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Research Article

Comparing in Iraqi Breast Cancer Incidence: Systematic Review

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ABSTRACT

Background: Breast cancer continues to rank among the top causes of cancer-related mortality among women, despite its distinct epidemiological patterns and notable variation. This paper looks at the analysis of breast cancer data for the continent of Asia, of which Iraq is a part, focusing on the most affected provinces, especially the Kurdistan region of Iraq.

Material & Methods: Publications from WHO, the International Agency for Research & Cancer, and Cancer Today 2024 on the incidence and mortality of male and female Asian cancer sites were used, with a comparison made to find their indicators (incidence, mortality, and survival rates) in different Iraqi provinces, discussed and illustrated with charts.

Results: The results indicated that there were equally likely indicators for males and females; survival rates were in an increasing pattern in Iraq, especially in the Kurdistan region of Iraq.

Conclusion: The risk of breast cancer increases with a family history, and deaths from breast cancer are reduced if its cases are detected and treated early. Survival rates have shown that these rates are still low despite the development of medical science and the early detection of this type of cancer and the progress of medical treatments.

1. INTRODUCTION

Breast cancer continues to rank among the top causes of cancer-related mortality among women, despite its distinct epidemiological patterns and notable variation [1]. Breast cancer is an abnormal growth of breast cells and their proliferation in a cancerous form, which may lead to the formation of tumors and their spread in the body. Early detection is necessary to increase the chances of recovery, the diagnosis is made by self-examination, clinical examination, and mammogram [2]. A lump in the breast tissue that is different from the normal tissue is the first obvious indication of breast cancer. Mammograms are the first line of treatment for breast cancer, which is found in 80% of cases when a woman feels the lump [3, 4]. Swollen lymph nodes under the arms can also be a sign of breast cancer. A change in the shape or location of the nipple or the nipple becoming pulled inward, a change in the skin of the breast to a wrinkled or pitted appearance, the appearance of a rash around or on the nipple, fluid coming out of the nipple, a feeling of constant pain in part of the breast or in the armpit area, the appearance of swelling under the armpit or around the collarbone, and an increase in the hardness of a specific area of the breast tissue in comparison to normal tissue are additional indicators. The existence of breast pain can be a significant sign of other breast health issues, but it cannot be used to accurately diagnose breast cancer [5-8]. Breast cancer survival rates are in an increasing pattern according to advances in medical treatments and diagnosis, and the number of people dying from breast cancer continues to decrease [9]. This paper sheds light on the first type of cancer almost universally. The focus was on the continent of Asia by presenting the most dangerous sites of cancer and the countries with the highest incidence and deaths and focusing on studying the case of Iraq in all its provinces, including the provinces of Iraqi Kurdistan.

2. METHODS & INDICATORS

2.1 Data source

Data for this paper were drawn from WHO, the International Agency for Research on Cancer, the Global Cancer Observatory, and Cancer Today, 2024, for the continent of Asia [9-15]. In addition, different sources were used for Iraq [10-28]. The data were analyzed and graphically illustrated.

2.2 Statistical analysis

To clarify group differences based on statistical significance, multiple comparisons using one-way ANOVA and paired sample t tests were employed using SPSS software and Microsoft Excel. The threshold for statistical significance was set at $p < 0.05$.

