across the provinces and that differences exist in terms of registered cases in different governorates. It is believed that demographic changes such as population displacement may have contributed to the excess in geographically distributed cases of cancer within the country during the study period.

However, further information is available from the regional perspective of Kurdistan. A population-based study of cancer occurrence in Erbil and Duhok conducted for a period of seven years (from 2013 to 2019) showed that breast cancer was diagnosed most often among females during the period. Altogether, the number of registered breast cancer cases in Erbil totaled 3406 females or 39.4 cases for each 100,000 females, while the number registered in Duhok was 1205 females or 18.1 cases per 100,000 females [22].

Table 4. Breast cancer registration in Erbil and Duhok, 2013–2019

Governorate	Female breast cancer cases	Incidence per 100,000	Study period
Erbil	3,406	39.4	2013–2019
Duhok	1,205	18.1	2013–2019

The geographical variations reported in cancer registration statistics should be regarded with caution. The differences in incidence rates recorded may depend on factors such as population size, age structure, availability of healthcare, referral practices, migration, diagnosis capabilities, and coverage of cancer registries. Therefore, the higher reported incidence in one governorate alone would not justify the conclusion that women residing in that governorate are at a higher biological risk of developing breast cancer.

Risk factors associated with breast cancer

Breast cancer is a complex disease that arises from the interplay of genetic, hormonal, reproductive, demographic, and lifestyle factors. Each individual risk factor has different levels of strength based on evidence, and the relationship could differ across age and menopausal status [23]

Genetic and family history

A family history of breast cancer is an important risk factor, especially if close relatives develop breast

cancer or being diagnosed at a young age. Genetic predisposition to breast cancer can also increase the risk of developing breast cancer due to genetic variations. Recent studies conducted in Iraq investigated a number of polymorphisms and found that some of these studies are associated with breast cancer susceptibility among Iraqi women. However, there are still some limitations of genetic studies conducted in Iraq in comparison to evidence found on a global level.

Age and reproductive factors

Advanced age is a recognized risk factor for breast cancer, even so, studies in Iraq demonstrate that many women receive diagnosis before reaching fifty years. Different reproductive factors may also play a role in the treatment of this type of cancer. The timing of having a child for the first time, total number of children, breast-feeding history and timing of menopause have been analyzed as risk factors for breast cancer. A recently conducted case-control study in Iraq has confirmed that breast cancer might be linked to various reproductive and sociodemographic characteristics.

Hormonal factors

Hormonal exposure is essential in the development of breast cancer. Increased exposure to hormones produced by the body and some types of treatments that use external hormones may be linked to the breast cancer risk. Compelling evidence from multiple analyses indicates results of different hormonal exposures related to estrogen and progesterone hormone levels and their influence on a person's health.

Lifestyle and metabolic factors

There are certain lifestyle factors that can contribute to breast cancer. For instance, obesity has been shown to be a significant risk factor for breast cancer. On the other hand, physical activity is one of the activities that has been shown to lower risk factors for breast cancer. Smoking and drinking alcohol, with their harmful substances, will increase the risk of cancer. It is also possible that dietary patterns have an influence on risk, but evidence is still not available for individual products and food components.

The evidence provided by Iraq is generally consistent with the above findings. A case-control study conducted in Al-Najaf in 2025 has indicated that breast cancer is related to smoking and being overweight or obese, the consumption of particular foodstuffs, and some reproductive and social factors]. Nevertheless, as the study was limited to the hospital-based samples, the findings cannot be treated as representative for the entire population of women in Iraq [24].

