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Cancer and Breast Cancer Incidence Rates in Basra and Its Districts from 2017-2021

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Abstract

An escalating trend in breast cancer incidence was noticed worldwide and globally rushed over the last three decades. In Iraq, there is a lack of studies detailing the time-based and geographical distribution of cancer and breast cancer. The study aimed to address this gap by examining the incidence rates and trends of cancer and breast cancer in Basra city center and its districts over five years from 2017-2021. Data were collected from the Ministry of Health, The Iraqi Cancer Registry and related databases. The study included Basra Center, Diyar, Mudainah, Qurna, Hartha, Zubair, Shatt Alarab, and Abu Alkhaseeb districts. The annual incidence rate of cancer revealed consistent upward in Center, Zubair, and Abu Alkhaseeb. Shatt Alarab showed a higher rate among other districts while the center displayed the highest peaking at 144 in 2021. The results showed variable trends across these districts with Zubair and AbuAlkhaseeb demonstrating a consistent increase in breast cancer disease. The center showed the highest growth over the study period.

This study shed light on the localized trend of breast cancer in Basra and highlights the need for targeted awareness campaigns, activating the role of early detection clinics and the need for interventions in lifestyle.

Introduction

Excluding non-melanoma cancer, 18.1 million newly diagnosed cases are registered worldwide with a male-to-female ratio of 10:9.5 in 2020. The global cancer incidence rate is 206.9 or 178.1 new cases per 100000 males and females respectively (IARC, 2020). Breast cancer is the most common type of cancer in the world with an increasing number of annual registered cases. It is expected that the number of newly diagnosed cases to be 3 million with a mortality of 1 million



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by 2040 (Arnold et al., 2020). Commonly, breast cancer originates from either the inner lining of the milk ducts or the lobules that supply the ducts with milk (Sharma et al., 2010). In general, counteracting programmed cell death, uncontrolled division, increased angiogenesis, and the ability to metastasize all are contributors in cancer progression (Hanahan & Weinberg, 200). The increasing registry of breast cancer cases started to have its negative, mental, physical, and social life of the affected people and their families (Poorkiani et al., 20210). Many patients and environmental determinants are implicated in developing breast cancers such as age, elevated hormone levels, gene mutation race, and type of social life (Steiner et al., 2008; yager 2006; Majeed et al., 2014).

According to (WHO, 2023) Breast cancer survival fluctuates among countries and within the same country as well, and more or less 80% of deaths occur in low- and middle-income countries. Out of 10 newly diagnosed cancers, breast cancer represents 1 of these cases (Alkabban & Ferguson 2022). In North America, the 5 years survival rate exceeded 80% due to the early detection (Desantis et al., 2016). Over the last three decades the incidence rate of breast cancer increased and between 1990 to 2016 in countries from Asia and South America the incidence was more than double. Yemen, Saudi, Paraguay and Libya showed a rate of death exceeded double (Sharma, 2019).

Breast cancer incidence in Arab countries shows no clear trend due to inconsistent registry in many of these countries. Despite the incidence of breast cancer stayed less than the western countries for decades, recently the incidence rates became comparable to the western countries. This might be attributed to the screening programs that helped to early detection of breast cancer (Sadeeh & Abdel-Razeq; ChoChani et al., 2013; Alshamsi et al., 2013). Over two decades, from 2000-2019 breast cancer incidence in Iraq was 37/100000 case (Al-Hashmi, 2021).

To our knowledge, Overall trend and the geographical distribution of breast cancer over five years in Basra was not revealed by any other study. So, impetus is to detect the incidence rate and the overall trend of all types of cancer collectively focusing on breast cancer as the most common cancer and in city center of Basra and its districts.

Methodology

This study is descriptive of breast cancer cases from 2017 to 2021. Within a specific time frame, it involved comprehensive methodology to collect, analyze and interpret the data of cancers in



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Basrah city center and its districts. The work design is retrospective depending on the Ministry of Health's raw data, the Iraqi cancer registry, and relevant database. The cases under the study included all individuals who were diagnosed with breast cancer within the specified geographical region. Over the study period, the incidence rate was calculated as the number of new cases of breast cancer per 100000 person-year. The breast cancer temporal trend was concluded from the graphical representation which revealed the variation over the study time interval. The study was approved by the ethical committee and patient confidentiality was maintained. Regions included in the study are: Basrah Center, Diyar, Mudainah, Qurna, Hartha, Zubair, Shat Alarab and Abu Alkhaseeb districts. Percentages of breast cancer cases were calculated by dividing the number of cases by the total number of the region population each year.