3. RESULTS AND DISCUSSION

In terms of breast cancer incidence and mortality in Asia, China ranked first with 357161 and 74989 incidences and deaths, followed by India (192020 and 98337) and Japan (91916 and 17638). Iraq came in at number thirteen with 8626 and 3372, and the survival rate was 61%, figure 1. According to the data, there is a significant regional variation in the incidence and mortality of breast cancer throughout Asia. Due to their enormous populations and growing exposure to risk factors such urbanization, lifestyle changes, and postponed childbearing, China and India together account for a sizable percentage of the continent's breast cancer burden. Japan exhibits comparatively lower mortality while having a high incidence rate, most likely as a result of sophisticated screening systems and early identification techniques. The modest incidence, relatively high mortality rate, and lower survival rate (61%) in Iraq, on the other hand, underscore persistent difficulties in early diagnosis, treatment accessibility, and public health awareness. These variations highlight the necessity of region-specific approaches to enhance patient outcomes, treatment accessibility, and early diagnosis in Asian nations [29].
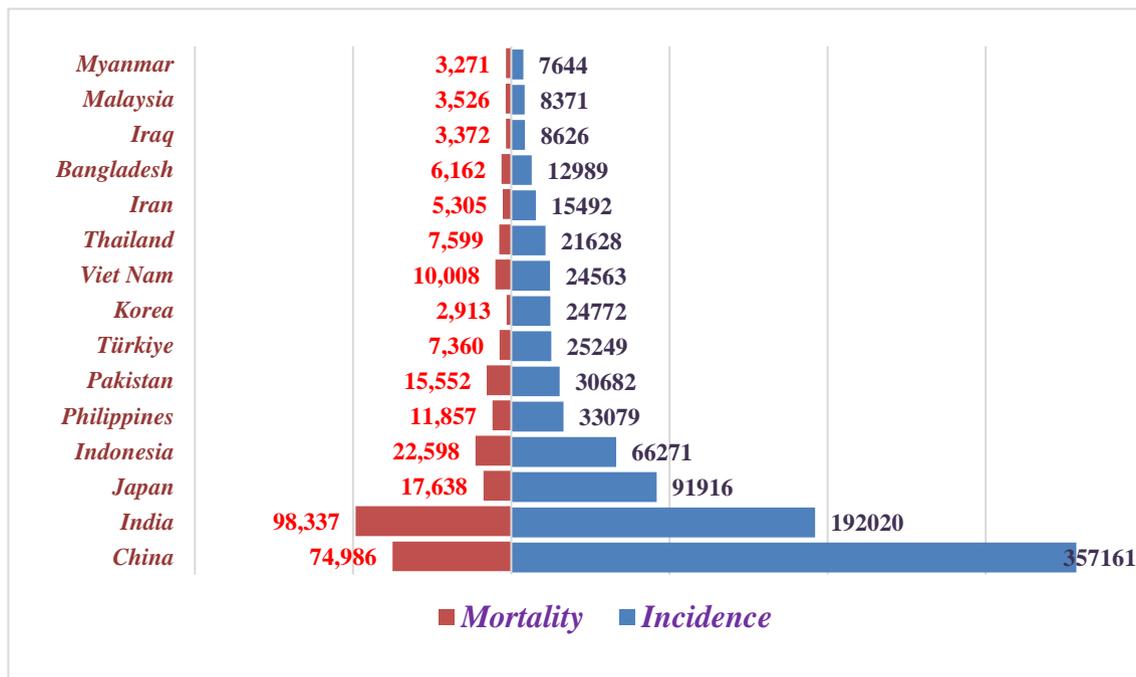

Fig. 1. Asian Countries Incidence & Mortality [15]