Table 5. Major risk factors associated with breast cancer

Risk factor	General evidence	Evidence reported in Iraqi women
Increasing age	Established risk factor	Associated with increased risk
Family history	Increased risk, particularly with close affected relatives	Reported as an important factor
Genetic susceptibility	Certain inherited variants increase risk	Genetic associations have been reported
Obesity	Increased risk, particularly after menopause	Association reported
Physical inactivity	Associated with increased risk	Lifestyle concern reported
Smoking	Associated with increased risk	Association reported
Hormonal exposure	Risk varies according to exposure type and duration	Reproductive/hormonal factors investigated
Reproductive factors	Several reproductive characteristics influence risk	Associations reported in Iraqi studies
Diet	Evidence varies between dietary factors	Dietary associations reported

Clinical characteristics of breast cancer among Iraqi women

Breast cancer is a significant healthcare concern for the women of Iraq and shows high variability between age at diagnosis, clinical signs, types of tumors, and molecular subtype. Both international and national studies suggest that many patients in Iraq are diagnosed before they turn 50 years of age.

Age and clinical presentation

Studies from Iraq indicate that the average age at diagnosis among patients is around 49–50 years. A national study in 2018 stated that 45% of cases were diagnosed before they turned 50 years with a quarter of them before reaching 45 years. Newer evidence from Iraq indicates that cases of breast cancer at the premenopausal stage continue to be very high [25].

Stage at diagnosis

Several studies conducted in Iraq indicate advanced stage of disease at the time of diagnosis. For example, in a survey conducted by the National Cancer Center in 2018, 42.9% of participants were diagnosed with stage III cancer while 25% had stage IV cancer. Metastasis was found in 24.1% of patients. Similarly, studies from Sulaimaniyah demonstrated a large percentage of patients diagnosed with advanced stage of cancer. This is an important observation in relation to early diagnosis since diagnosis in advanced disease limits the possibility of treatment and makes it more complicated [26].

Histological and molecular characteristics

Invasive ductal carcinoma is the commonest type of histological data recorded in females in Iraq. The study of molecules showed differences in the expression of various receptors, including estrogen and progesterone. The recent study from Iraq shows 81.8% of the patients being ER positive and 73.7% being PR positive, while the occurrence of Luminal A-type tumors was around 61.7%. Another study also found Luminal A to be the most prevalent type of a tumor with its prevalence differences across studies.

Table 6. Selected clinical characteristics of breast cancer among Iraqi women

Characteristic	Finding
Mean age at diagnosis	Approximately 49–50 years
Patients <50 years	45%
Patients <45 years	25%
Stage III at diagnosis	42.9%
Stage IV at diagnosis	25%
Metastasis	24.1%
Most common histological type	Invasive ductal carcinoma
ER positivity	81.8%
PR positivity	73.7%
Luminal-A-like subtype	61.7%

Challenges in early detection of breast cancer in Iraq

Breast cancer detection is still a significant issue in Iraq. Several studies have pointed out various obstacles, including lack of knowledge, delayed medical visit, screening practices, access to healthcare, and socio-economic status.

Limited awareness and knowledge

Awareness of breast cancer symptoms and ways to discover the disease early on makes it possible to have timely medical consultation. In Sulaimaniyah, it was revealed that women with little knowledge about the symptoms of breast cancer were also the ones that would seek a consultation at a later time. According to a study conducted in Baghdad in 2026, 68.3% of women with breast cancer had never performed breast self-examination, while 79.4% did not undergo screening before diagnosis [27].

Delayed presentation

Another serious challenge is patient delay. According to a research study in Kurdistan-Iraq, the study indicated that the median time delay of seeking medical help was 30 days after progressing symptoms. When it came to longer delays, some factors such as socioeconomic status, the chronic disease condition, and health motivation amongst others played a significant role. Similarly, the finding of another study conducted in

Sulaimaniyah showed that many patients did not seek medical help simply because of poor awareness and also the advanced nature of the clinicopathological characteristics of their disease [28].

Limited screening and healthcare access

Another issue is the availability and utilization of screening services. A study conducted on barriers to cancer care in Iraq showed that there is no countrywide population-based breast cancer screening program for women without symptoms and that early detection services are dependent on awareness and socioeconomic conditions. There are also some additional problems in using the screening which include financial issues, accessibility problems, and communication with health care officers [29].

