

Breast cancer in Basrah governorate: Pattern of geographical distribution

Ghalib Noori Nasr (MSc)* Nasrullayeva GM** Gaziyevev AY*** Jawad KH Al-Ali (MRCP-UK)****

Abstract:

Background: Breast cancer is occupying a high rank among malignant diseases in Basrah and some evidence suggests that the risk is getting increased with time.

Objectives: This article is designed to provide a profile on the geographical distribution of incident breast cancer in various parts of Basrah governorate.

Methods: All newly diagnosed cases registered with Basrah Cancer Registry Office during a four- year period (2009-2012) were used for the purpose of the study.

Results: The average annual crude incidence rate of breast cancer was 24.49 per 100000 females and age-standardized incidence rate was 34.86 per 100000 females. Great variation in the incidence rate was noticed across different districts with the highest rate was in Basrah city 40.22 per 100000 females and the lowest was in Northern districts of Mdaina (11.04 per 100000 females) and Qurna (12.56 per 100000 females). The incidence rates in other districts were in between the two extremes.

Conclusions: The risk of breast cancer is relatively high in Basrah with great variation in different districts. The variation could reflect true risk difference, difficult accessibility to oncology services in Basrah or incomplete registration of cases.

Keywords: Breast cancer, Basrah, Epidemiology, Geographical distribution

Introduction:

Evidence from various sources indicates that breast cancer is by far the most common cancer among the population as a whole and among females in particular at international, national and local levels⁽¹⁻⁴⁾. This evidence is true whether it is viewed from incidence, mortality or cost on individual families and the health care system at large. Referring to the economic burden of cancer, the cost on the community can be direct (cost of care utilization) and indirect which is difficult to estimate and arises from loss of productivity and premature death.⁽⁵⁾

In Basrah, breast cancer ranks the first among all incident cancer cases during the years 2005-2012.^(3, 4) It represents 17.9% of all incident cancers (a crude incidence rate of 12.49/100000 population. Among females it represents more than 30% and the crude incidence rate was 23.24/100000 females.⁽⁶⁾ The overall level is, however, still within the pattern in surrounding countries but the pace of rise with time is probably more accelerated in Basrah for reasons which are not clear yet. Given these facts and particularly the further expected rise in breast cancer burden, the use of further technical advances such as the Matrix Metalloproteinase (MMPs) as marker for this purpose in tumor pathogenesis and progression, which increases in malignant cell lines and correlates with metastatic potential is worth considering.⁽⁷⁻⁹⁾ Understanding the epidemiological features of breast cancer at population level would help the management of the problem at various levels; prevention, early diagnosis, risk factor identification, treatment initiation and prognosis. Spatial distribution of any disease including breast cancer could identify special clustering of cases in given geographical areas. Such clustering could be related to specific

patterns of risk factors whether these are population behaviors and/ or environmental exposures. In addition, the quantification of high incidence of breast cancer would justify the search for new means to deal with it.

This study attempts to quantify the incidence of breast cancer across the main geographical/administrative areas in Basrah governorate. The main objectives are to compare the incidence rates across these areas and to identify major differences in risk (if any).

Materials and methods:

This study was based on data obtained from all official sources in Basrah governorate which gather basic information on incident cancer and mortality. The data were obtained mainly from two sources: The Population-based Cancer Registry at the General Directorate of Health and the Histopathological Cancer Registry at the Department of Pathology and Forensic Medicine-College of Medicine, University of Basrah. The data covered four years 2009-2012. The choosing of these years was due to better ascertainment of place of residence of incident cases in almost all verified cases.

The researchers obtained an excel file containing all new breast cancer cases registered during the four-year reference period. The data were carefully checked for duplication of cases and for exclusion of all cases who were normally residents of other governorates. The total breast cancer cases verified for the years 2009-2012 who were definite residents of Basrah governorate were included in this study.