The incidence and mortality of breast cancer for aging ages (70+) was highest in China (24348 & 15684 cases), accounting for (9% & 21%) of all group ages) and India (16133 & 13944 cases), accounting for (8% & 14%) of all group ages. Japan (24,403 & 8,451 cases) accounts (27% & 48%) of all group ages. Iraq (521 & 416) represented cases (6% & 12%) of all age groups, figure 2. The data reveal that breast cancer incidence and mortality among elderly women (aged 70 years and above) vary considerably across Asian countries. Japan shows the highest proportion of cases and deaths within this age group relative to total breast cancer cases, suggesting that longevity and an aging population structure contribute substantially to its cancer burden. In contrast, while China and India report the highest absolute numbers, the proportion of elderly cases is smaller, reflecting their younger population demographics. Iraq's relatively lower incidence but higher mortality percentage among the elderly may indicate delayed diagnosis, limited screening programs for older women, and potential gaps in access to advanced treatment options. These findings emphasize the importance of age-specific breast cancer management strategies and the need to strengthen early detection and geriatric oncology services across Asia [30].
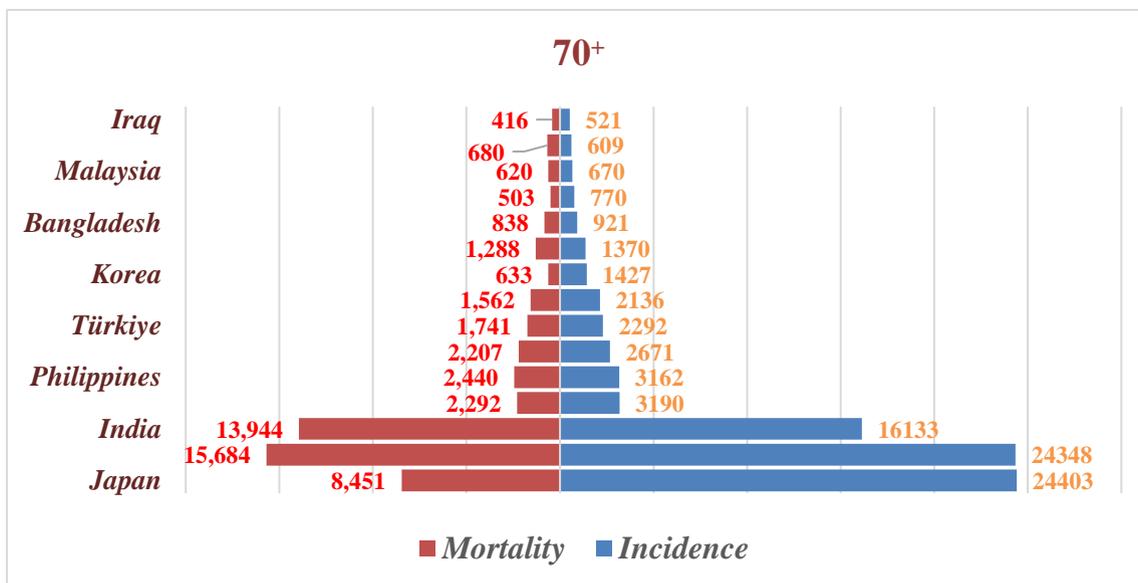
Fig. 2. Top 15 Asian Countries aged 70+