The results

The incidence of all types of cancer in each district was calculated for each year. Center, Zubair & abu Alkhaseeb revealed a consistent increase over the five-year period. Despite the fluctuation noticed in center's data but it exhibited the highest rates of incidence among all districts throughout the study. The incidence rates were significantly increased from 124.8-126.9 in 2017 and 2018 and more substantial increase in 2021 reaching 144. Abu Alkhaseeb showed significant growth in cancer incidence rates over the five-year period with a highest of 78 in 2021. A steady increase was registered in Zubair with a highest reaching 63.8 in 2021. In Qurna, there was no clear linear trend due to the fluctuation over the study period but scored the highest in 2021 with an incidence rate of 58.3. A relatively low initial incidence of cancer rates was noticed in Hartha and Mudainah 18.6 or 37 respectively. Hartha exhibited a modest increase over the five years while Mudainah data fluctuated with the highest rate in 2018 reached 58.3. Compare to other districts Shatt Alsrab showed higher incidence rates with no clear increase or decrease treand over the study period figure 1



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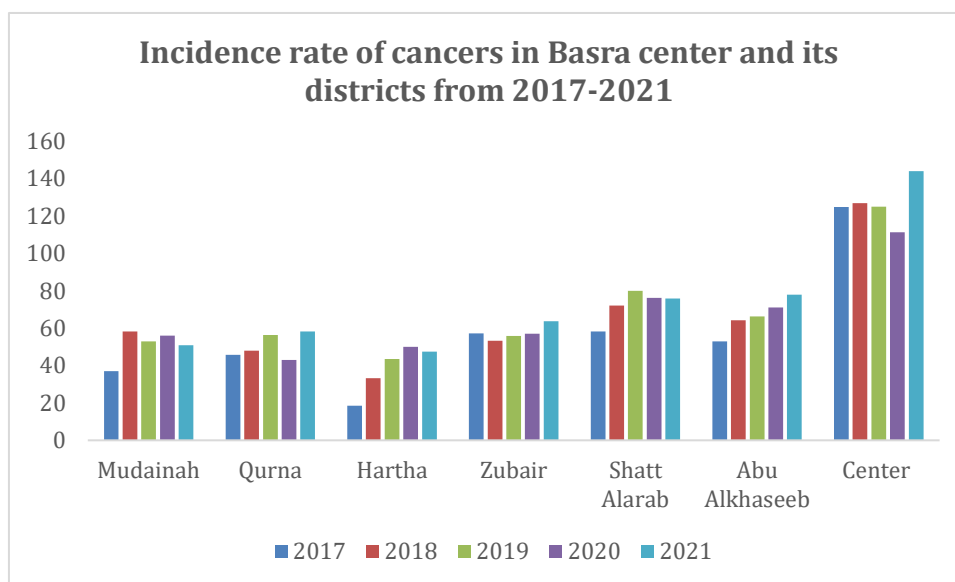


Figure 1: Cancer incidence in Basra center and its districts. The incidence rate was calculated as the number of new diagnosed cases per 100000 population

The following histogram represents breast cancer incidence rates in Basrah Center, Diyar, Mudainah, Qurna, Hartha, Zubair, Shat Alarab and Abu Alkhaseeb districts over a five year period from 2017 to 2021. The x-axis represents the study years while the y-axis represents the breast cancer incidence rate per 100000 person-years. The graph showed that the center incidence rate was the highest followed by ShattAlarab, Abu Alkhaseeb and AlQurna figure 1.

