

RESEARCH ARTICLE

Epidemiology of Breast Cancer among Females in Basrah

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Abstract

Breast cancer is the most frequent cancer in females. Its incidence is higher in developed countries than in developing ones partly due to variation in risk exposure and partly due to better detection methods. Scattered evidence in Basrah, Iraq, suggests that breast cancer has been increasing at a significant pace in recent years. This study aimed to measure the current level of risk of breast cancer among females in Basrah and to describe the time trend over almost a decade of years. Data on breast cancer cases from all sources of cancer registration in Basrah governorate were compiled for the years 2005-2012. The data for each year were first checked separately for duplicate reporting of cases among various sources. Then the eight files were pooled together and checked again for any duplicate cases among years of registration. The final set of data contained 2,284 cases of breast cancer (2,213 female cases and 71 male cases). All patients were inhabitants of Basrah governorate at the time of diagnosis. Figures on the Basrah population were obtained from various sources including the Ministry of Health, Ministry of Planning and Developmental Collaboration and local household surveys. It was possible to have total population estimates for each year and by age and sex. The data were imported into SPSS (version 17) software. Age specific and year specific incidence rates were calculated. The age standardized incidence rate was also calculated using world population as the standard population to be 34.9 per 100,000 females. Age-wise, no case was reported among children aged less than 15 years and the incidence increased with advancing age reaching a peak of 123.8/100,000 females at the age range of 50-54 years. The time trend of the crude incidence rate showed only modest increased risk with passage of years and no age shift could be documented in this study. Breast cancer in females in Basrah is a significant health problem. The current incidence rate (crude, 23.7/100,000, age-standardized, 34.9/100,000) is high and justifies intensive efforts to improve early detection of cases, provide better treatment amenities and introduce long term preventive measures. Using the age standardized incidence rate as reported in this paper, it is possible to put the risk in Basrah within a regional and international context.

Keywords: Breast cancer - age standardized incidence - time trend - Basrah

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Introduction

Breast cancer is the most frequent cancer in females. Its incidence is higher in developed countries than in developing ones partly due to variation in risk exposure and partly due to better detection methods (Ferlay et al, 2013). Available evidence in Basrah suggests that breast cancer is increasing at a significant pace in recent years. (Habib et al., 2007, BCRG., 2009). For example, a hospital-based study reported an incidence rate of about 11/ 100,000 females (Al-Badri and Ajeel, 1998), but recent reports put the annual incidence rate among females at around 23 per 100,000 (BCRG 2009, Habib et al, 2010). However, complete data on incident cancer

is only recently attempted through a combination of data of improved cancer registration (Habib et al., 2010) and household surveys (Al-Hilfi and Habib, 2015, Al-Hilfi and Habib., 2015).

The true extent of breast cancer in terms of incidence rate is still awaiting to be known. The exact magnitude of risk and determinants of such pattern are not well documented. Few small-scale studies have been carried out on this important cancer and attempted to shed light on extent and risk factors (Al-Badri and Ajeel, 1998, Abdul-Samad et al, 2009) given the significant share of this cancer among all cancers registered in Basrah (16.8% of all cancers) and especially among females (30.2% of female cancers) (BCRG, 2009). Such level puts Basrah

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somewhere in the middle of neighboring countries (Tawarneh, 2007, Al-Hamdan, 2008). During the last ten years, extensive work was done by Basrah Cancer Research Group (BCRG) to obtain as accurate data as possible on all cancers in Basrah. The achievement so far is sufficient to make feasible the estimation of fairly accurate epidemiological parameters. There is a need to carry out at least four types of research on breast cancer: first is to document time trends with reasonable accuracy to quantify the change in risk (if any), second is a large scale case-control study to identify pattern of risk factors and locally acting determinants of the apparent rise in the incidence rate, and third, a five-year survival study to reflect on quality of care and fourth is a study on quality of life. In addition, research on new tools for diagnosis and prognosis such as the use of immunological parameters and others is also necessary (Farina and Mackay, 2014). This paper presents the most accurate data so far on breast cancer in Basrah governorate in terms of age, sex and time trend. It is hypothesized that the data used are accurate enough to answer specific research questions: What is the current level of risk of breast cancer among females in Basrah? Did the risk increase with time during the last years?