The total of all sites of cancer in Iraq was (39068) cases, (16287) for males, and (22781) for females; the largest number was in the capital, Baghdad: (5723) females and (3600) males. Next comes Sulaymaniyah, which is from the regions of Kurdistan (1585 & 1324), and then Basra (1822 & 1377), Nineveh (1450 & 1179), Erbil (1367 & 1098), and the lowest Muthanna provinces (379 & 337). The number of female cases is more than the number of male cases for all governorates, and in some governorates, it reaches half or almost half, figure 3. Due to its high population density and concentration of diagnostic and treatment facilities, Baghdad has the highest burden of cancer cases in Iraq, indicating distinct regional differences in the distribution of cancer cases. In the Kurdistan area, governorates like Sulaymaniyah and Erbil also recorded significant numbers, presumably as a result of better healthcare reporting systems. Due to the high incidence of gynecological and breast cancers in women, as well as increasing screening and awareness efforts, female cases have consistently outnumbered male cases in all regions. On the other hand, provinces like Muthanna may have lower case counts due to underreporting, scarcer diagnostic services, or smaller populations. These trends highlight how resources for cancer care must be distributed fairly, and how public health initiatives for early detection must be strengthened in all Iraqi regions [31].
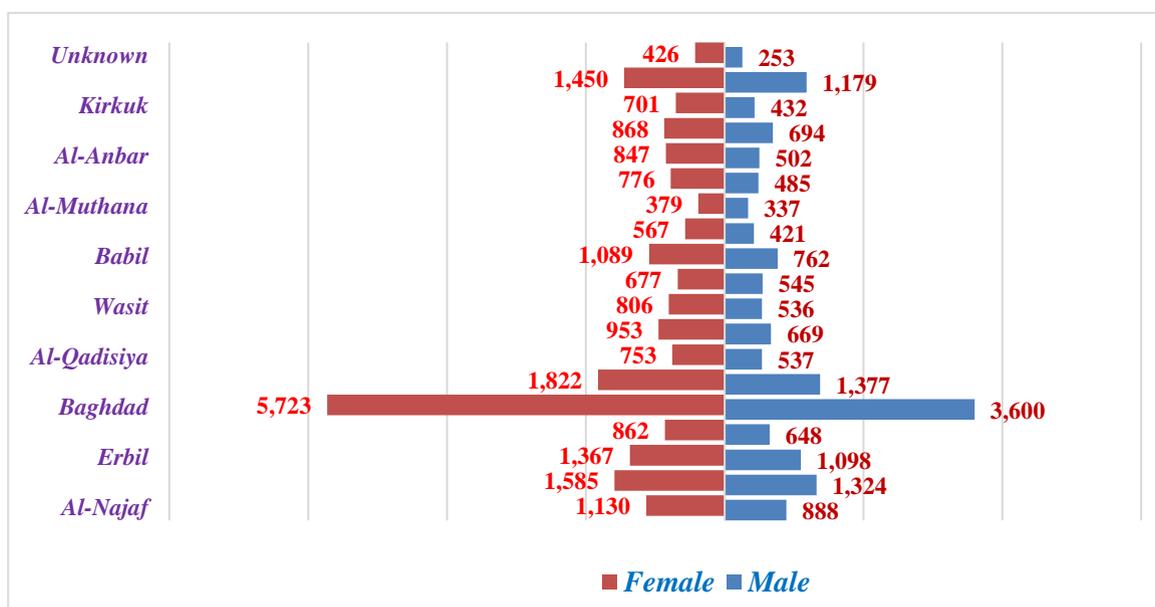

Fig. 3. Distribution of Iraqi male female cancer cases by governorate

The top ten types of cancer in Iraq were breast cancer (8,299) cases, followed by colorectal (2,871 cases), bronchus & lung (2,853), thyroid (2,402), and the lowest, non-Hodgkin lymphoma (1,361). The number of male cases was higher than female, except for breast and thyroid cancers. In the Kurdistan governorates, the most common breast cancer in the Erbil

governorate (570) cases, the second type was colorectal in the Sulaymaniyah governorate (242); the third type was skin cancer in the Erbil governorate (222); and the least common cancer was stomach cancer in the Duhok governorate (35 cases). The absence of melanoma cancer in Sulaymaniyah and the brain in Erbil. The other sites of cancers were the highest in Sulaymaniyah governorate (1300 cases), Erbil (865 cases), and Duhok (384 cases).