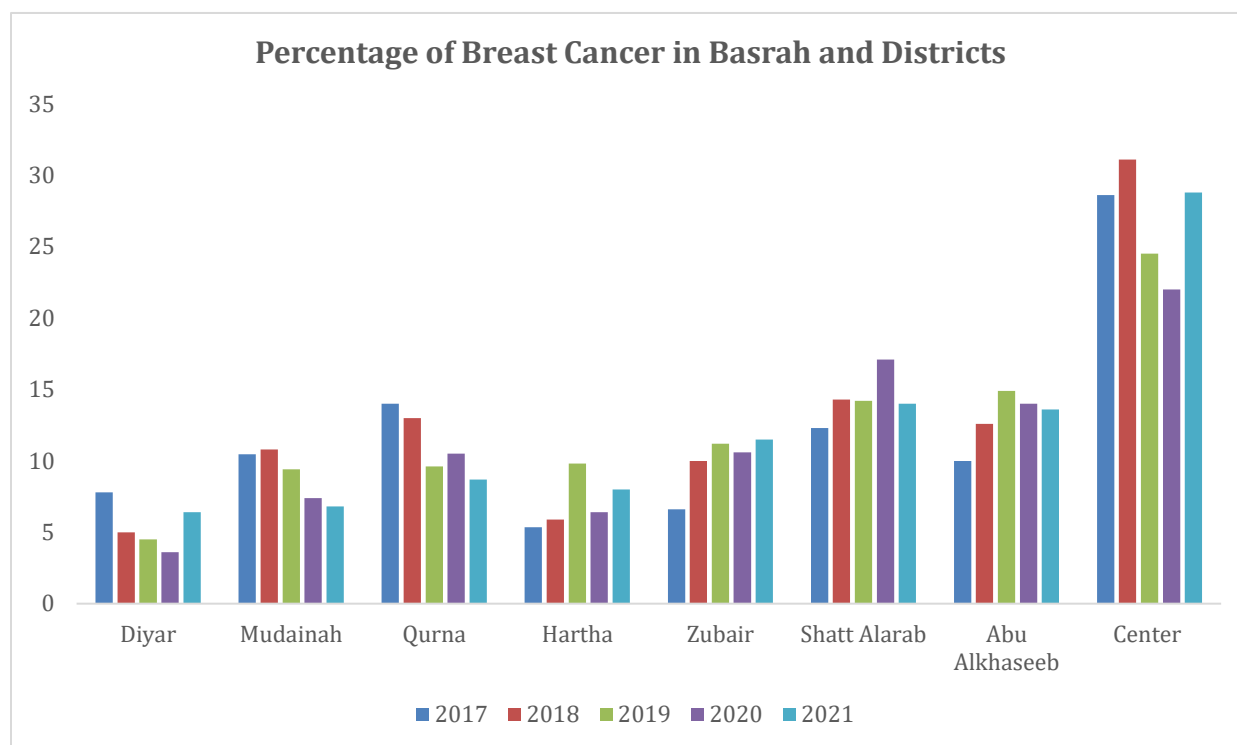


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Figur 2

Discussion

Biological mechanisms that explain cancer development always include environmental and genetic factors. Exposure to carcinogens and mutations in P53, BRCA1 and BRCA 2 render people more vulnerable do developing cancer (Sonnenschein & Soto, 2008). Clearly, the data showed that the incidence rate of all types of cancers and breast cancer was higher in center and Zubair and the newly occupied areas by people who migrated from the center, Abu Alkhaseeb and Shatt Alarab.

Breast cancer is one of the other cancer types that are associated with socioeconomic status which made its incidence differ between urban and rural areas (Sharp et al., 2014). Determinants could be implicated in an increased number of breast cancer in the center of cities. Limited physical activities, unhealthy food habits and higher stress. Gaining weight with high-caloric food were identified as major two factors. Post-menopausal obesity & high body mass index are associated with the increased risk of breast cancer development with no correlation among



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premenopausal women (Greenwald, 1999). In contrast to men, women breast cells are highly susceptible to any hormonal influence such as estrogen and progesterone (Key et al., 2014).

Accordingly, higher level of obesity and imbalance hormone such as the high increase of estrogen misuse & mis prescription is very common in Iraq and the south of in particular. Regarding the situation in Basra, early detection clinics of breast cancer are mainly located in the center. This makes approaching such facility more difficult for women live in rural areas. More awareness campaigns, workshops, and series of lectures are organized in city center compared to the rural areas. Recently, in large scale studies diabetes could be risk factor for breast cancer since breast cancer was shortly diagnosed after diabetes (Garcia et al., 2020; Xiong et al., 2023). Smoking notably correlated with increased risk of breast cancer specially in women started smoking early and women with family history (Jones et al., 2017)

Aging is another significant risk factors for breast cancer. Statistics from US revealed that 99.3% of all breast cancer related deaths were in women aged 40 or older with 71.2% affecting those of age 60 and above. For that reason it is critical for women who are 40 and above to undergo a mammography screening in a timely manner (Siegel et al., 2017). Family history is another important risk factor for breast cancer. Women who have a one first degree relative diagnosed with breast cancer face 1.75-fold increased risk of developing the disease compared to those without any affected family member (Brewer et al., 2017)

Breastfeeding is also uncommon in urban areas and if there is it would be for a shorter time. In addition, due to the higher level of pollution, women are more exposed to chemicals that disturb the endocrine functions. In conclusion: All types of cancer has increased in in city center and the newly occupied rural districts. Pollution, exposure to chemicals, modern lifestyle, lack of early detection clinics in rural areas and smoking are contributing factors in developing cancer and breast cancer.



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