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Study of Risk Factors for Breast Cancer in Iraqi Patients

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Abstract **Original Research Article**

Breast cancer (BC) is the most commonly malignancy in women. In the United States, breast cancer is the most common female cancer and the second most common cause of cancer-related death. Information on established risk factors for breast cancer in humans is examined. The key determinants of risk include age, geographic area of residence, age at first birth, specific markers of ovarian activity, benign breast disease history, and breast cancer in the family. A review of particular etiologic theories is also conducted, taking into account how well they explain or align with the known patterns of risk distribution Although young women with bilateral disease appear to be most significantly implicated by familial variables, it is unknown whether these factors are genetic or environmental in character. The user conducted searches in the PubMed, Web of Science, and Scopus databases without setting any period limitations. The search term comprised the subsequent terms.: breast cancer, risk factors, incidence, and mortality and a com-bination of these terms Additionally, a comprehensive search was conducted to identify a compilation of relevant papers. Especially in light of Iraq's alarmingly high breast cancer death rate, the research emphasizes the enormous worldwide burden of breast cancer. It highlights a number of important risk factors among Iraqi women, such as chronological age, level of education, employment (particularly housewifery), genetics, reproductive health, and personal habits. These results highlight the need for early identification tools and focused prevention actions.

Keywords: Breast cancer (BC), risk factors, chronological age, personal habits, female hormones.

INTRODUCTION

Thousands of women around the world suffer from breast cancer, including thousands in Iraq. Breast cancer is one of the biggest problems facing international health. It accounts for 23% of all female malignancies diagnosed recently, making it the most common form of cancer in women. In Iraq, breast cancer kills more women than any other type of cancer. It is also the most common disease among all females in that country. Even worse than the incidence rate of bronchogenic cancer has been its steeply rising trend [1].

There are various factors contributing to the complexity of breast cancer, including genetic predisposition, environmental variables and dietary habits. These are all risk factors. Getting a good handle on them is key to putting preventative measures into effect [2]. Regardless of what corner of the globe one finds oneself in or which culture is involved, breast cancer is a terrible plaffage suffered by millions and itself in fact over the last few years it has been increasingly apparent that there is a need to conduct research focusing on particular regions, so as with this complex network of risk variables able to unravel this multifaceted illness. Conservation of sites getting a lot attention because the incidence of breast cancer has been increasing alarmingly in one area--Iraq [3]. Therefore further investigation is necessary into the causes of this disease among Iraqis. Risk factors for Iraqi breast cancer hopefully, this type of research will benefit the third area: Public health programs, clinical practice and policymaking. Factors related to genes, the environment and behavior are explored in detail. A blueprint for devising individualized preventive approaches as well as early detection programs is proposed. This work fills a major hole in the knowledge set when it comes to epidemiology of breast cancer in Iraq. It provides an important reference for subsequent study that may help develop more effective treatments [4].

This review examines the complete research on risk factors for breast cancer in Iraqi patients, pulling together a wide range of study results. In studying the special genetic predispositions, environmental factors

and socio-cultural determinants specific to this population we strive for a more complete explanation of why breast cancer seems so prevalent among these women. As a result of this in-depth investigation, we hope to impart healthcare professionals, researchers and policymakers with further insight into aspects that govern the pathophysiology and can contribute towards enhanced prevention methods amenable to Iraqis [5].

MATERIALS AND METHODS

Search Method

The user conducted searches in the PubMed, Web of Science, and Scopus databases without setting any period limitations. The search term comprised the subsequent terms.: breast cancer, risk factors, incidence, and mortality and a com-bination of these terms Additionally, a comprehensive search was conducted to identify a compilation of relevant papers. Only studies published in the English language, which addressed several facets of breast cancer such as epidemiology and risk factors, were incorporated into the analysis. Qualitative studies, studies related to therapeutic and diagnostic aspects, and studies with insufficient focus on the goals of this study were excluded from the present study. Studies were selected based on the review of the article title, abstract, and full text of the articles. Finally, 38 articles published in English were included in the study.

Risk Factors:

1. Genetic predisposition as a risk factor in Iraqi patients

1.1. Examination of genetic analyses and studies conducted on Iraqi patients

Genetic analyses and studies on Iraqi patients have found that genetic predisposition is a risk factor for breast cancer in this population. Breast cancer is the most common type of cancer among Iraqi women, accounting for a third of all registered female cancers and being the leading cause of cancer-related death in women. Family history plays a significant role in breast cancer risk, with the severity depending on factors such as the degree of family involvement, age, and number of affected relatives. It is believed that this interaction between genetics and shared environmental exposures contributes to the risk [6].