The highest number of cases of breast cancer was in the province of Kirkuk (582 cases), followed by Diyala (254 cases), then Baghdad (146 cases), Salah Al-Din (97 cases), and Anbar (70 cases). The provinces with the lowest number of cases were ThiQar, Maysan, Najaf, and Wasit, with two cases each. In the Kurdistan region of Iraq, the highest were in Sulaymaniyah (5404 cases), followed by Erbil (195 cases), Halabja (109 cases), and Dohuk (only 41 cases), figure 4.
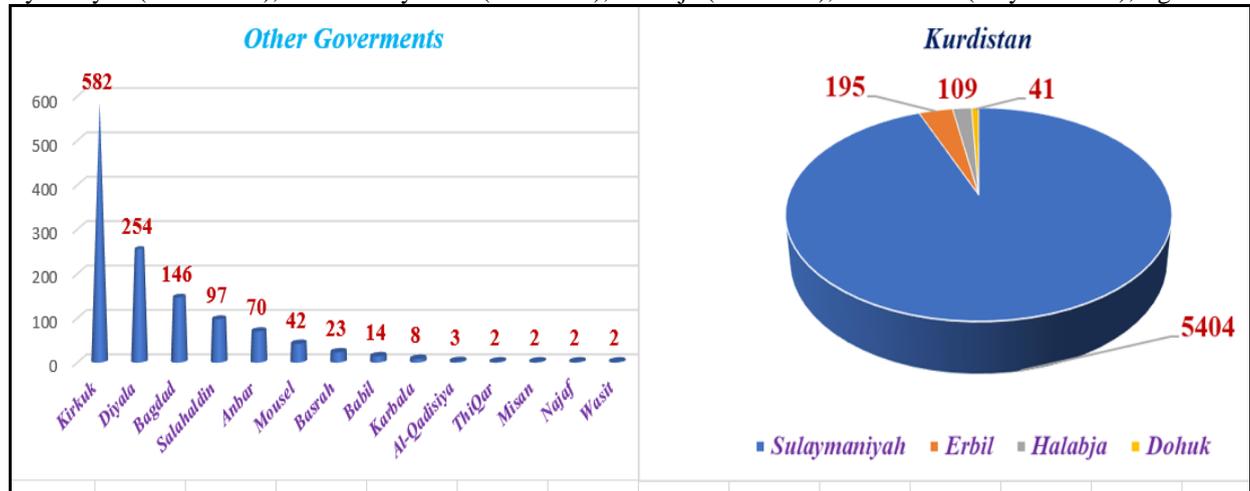

Fig. 4. Geographical Distribution of Breast Cancer Cases in Iraqi Governorates (2007-2023)

The highest morphological distribution of breast cancer among females was in infiltrating duct carcinoma, NOS (7490 cases); lobular carcinoma, NOS (410 cases); papillary adenocarcinoma, NOS (136 cases); infiltrating duct and lobular carcinoma (66 cases); mucinous adenocarcinoma (21 cases); and phyllodes tumor (21 cases); and the lowest was malignant metaplastic carcinoma, NOS (6 cases), figure 5.
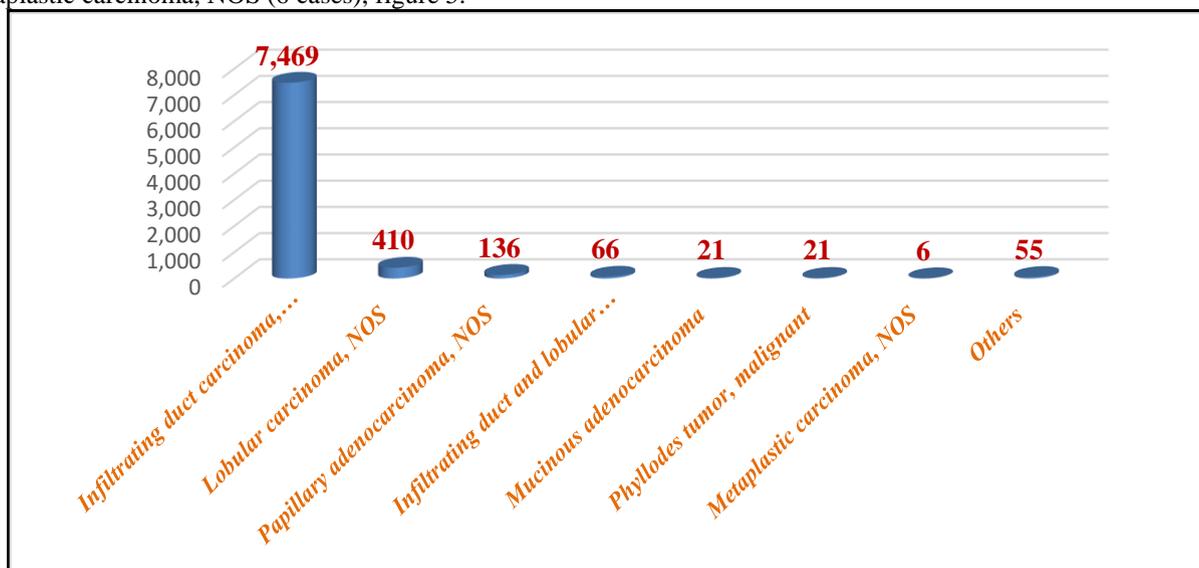