Figures on Basrah population by district were obtained from various sources including Ministry of Health⁽¹⁰⁾, Ministry of Planning and Developmental Collaboration.⁽¹¹⁾

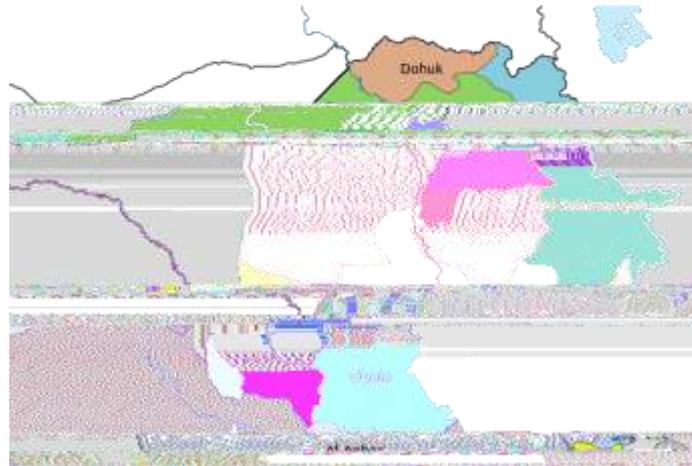


Figure 1: Map of Republic of Iraq showing Basrah governorate location.

Results:

Overall, the crude incidence rate was 24.49 per 100000 females and age standardized rate was 34.86 per 1000000 females. The distribution of breast cancer incidence rates in various administrative areas of Basrah governorate is shown in Table 1 and illustrated in Figure 1. The results show a marked variation of the registered risk of breast cancer with the city of Basrah having the highest incidence rate (40.22 per 100000 females). The lowest rates are seen for Qurna (12.56 per 100000 females) and Mdainah (11.04 per 100000 females). Intermediate rates are seen in all other areas.

In Basrah governorate, a number of studies reported that the levels of air pollution was high which enhanced the hazard levels of danger gases

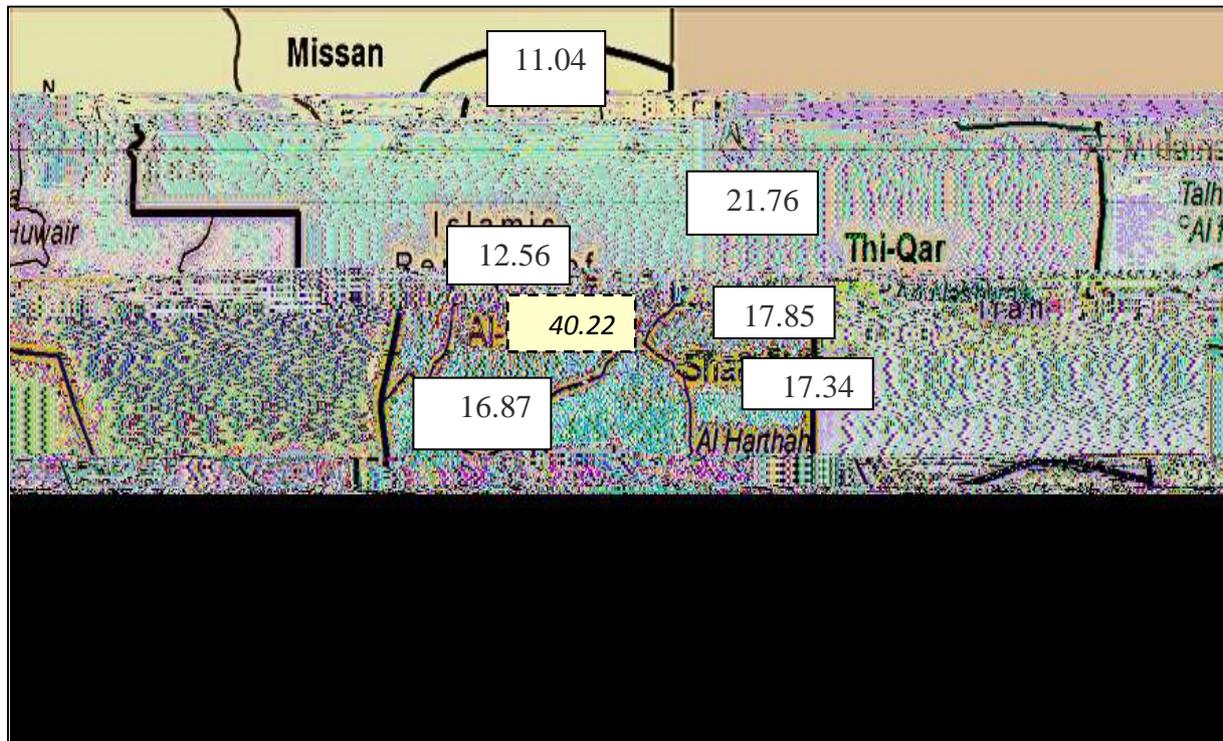
and its effect on health like (CO, CO₂, SO₂, NO₂).⁽¹⁸⁻¹⁹⁾ All these chemicals leading to exogenous estrogen (xenoestrogens) that mimic the action of hormones or directly affect pathways of endogenous hormones which in final result produce genotoxic substances.⁽²⁰⁾