Around 5-10% of breast cancer patients in Iraq have a genetic familial predisposition due to germline mutations. Research has emphasized the importance of family history assessment in promoting screening for breast cancer control. However, there are conflicting findings regarding the characteristics of familial breast cancer among Iraqi patients. Some studies suggest more aggressive tumours and higher rates of ER/PR negativity, while others report lower prevalence of HER2-positive tumours compared to previous reports [7].

Efforts are being made worldwide to personalize and refine breast cancer screening based on individual risk. In Hong Kong, a pilot program recommends stratified screening for women aged 44 to 69 with specific combinations of risk factors. Taiwan has also adopted a stratified approach in the Keelung Community-based Integrated Screening, prioritizing women who may benefit from mammography based on family history or computed risk scores [8].

Assessing individual breast cancer risk is crucial for guiding counseling on surveillance, risk reduction strategies, and genetic testing. Risk assessment should not be used to exclude women from appropriate screening but rather to identify those who could benefit from enhanced screening or risk-reduction strategies [9]. By taking into account a woman's family history, medical history, reproductive history, and mammography data, validated risk assessment systems like as the Gail model may predict her risk over time [10].

1.2. Identification and discussion of specific genetic risk factors

As the most prevalent cancer in women and the top killer of cancers in Iraq, breast cancer deserves special attention from the country's healthcare providers. Hereditary factors, hormonal changes, and environmental factors all have a role in breast cancer development. One established risk factor is a family history, the impact of which may vary with age, the level of family engagement, and the number of afflicted relatives. A hereditary propensity resulting from certain gene mutations affects around 5-10% of breast cancer patients. The eleventh Breast cancer risk assessment techniques that include personal risk variables have been developed. One popular method for estimating a woman's breast cancer risk using her own data is the Gail model. This method need more data from mammography sessions to increase accuracy in Asian populations like Iraq, however, because it was first designed for white women. A larger density of breast tissue is associated with an increased risk of breast cancer in women [6].

Patients having a positive family history of breast cancer have been the subject of research in Iraq. More aggressive malignancies and hormone receptor negative results are common in these individuals [7]. However, HER2 positive rates vary among studies, therefore further study is required to comprehend these features completely [8].

Breast cancer screening in Iraq has been regionally divided to better meet the needs of patients. Regular mammography screenings are advised for women at high risk, while those at lesser risk should get a physical examination once a year. Women in Hong Kong who have certain risk factor combinations are the focus of similar initiatives [12].

Finally, it is clear that genetic predisposition is a major factor in the risk of breast cancer in Iraqi patients.

The development of screening programs, risk assessment techniques, and the identification of certain genetic risk factors are all ongoing endeavors with the goal of better early diagnosis and prevention. If Iraq is serious about reducing the prevalence of breast cancer and identifying those at highest risk, it must prioritize public education on breast health care [9].

1.3. Implications for prevention and early detection strategies

Iraq has a serious problem with breast cancer, which is the most common malignancy in women and the main cause of cancer-related deaths in this country. Factors including age, level of family participation, and number of afflicted relatives determine the severity of the risk associated with a family history of breast cancer, which is recognized to be a risk factor. Some mutations put some breast cancer patients at a higher risk than others; this accounts for around 5-10% of cases. According to studies on family history evaluation, breast cancer screenings are crucial [11]. Stratified screening is being used in Asian communities to identify individuals depending on their risk factors. A popular technique for estimating a woman's risk of breast cancer, the Gail model takes into account her family history, medical history, and reproductive history, among other personal details [13]. However, additional information from mammography visits is necessary for accurate risk assessment in Asian populations. Women with higher breast density are at a higher risk of developing breast cancer. False positive results from mammography also indicate an increased risk [6].

Efforts are underway worldwide to refine breast cancer screening based on individual risk factors. In Hong Kong, a pilot program recommends mammography screening every two years for women aged 44 to 69 with certain risk factors. This program uses risk assessment tools developed by the University of Hong Kong. Given this background, the Keelung Community-based Integrated Screening program in Taiwan adopts a stratified approach. High risk women are prioritized for mammography screening while others receive annual physical examinations [7].

Because there is no specific clinical indicator of familial breast cancer in Iraq, careful screening, periodic follow-up and public education are necessities if high-risk groups can be identified [8].

To sum up, genetic predisposition is a significant risk factor for breast cancer in Iraqi patients. Risk factor stratified screening is a way to enhance the accuracy in identifying high-risk persons [14]. Risk-assessment tools should be checked in the actual environment; as for prevention, healthy lifestyle recommendations are involved. It is necessary to optimize early detection strategies based on an understanding of the natural course of breast cancer as well as variation in test sensitivity due to differences in risk levels [15].