Fig. 5. Morphological Distribution of Breast Cancer Among Iraqi Females

The survival rate is the percentage of people in a particular group who remain alive for a certain period of time after being diagnosed with a disease or starting treatment. This rate is used to assess the fate of the disease, as in cancer, or to evaluate the effectiveness of a new treatment in clinical trials. The highest survival rate of the fifteen countries with the highest incidence and mortality of breast cancer for the Asian continent was in Korea (88%), followed by Japan (81%), and then China (79%), Turkey (71%), and Indonesia (66%). Iraq also ranked thirteenth (61%), figure 6. Breast cancer survival rates fluctuate greatly throughout Asian nations, which can be attributed to variations in availability to contemporary treatments, early detection initiatives, and healthcare infrastructure. Because of extensive screening, early-stage diagnosis, and state-of-the-art treatment facilities, nations like Korea and Japan have high survival rates. On the other hand, late presentation,

restricted access to diagnostic resources, and postponements in starting the right treatment could be the cause of lower survival rates in nations like Indonesia and Iraq. These differences underline the necessity of all-encompassing cancer prevention plans that prioritize education, screening, and fair access to care for people from all socioeconomic backgrounds in Asia [32].
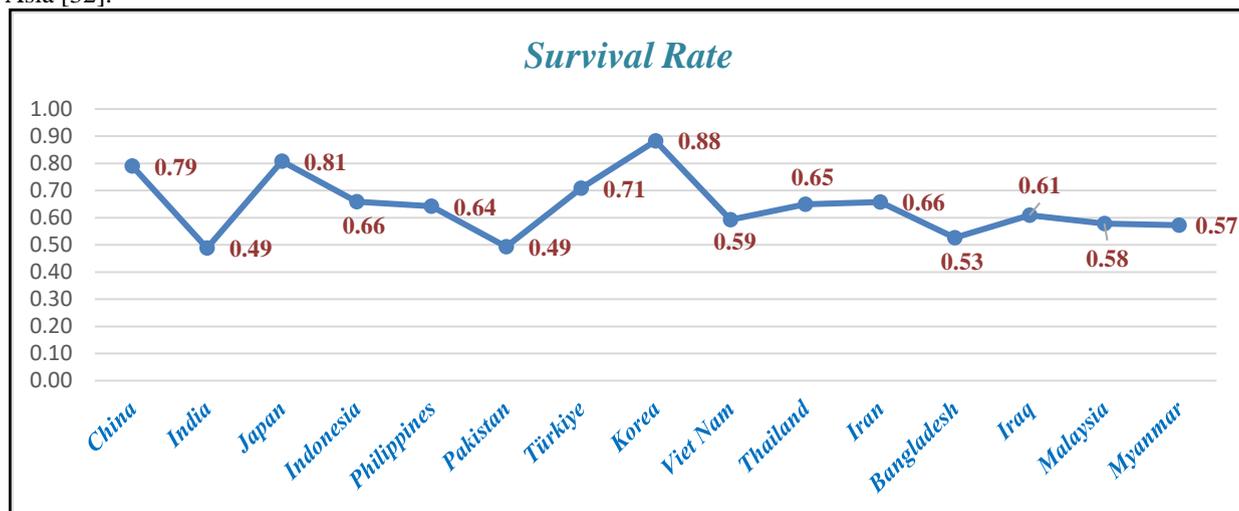