Material and Methods

In Basrah, people with cancer are mainly identified and their cancer is diagnosed when they visit specialist doctors in the private clinics, the consultancy clinics in major hospitals, and centres specialized to deal with cancer. Few cases may be detected in primary health care institutions. In each of the major hospitals, a cancer registration unit exists. These units report registered cases to the Cancer Control Centre (CCC) as the point of pooling of cases at Basrah governorate level. Cases which are treated in the oncology centres are also reported to the (CCC). In addition breast cancer early detection centres were established and they also report detected cases to the CCC. Further, a major source of cases is a histopathological cancer registration, which was established at the Department of Pathology and Forensic Medicine, College of Medicine, University of Basrah to compile and register solid tumours. Childhood cancers are mainly treated at the Children Specialized Hospital. All cases registered in all these registration units and centres are compiled and

pooled in one epidemiological unit at the College of Medicine for checking and epidemiological analysis. A copy of the data is also sent to the Iraqi Cancer Board in Baghdad.

The cases which are registered in Basrah are drawn from the population of Basrah and adjacent governorates. From epidemiological point of view, cases can be identified and classified according to age, sex, place of residence, cancer site, histopathological typing, year of diagnosis and source where they first identified.

Data on breast cancer cases from all these sources were used in this study. Excel files were obtained for each of the eight years covered in the study (2005-2012). The data for each year were first checked separately for duplicate reporting of cases among various sources. Then the eight files were pooled together and checked again for any duplicate cases among years of registration. The final set of data contained 2,284 cases of breast cancer (2,213 female cases and 71 male cases). These were the cases from the inhabitants of Basrah governorate at the time of diagnosis.

Figures on Basrah population were obtained from various sources including Ministry of Health, Ministry of Planning and Developmental Collaboration (MoP, 2013) and local household surveys. It was possible to have total population estimates for each year, by age and sex.

The data were imported into SPSS (Statistical Package for Social Sciences –version 17) software. Age specific and year specific incidence rates were calculated. The age standardized incidence rate was also calculated using World population as the standard population (Parkin et al, 2005).

Results

A total of 2,213 new cases of breast cancer were diagnosed, treated or registered in Basrah among females during the period 2005-2012 inclusive. These cases are all from the normal resident population in Basrah governorate at the time of diagnosis.

Year of diagnosis

Table 1 shows the distribution of new female breast cancer cases registered in Basrah during 2005-2012 by *Age pattern of cases*

The numbers, percentages and age specific incidence

Table 1. Estimates of Female Population, Numbers and Percentages of New Breast Cancer Cases and Annual Incidence Rates per 100,000 Females: Basrah 2005-2012.

Year of registration	Estimated female population	No. of new cases registered	%	IR/100,000 females
2005	1,053,638.0	244.0	11.0	23.2
2006	1,085,247.0	226.0	10.2	20.8
2007	1,117,805.0	269.0	12.2	24.1
2008	1,151,339.0	286.0	12.9	24.8
2009	1,185,879.0	271.0	12.3	22.9
2010	1,216,493.0	30.0	13.6	24.7
2011	1,248,275.0	290.0	13.1	23.2
2012	1,281,236.0	326.0	14.7	25.4
Total	1,168,609.0	2,2130	100.0	23.67

Table 2. Estimated Population, Number and Percentages of New Cases and Age-Specific Incidence Rates of Breast Cancer: Basrah, Females 2005-2012.

Age in years+A15:E25	Estimated mid-period female population	No. of cases in 5 years	%	IR/100,000 females
<5	174,123.0	0.0	0.0	0.0
September-05	161,268.0	0.0	0.0	0.0
October-14	140,233.0	0.0	0.0	0.0
15-19	119,198.0	9.0	0.4	0.9
20-24	107,512.0	24.0	1.1	2.8
25-29	91,152.0	77.0	3.5	10.6
30-34	85,308.0	125.0	5.6	18.3
35-39	73,622.0	249.0	11.3	42.3
40-44	61,936.0	376.0	17.0	75.9
45-49	43,239.0	355.0	16.0	102.6
50-54	32,721.0	324.0	14.6	123.8
55-59	24,541.0	207.0	9.4	105.4
60-64	23,372.0	207.0	9.4	110.7
65-69	12,855.0	120.0	5.4	116.7
70-74	9,349.0	79.0	3.6	105.6
75 &above	8,180.0	61.0	2.8	93.2
Total	1,168,609.0	2,213.0	100.0	23.7