It must be stressed here, that the variation in the risk of breast cancer in various parts of Basrah governorate could be a reflection of differential reporting to health authorities. Fear of cancer, shyness, family restrictions and fear of social implications, as well as poor health education and difficulty of access to breast health care in peripheral areas could lead to delays in presentation and diagnosis, which in the end leading to variation in incidence.⁽²¹⁾

Table 1: Estimated population, number of new breast cancer cases and incidence rate per 100000 females across various administrative areas of Basrah governorate.

Administrative Unit	Mid-period population	Mid-period female population	Number of cases	%	IR/1000000 population
Basrah City Centre	874917	431334	694		40.22
Hartha and Dair	249977	123239	88		17.85
Qurnain and Shafi	262476	129401	65		12.56
Mdainah	224979	110915	49		11.04
Zubair	474955	234153	158		16.87
Abul-khasib and Faw	274964	135557	94		17.34
Shatt-Al-Arab	137496	67785	59		21.76
Total	2499764	1232384	1207		24.49

Females =49.3% of Basrah population



Discussion:

The risk factors of breast cancer are numerous, and their prevalence varies between racial and ethnic groups as well as geographical regions, demographic, ecological, environmental, social, cultural and genetic variables. All these contributed to the heterogeneity of cancer incidence.

Multiple factors are associated with an increased risk of developing breast cancer, including age, family history, exposure to female reproductive hormones, diet, overweight and obesity, life style and environmental factors, benign breast disease, breast density and reproductive history.⁽¹²⁻¹³⁾ The association between socio-economic status and risk of breast cancer is well established, with women in higher socio-economic grouping as being of higher risk. The changing patterns of childbearing and breastfeeding, of exogenous hormonal intake and of dietary factors including obesity and reduced physical activity have certainly contributed to trends in incidence and mortality.⁽¹⁴⁻¹⁵⁾

The highest incidence rate in the city of Basra associated to another risk factors (as well as) to the previous risk factors. More studies (Global) suggests a link between air pollution and breast cancer.⁽¹⁶⁾ There is a high probability that big urban centres like the city of Basrah are exposed to heavy pollution with various toxic materials including carcinogenic agents. Such hypothesizing is supported by a finding by McGill University Health Center⁽¹⁷⁾ in Montreal- France, where they reported that the incidence of breast cancer was clearly higher in areas with higher levels of air.