Fig. 6. Top 15 Asian Countries Survival Rate

The survival rate of the top fifteen countries in the incidence and mortality of breast cancer for the aging age (75+) for the Asian continent was in Japan (65%), followed by Korea (56%), and then China (36%), Sri Lanka (35%), and Indonesia (28%). Iraq was the least (20%). The survival rates for the aging age were much lower than for other ages, figure 7.
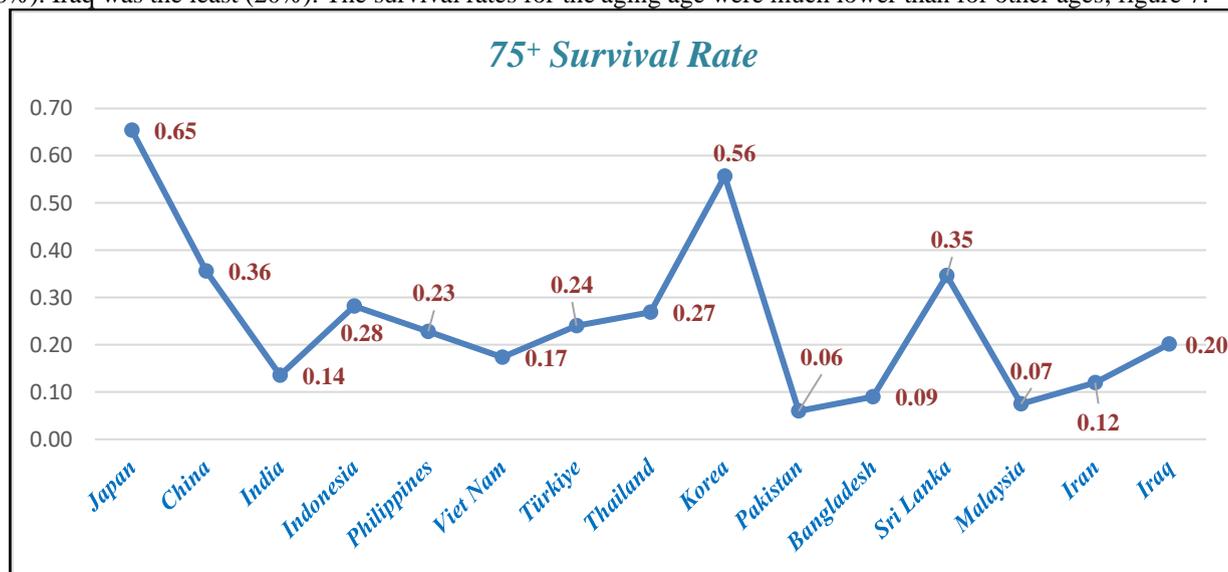