Sociocultural and psychological barriers

Women have been deterred from engaging in screening or seeking medical advice due to fears, shyness, misinformation, and worries associated with obtaining medical care. One recent study conducted in Baghdad found poor communication with physicians, a lack of power in decision-making, and fear of seeing doctors to be significant obstacles. This study emphasizes that recognizing diseases in the early stage relies not only on available medical services but also on women's willingness and ability to their services.

Table 7. Major challenges affecting early detection of breast cancer in Iraq

Challenge	Evidence from Iraqi studies
Limited awareness of symptoms	Associated with delayed presentation
Low breast self-examination practice	68.3% did not perform self-examination in a 2026 Baghdad study
Low screening utilization	79.4% had not been screened before diagnosis
Patient delay	Median delay of 30 days reported in Kurdistan-Iraq
Financial barriers	Associated with advanced presentation in recent Baghdad data
Communication difficulties	Reported by 90.8% of participants in the 2026 Baghdad study
Lack of nationwide screening	Reported as a health-system barrier
Fear and embarrassment	Reported barriers to seeking medical care

Screening and early detection methods

Early detection of breast cancer involves recognizing the symptoms and applying the appropriate means of testing. Early detection and proper treatment are crucial in improving the outcome of breast cancer.

Mammography

The most common imaging test for population-based screening is mammography. The recommended age and the interval period vary internationally based on population and health system. For instance, the 2024 USPSTF guidelines recommend biannual mammography among women aged 40-74 years, although others recommend a different age range and interval [30].

The significance of mammography is supported by results from the Iraqi setting. In a 2024 study from Iraq, among 1,500 women aged 40 years and above, 83% of cancers discovered by biopsy were classified at stages I or II. However, these results need to be taken with consideration of the nature of the study and not that of national screening program.

Breast ultrasound

Breast ultrasound is very helpful in evaluating women with lumps. Breast ultrasound is also an excellent diagnostic tool in women with dense breasts. A recent study from Iraq reported that density of the breasts impacted the sensitivity of the mammogram and that ultrasound was an additional source of useful diagnostic information. A second Iraqi 2025 study reported that ultrasound BI-RADS categorization along with tissue sampling could differentiate between benign and malignant breast lumps.

Magnetic resonance imaging

Breast MRI should in most cases not replace mammography as a screening test for women at average risk of breast cancer. It has a significant role for women at high risk of breast cancer or in some diagnostic cases. In the recently published Baghdad study, MRI has proved to be highly sensitive, but less specific than other methods.

Breast self-examination and clinical assessment

Breast self-examination can promote awareness of the usual appearance of the breast and help women identify any new change, but it should not be used as an alternative to proven screening programmes. A study of women with breast cancer in Iraq reported that a number of women had poor knowledge regarding breast self-examination. A study in Erbil found that 87.3% of women in the study had no history of pre-test prior to diagnosis and only two women had previous mammogram.

Table 8. Main methods used for breast cancer screening and early detection

Method	Main role	Considerations in Iraqi women
Mammography	Population screening and detection of suspicious lesions	Limited screening participation remains a challenge
Ultrasound	Diagnostic assessment and evaluation of dense breasts	Useful complementary method
MRI	Additional imaging, particularly for selected high-risk women	High sensitivity but greater resource requirements
Breast self-examination	Breast awareness and recognition of changes	Knowledge and correct practice remain limited
Clinical assessment	Evaluation of symptoms and breast abnormalities	Important for women presenting with symptoms
Biopsy	Histopathological confirmation of suspicious lesions	Required for definitive diagnosis in suspicious cases

Screening challenges in Iraq

Although several diagnostic modalities are available screening is still underused in some Iraqi communities. Cultural factors, low levels of awareness, lack of screening services and socio-economic conditions may be barriers to screening. Patient-navigation strategies have been suggested in some countries to help mitigate the delay from detection and diagnosis to treatment in the setting of fragmented or inaccessible health systems.