2. Reproductive history as a risk factor in Iraqi patients

2.1. Evaluation of epidemiological research that examined the family history of breast cancer in Iraqi women.

Among Iraqi patients, reproductive history significantly increases the risk of breast cancer. Factors that increase the likelihood of getting breast cancer include chronological age, degree of education, smoking status, BMI, amount of physical activity, past experiences with abortion, dietary habits, and a personal or family history of the illness. Those most at risk are housewives and those with a history of breast cancer in their immediate family. Women who are not pregnant are at a reduced risk, although having more than three children is not healthy [1]. For women who have the BRCA1 mutation, the risk of breast cancer is more strongly linked to reproductive variables. The success of screening and preventive initiatives depends on our ability to identify and address these risk factors. Nevertheless, keep in mind that these risk factors could change throughout demographics [16]. To further understand the processes at work and to create targeted approaches to early identification and prevention in Iraq, more research is required. Reducing the incidence of breast cancer in this group is vital, and public awareness efforts and frequent breast self-exams play a key role in this [12].

2.2. Identification and discussion of specific reproductive risk factors

Breast cancer risk factors in Iraqi patients include reproductive history. Because milk affects levels of insulin-like growth factor-I [IGF-I], it may raise the risk. Less obvious connections exist with other dairy products [11]. Carriers of the BRCA1 mutation are more strongly linked to an increased risk of breast cancer by reproductive variables than those carriers of the BRCA2 mutation. Factors that protect carriers of the BRCA1 mutation include having a later age at first birth, nursing for at least one or two years, and a later age at menarche [17]. Other known risk factors include advanced age, menstrual cycles, obesity, hormone use, and family history [8]. Iraq must implement screening programs and public awareness initiatives to diagnose and prevent breast cancer [12].

2.3. Implications for prevention and early detection strategies

When it comes to breast cancer risk factors in Iraqi patients, reproductive history plays a major role. There is a 38% reduction in the risk of breast cancer for mothers who give birth later in life and a 37% reduction for mothers who breastfeed for one to two years, according to [18]. In a similar vein, delaying menarche by 3 years lowers the risk [11]. In women who have the BRCA1 mutation, these variables have an effect on the

risk of breast cancer. Because of this, tailored preventative initiatives have to concentrate on this particular genetic grouping [19, 17]. One measure is to promote early estimates, breastfeeding and appropriate reproductive health practices in Iraqi patients. Many more studies are needed to verify these results, and understand the underlying processes [20, 14, 21].

3. Hormonal influences as a risk factor in Iraqi patients

3.1. Determinants of breast cancer risk factors in Iraqis: a hormonal perspective

Several variables impact the incidence of breast cancer in patients from Iraq. It is well-known that hormonal impacts, especially estrogen, provide a significant danger [18]. There is also an older women component; the risk increases in proportion to age [11]. Additionally, age is a factor: the older you are, the greater your risk [19]. Risk also depends on when menarche occurs--the later the better. The same goes for late or early eventual total depletion of ovarian resources (menopause). But early childbirth reduces the risk compared to later one [2]. Other risk factors include family history, benign breast disease and previous biopsy. Regular exercise and breast feeding reduce risk factors [17]. The contribution of diet is still uncertain, but eating many fruits and vegetables may be protective [8]. More research is needed to clearly define these risk factors so as to develop successful prevention and screening strategies [9, 21].

3.2. Identification and discussion of specific hormonal risk factors

Breast cancer is a complex illness affected by many factors, including hormones [18]. It is particularly important that Iraqi patients understand the hormonal influences in contributing to breast cancer [11]. Old age is one of the risk factors, and women over 55 are more at risk [19]. Menarche early and menopause late also raise the risk. Reproductive factors are also involved, with an earlier first birth reducing risk and pregnancy carrying a transient rise in risks followed by a long-term fall. Family history, benign breast disease and previous biopsy of the breast also increase risk [16]. Hormonal factors, particularly estrogen, are major contributors to breast cancer [7]. High BMI in postmenopausal women increases risk, while regular exercise decreases it [17]. The role of specific dietary factors remains uncertain. [8] In Iraq, considering various risk factors such as age, marital status, pregnancies, education, social habits, hormonal use, and family history is crucial for breast cancer incidence [21].

3.3. Implications for prevention and early detection strategies

Hormonal factors, particularly estrogen, play a significant role in the risk factors for breast cancer in Iraqi patients [11]. Pregnancy has dual effects on breast cancer risk, with short-term risk increasing but long-term risk decreasing after having at least one child. Family history, benign breast disease, and previous breast biopsy are also strong risk factors [19]. Reproductive factors such as nulliparity and longer intervals between menarche and age at first birth increase the risk, while parity and breastfeeding decrease the risk of certain types of breast cancer [13]. Hormonal changes related to breastfeeding or regular aerobic exercise can impact an individual's risk [22]. While specific dietary factors' relation to breast cancer causation is unclear, overall lifestyle choices that promote a healthy weight and limit alcohol consumption are important [8]. Understanding these risk factors has implications for prevention and early detection strategies [9]. Healthcare professionals can identify individuals with higher risks through family history and reproductive factors and implement tailored surveillance and prevention strategies [14]. Early detection is crucial in reducing mortality rates associated with breast cancer [23]. By considering these factors, healthcare professionals can make a significant impact on reducing the burden of breast cancer in Iraqi patients [24, 25].