Age standardized incidence rate = 34.9 per 100,000 females

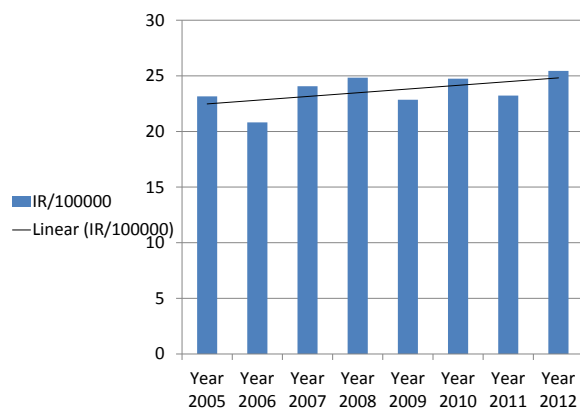


Figure 1. Year-specific IR per 100,000-Basrah 2005-2012

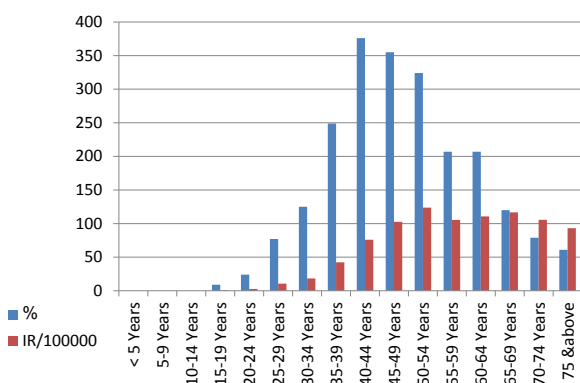


Figure 2. Relative Frequency and Age Specific Incidence Rate In Females: Basrah 2005-2012 ASIR=34.8/100,000

Table 3. Comparative Age-Standardized Incidence Rates of Breast Cancer in Selected Asian and European Countries.

Country	Age-standardized incidence rate/100,000 females*
Saudi Arabia	13.0
Iran	23.1
India	28.9
Turkey	33.3
Qatar	33.9
Basrah	34.9
Japan	35.1
Kuwait	36.0
China	36.2
Jordan	42.5
Bahrain	47.0
Poland	53.7
United Kingdom	74.4
Sweden	76.6
Denmark	81.3
United States of America	89.5

* Source: Authors prepared based on references 1,9,10 19,20. Most of the figures are related to the period 2000-2008

the years they were first recognized as cases of cancer. There is a slight tendency for the number of cases and the relative frequency to increase with years. Looking for the years they were first recognized as cases of cancer. There is a slight tendency for the number of cases and the relative frequency to increase with years. Looking for the year-specific incidence rates (Table 1 and Figure 1), only a slight rising time trend is noticed also.

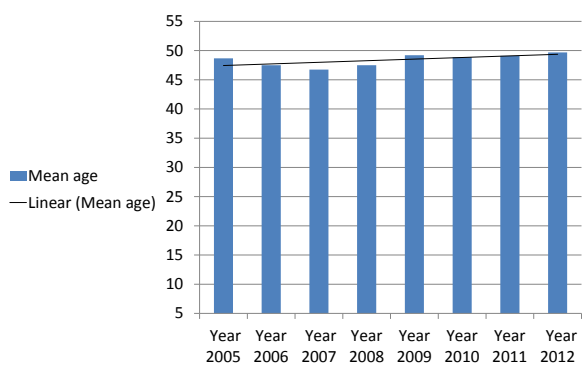


Figure 3. Mean Age of Incident Cases by Years: Basrah 2005-2012.