Discussion

Breast cancer is the most commonly diagnosed cancer among women in Iraq: GLOBOCAN 2022 estimated 8,626 new cases, about 40% of all cancers in women (Table 2). Registered incidence has risen, with the age-standardized rate increasing from 36.61 to 61.89 per 100,000 women between 2012 and 2022 and an average annual percentage change of +4.83% (Table 1). A considerable share of women are diagnosed before the age of 50, while the largest increases in incidence were observed in the oldest groups (Table 3). Many women present with advanced disease: in a 2018 national series 42.9% had stage III and 25% had stage IV cancer (Table 6). The studies also point to the same group of barriers to earlier diagnosis: limited awareness of symptoms, low use of breast self-examination (68.3% had never performed it in a 2026 Baghdad study) and of screening (79.4% had not been screened before diagnosis), patient delay (median 30 days in Kurdistan-Iraq), the absence of a nationwide population-based screening programme, and sociocultural and psychological barriers (Table 7) [31].

The rise in registered incidence should not be read as a rise in biological risk alone. Registry figures also reflect changes in diagnosis, use of health services, population structure and cancer registration. The same caution applies to the geographical differences, such as the higher registered incidence in Erbil (39.4 per 100,000) than in Duhok (18.1 per 100,000), which cannot be taken as evidence that women in one governorate are at higher risk.

The age findings need to be read in the same way. The mean age at diagnosis of about 49–50 years and the share of patients younger than 50 show that the disease affects relatively young women in Iraq, whereas the fastest relative increases in registered incidence were in women aged 60 and above. These two observations are not contradictory, because one describes who is diagnosed and the other describes how fast registered rates are changing; the hospital-based figures, however, cannot be taken as the age distribution of all Iraqi cases.

The high proportion of advanced disease is consistent with the barriers described. Low awareness, low screening use and delay in seeking care make later-stage presentation more likely, and late diagnosis limits the

options for treatment and makes it more complicated. The evidence also shows that early detection depends not only on the availability of services but also on women's willingness and ability to use them, which is influenced by fear, embarrassment, misinformation and poor communication with physicians. The Iraqi findings on risk factors, namely obesity, smoking, physical inactivity and reproductive factors, agree in direction with the international evidence, but most of the Iraqi studies are hospital-based or regional, and the genetic studies are still limited [32].

Several practical priorities follow from the findings. First, public and professional awareness of symptoms should be raised, including the correct technique of breast self-examination, which helps women to notice changes but cannot replace screening. Second, imaging services should be used efficiently: mammography is the main screening tool, ultrasound is a useful complement, especially in dense breasts, and MRI has a role in selected high-risk or diagnostic cases. The age at which and the interval with which screening should be offered in Iraq cannot be determined from the studies reviewed, since international guidelines differ. Third, women with a suspicious finding need prompt referral for testing and treatment, and patient navigation, which has been suggested in some countries for fragmented or inaccessible health systems, may help to shorten the interval from detection to treatment. Fourth, cancer registration should be strengthened, so that trends and regional differences can be interpreted with more confidence [33].

This review has several limitations. It is a narrative review without a formal search protocol or quality scoring, so some relevant studies may be missing and the weight given to individual studies is a matter of judgement. The studies are heterogeneous in design, period and population, and the figures were not pooled. Many of them are single-centre or regional studies, mostly hospital-based, and are not representative of all Iraqi women; some registry data cover periods that are now several years old. Registry coverage and quality vary between studies. Finally, the associations reported for risk factors come mainly from observational designs and do not prove causation.

Future work should include population-based studies using standardized national registry data, studies of risk factors, including genetic factors, in representative samples of Iraqi women, and evaluation of screening and patient-navigation pilots. Research on the awareness of women and on the sociocultural barriers to screening would help to design interventions that suit local conditions.

Conclusions

Breast cancer is a significant and growing health burden for Iraqi women, many of whom present at a relatively young age, and some with advanced disease. Several risk factors including genetic, reproductive, lifestyle, socioeconomic and access to care reasons account for this burden and late presentation. Enhancing public and professional awareness, screening and diagnostic services, registries and early access to treatment need to be developed.

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