4. Lifestyle choices as a risk factor in Iraqi patients

4.1. Analysis of lifestyle-related studies focused on breast cancer among Iraqis

Several modifiable risk factors linked to lifestyle have been discovered in studies on breast cancer among Iraqis. Some of these risk factors include [11]: drinking alcohol, being overweight or obese, not exercising, not nursing, not using birth control, getting menopausal hormone treatment, and having breast implants. Although these variables alone do not ensure breast cancer, there are steps one may do to lower their risk, as mentioned in reference [13]. Breast cancer risk factors in this group include, but are not limited to, age at menarche, age at first delivery, illiteracy, smoking, and a family history of cancer [26]. Breast cancer is a serious problem in Iraq, but there are ways to lessen its impact via health education campaigns that highlight these danger signs [4]. Prolonged exposure to estrogen during early menstruation raises the risk of breast cancer, which has been consistently associated with an early age of menarche. Environmental oncogenic risk factors and certain lifestyle choices have also been linked to genomic damage and an elevated risk of breast cancer [20]. To lower their risk and maybe find the illness early when treatments are most successful, women should be physically active, avoid alcohol, have a healthy weight, and get frequent screenings. When it comes to the incidence rate of breast cancer, which is by far the most common type among Iraqi women, age parity family history radiation exposure smoking and genetics are all factors. To reduce the risks, we must raise awareness through activities aimed at encouraging early screening and communicating with women about breast cancer symptoms. One step toward lowering this risk is to educate oneself about what choices one makes in terms of lifestyle and the variables that increase or decrease probability. Lessening the impact of breast cancer in Iraq should focus on health education, early screening and

raising people's awareness that it is a treatable disease. How can we prevent certain kinds of tumors? We lack the understanding to determine what elements in our environment increase the incidence rate for breast cancer among younger women [25].

4.2. Identification and discussion of specific lifestyle-related risk factors

Because breast cancer is a serious health problem for this group of patients, it's important to identify and understand the risk factors [11]. Lifestyle plays a huge role in the likelihood of getting breast cancer. Risk factors for breast cancer related to lifestyle include excessive alcohol intake, obesity and lack of exercise [19, 26].

Other risk factors include not breastfeeding or not having children at all, and the age of first child being more than 30. Hormonal contraceptives and hormone replacement treatment throughout menopause are other variables that increase the risk [16]. Iraqi patients may lower their risk of breast cancer by making educated decisions regarding alcohol intake, keeping a healthy weight, exercising regularly, and thinking about whether to have children [20, 4, 25].

4.3. Implications for prevention and early detection strategies

Breast cancer risk factors in Iraqi patients have important implications for prevention and early detection strategies [11]. Lifestyle choices such as alcohol consumption, obesity, lack of physical activity, not having children or breastfeeding, using birth control, menopausal hormone therapy, and breast implants are all identified as risk factors. However, having these risk factors does not guarantee that an individual will develop breast cancer [19]. Nearly 1 in 4 breast cancers can be prevented through lifestyle choices, emphasizing the importance of informed decisions about health and habits [26]. Maintaining a healthy weight, regular exercise, and avoiding alcohol can help reduce the risk [17]. Being breast aware and attending regular screenings also increase the chances of early detection when treatments are most effective [4]. Dietary factors, particularly dairy and meat consumption, have conflicting results in relation to breast cancer risk. Specific subtypes of breast cancer may be associated with different risk factors, highlighting the need for further research [20]. In Iraq specifically, breast cancer is a significant health concern for women, with modifiable risk factors such as hormone replacement therapy use, obesity, sedentary behavior, low fruit and vegetable consumption, and alcohol consumption being prevalent. Targeted interventions are needed to reduce these risks. Overall, understanding the risk factors associated with breast cancer in Iraqi patients allows for the development of effective prevention and early detection strategies, which can significantly reduce the burden of breast cancer in this population [23].

CONCLUSION

Especially in light of Iraq's alarmingly high breast cancer death rate, the research emphasizes the enormous worldwide burden of breast cancer. It highlights a number of important risk factors among Iraqi women, such as chronological age, level of education, employment (particularly housewifery), genetics, reproductive health, and personal habits. These results highlight the need for early identification tools and focused prevention actions.

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