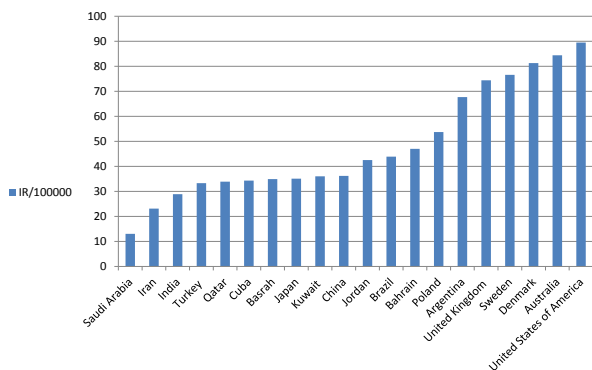


Figure 4 . Comparative Age-Standardized Incidence Rates of Breast Cancer in Selected Countries.

rates of female breast cancer are shown in Table 2. No cases were reported in females aged less than 15 years. Few cases were reported in the age group 15-19 years. Using the age-specific incidence rate, it is clear that the risk of cancer increases sharply with advancing age reaching a peak of 123.8/100,000 females at the age range 50-54 years. A decline in the frequency is noticed from age 65 years and above. Figure 2 illustrates the relative frequency and the age-specific incidence rates. The bulk of new cases occurred in the fifth decade while the peak incidence rate was in the sixth decade of age. No clear difference could be seen in the mean age of cases in different years (Figure 3)

Discussion

Breast cancer is the top cancer in Iraq and in Basrah according to all documents available from the incident cancers (Habib et al, 2007, BCRG, 2009, Iraqi Cancer Board, 2012). The risk is high and is increasingly registered. It is also a significant contributor to cancer related mortality in Basrah and southern Iraq (Habib et al, 2007). Such a significant position occupied by breast cancer strongly motivated us to start systematic work to improve detection and registration of new cases and to quantify the extent of the problem. In this paper we are reporting the best epidemiological estimates on incidence rate of breast cancer in Basrah. The data used are reasonably reliable in coverage but problems related to missing cases and denominators cannot be claimed to have been completely avoided. Yet, intensive efforts were made to identify every case of breast cancer and to obtain the most accurate possible estimate of the population of

Basrah and its age and sex composition.

Incident breast cancer has occurred in females as early as 17 years and showed a rising trend of risk with advancing age. The highest risk in terms of relative share is seen in the 5th and the 6th decades of age while the highest age specific incidence rates are seen in the 6th and first half of the 7th decades. This pattern of age risk is compatible with the case in many other countries and affirms the fact that breast cancer strike young and middle aged females when the bulk of cases occur (Ferlay et al, 2012).

Regarding whether the current level of breast cancer risk reflects an increase in the disease or not, the answer is not straight forward. The degree of completeness of the data used in the present study cannot be compared with most previously available data. The completeness in data available prior to 2005 is doubtful as many cases could not have been registered. Only one previous study by Al-Badri and Ajeel (1998) on the epidemiology of breast cancer in Basrah could be considered compatible for comparison with the present study. Using the data from the latter, the crude incidence rate of breast cancer in 1995 could be estimated at around 11 per 100,000 females. This rate is much lower than the annual average rate for the years 2005-2012 which is 23.7 per 100,000 females. Thus, taking these two figures on their face value, it is possible to say that the risk of breast cancer based on reported cases has almost doubled within two decade or so. Factors which must be considered in interpretation of such difference may include differential identification and registration, improved diagnostic methods and introduction of screening and early detection tools. But part of the difference is likely to reflect a real increase in breast cancer in Basrah. The rise may be related to a package of risk exposures related to life style, environmental factors and exposure to ionizing radiation from various sources including exposure to depleted uranium (Abdul-Samad et al 2009). No definite conclusion can be drawn about whether breast cancer has increased in Basrah and if so why? The time trend shown over the years 2005-2012 with much more representative data in the present study does not support the view that breast cancer risk has increased dramatically in recent decades. The evidence generated from the present study suggests that breast cancer showed only modest increase during the last ten years. In the meantime, it is difficult to exclude a real change in the risk of cancer without making careful identification and analysis of incident cases during the 1980s and 1990s. Nevertheless, the current incidence rate (crude :23.7/100,000, age-standardized 34.86/100,000) is high and justifies intensive efforts to improve early detection of cases, better treatment amenities and long term preventive measures.

Using the age standardized incidence rate as reported in this paper, it is possible to put the risk in Basrah within a regional and international context. The incidence rate in Basrah is higher than rates reported for Oman, United Arab Emirates and Saudi Arabia, very close to rates for Kuwait (Al-Hamdan et al, 2009) but much lower than the high rates in Jordan (Tawarneh,2007), the United states and Britain as described in Table 3.

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