Conclusion:

Breast cancer is important health problem in Basrah with substantial geographical variation. Further research is recommended and health education of the general population to encourage early medical consultation as well as increasing efforts for breast cancer control programs in Basra is highly needed

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References:

- 1-Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C et al. GLOBOCAN 2012, Cancer Incidence and Mortality Worldwide: IARC, Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>,
- 2-Iraqi cancer board. Cancer Registry of Iraq. Ministry of Health, Peoples Medical Clinics Press, Baghdad Reports of 2008, 2009 and 2010.
- 3-BCRG. Cancer in Basrah: epidemiological analysis of incident cancer 2005-2008. Basrah

- Cancer Research Group. Dar AIKutub for Press and Publication, Basrah 2010.
- 4-Habib OS, Al-Diab JMA, Al-Imara KAS, Al-Ali, Hasan JG, Al-Hilfi RAH. Epidemiology of Cancer in Basrah-Southern Iraq: Experience and outcome of registration and surveys 2005-2012. A confidential Report submitted to Her Excellency the Minister of Health, May 2015.
 - 5-WHO. National cancer control programmes: policies and managerial guidelines.2nd ed. World Health Organization, Geneva 2002.
 - 6-Habib OS, Hamid LA, Al-Hawaz MH, Ajeel NA, Nasr GN, Al-Sodani AH et al. Epidemiology of Breast Cancer Among Females in Basrah. The Medical Journal of Basrah University 2015 (Under publication).
 - 7-Farina AR, Mackay AR (2014). Gelatinase MMP-9 in tumor pathogenesis and progression. *Cancer* 2014; 6 (1):240-96.
 - 8-Vizoso FJ, Gonzaler LO, Corte MD, Rodriguz JC, Vazquez J, et al. Study of MMPs and their inhibitors in breast cancer. *Br J Cancer* 2007; 96:903-11.
 - 9-Davies KJ. The Complex Interaction of Matrix Metalloproteinases in the Migration of Cancer Cells through Breast Tissue Stroma. *International Journal of Breast Cancer* 2014, Article ID 839094, 5 pages, 2014. doi:10.1155/2014/839094
 - 10-Ministry of Health, DOH of Basrah Governorate. Unpublished population estimates.
 - 11-Iraqi Ministry of Planning. Central Statistical Organization. Statistic of Men and Women. Iraq.2013.
 - 12-Freeman H, Chu K. Determinants of cancer disparities: Barriers to cancer screening, diagnosis and treatment. *Surg Oncol Clin N Am* 2005; 14:665-9.
 - 13-Vineis P, Wild CP. Global Cancer Pattern: Causes and Prevention. *Lancet* 2014; 8:549 -57.
 - 14-Beral V. Breast Cancer and hormone-replacement therapy in the Million Women Study. *Lancet* 2003; 362:419-27.
 - 15-Bray F, Mc Carron P and Parkin DM. The changing global patterns of female breast cancer incidence and mortality. *Breast Can Res* 2004; 6:229-39.
 - 16-WHO. International Agency for Research on Cancer. Press Release No: 221./ 17 October 2013 .
 - 17-McGill University Health Center. Air Pollution link to Breast Cancer, Study Suggests. October 7,2010 ./SCIENCE DAILY .
 - 18-Al- Assadi K, Al-waeli A, Kazum HA. Assessment of air pollution caused by oil investments in Basra Province –Iraq. *J of Novel Applied Sci* 2015; 4(1):82-6 .
 - 19-Douabul A AZ, Al Maarof SS, Al-Saad HT and AL-Hassan Sh. Gaseous Pollutants in Basra City-Iraq. *Air, Soil and Water Research* 2013 :6 p 15-21.
 - 20-Gray J. State of Evidence: The connection between breast cancer and the environment. Sixth edition 2010. P:43 – 78 .
 - 21-El Saghier N, Khalil MK, Eid T, El Kinge AR, Charafeddin M, Geara F et al. Trends in epidemiology and management of breast cancer in developing Arab countries: A literature and registry analysis. *Int J of Surg* 2007; 5:225 - 33.
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- *Postgraduate PhD candidate; Azerbaijan Med Univ, Baku, Azerbaijan.
- **Prof of Immunology, Azerbaijan Med Univ.
- ***Prof of Oncology, Azerbaijan Med Univ.
- ****Consultant Physician & Oncologist, Basrah Cancer Centre, Al-Sadr Teaching Hosp & Member of Iraqi Cancer Board, Basrah, Iraq