Fig. 7. Top 15 Asian Countries Survival Rate aged 75+

The highest survival rate for the governorates of Iraq for all cancer was in Erbil (100%), followed by Sulaymaniyah and Anbar (88%), and then Dohuk (8%), that is, the governorates of Iraqi Kurdistan had the highest survival rate of other governorates. The lowest percentage was almost half in ThiQar (53%), figure 8. The wide range in cancer survival rates in Iraq is a result of differences in availability to specialized oncology services, diagnostic capabilities, and healthcare facilities. Improved cancer awareness campaigns, more easily available treatment facilities, and better-equipped medical centers may all contribute to the Kurdistan Region's remarkably high survival rates, especially in Erbil and Sulaymaniyah. On the other hand, governorates with significantly lower survival rates, like Thi-Qar, probably struggle with issues including inadequate follow-up care, late diagnosis, and a lack of oncology facilities. These variations highlight the pressing need for early detection program extension across Iraq, fair healthcare resource distribution, and national standardization of cancer management practices.
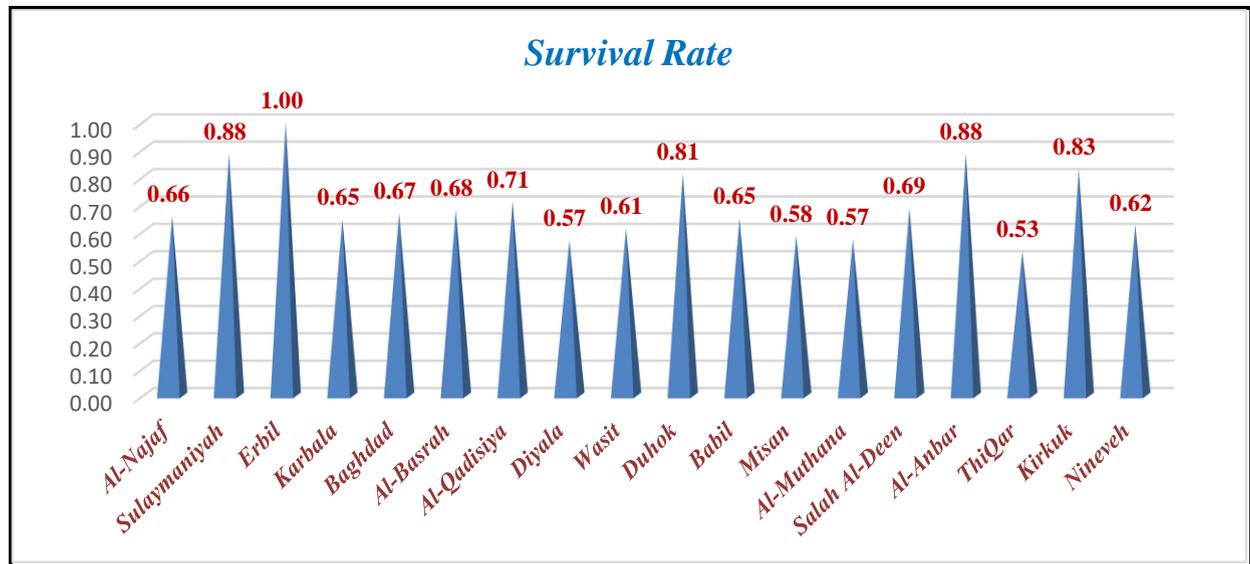
Fig. 8. Governorates Survival Rate

4. CONCLUSION

Most people have no symptoms when they have cancer in the early stages, hence the importance of detecting it early. People with an abnormal breast lump should seek medical attention, even if the lump does not cause pain, and most breast lumps are not cancerous. Cancerous breast lumps are more likely to be treated successfully when they are small and do not spread to nearby lymph nodes. Countries that have successfully reduced deaths from breast cancer have been able to achieve an annual reduction in those deaths. Strategies to improve treatment outcomes for breast cancer rely on strengthening the basic health system in order to provide treatments that are already known to be effective. These strategies are also important in the management of other cancers and other noncommunicable diseases. Survival rates are still low, especially in the developing countries of the Asian continent

Conflicts of Interest

Funding

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Authorship contribution statement

Zinah Ameer Abbood: Methodology, Formal analysis, Visualization. Supervision.
Asmaa Samir Mohsin: Methodology, Formal analysis, Visualization. Supervision
Sura Mouaid Abbas: Methodology, Writing - Original Draft, Visualization. Supervision, Project Administration, - Review & Editing. Investigation, Software,
Ashjan Mohammed Hussain: Methodology, Project Administration, Writing - Review & Editing
Tareq Hafdi abdtawfeeq: Conceptualization, Supervision, Project Administration.
Nathier A. Ibrahim: Conceptualization, Methodology, Formal analysis, Writing - Original Draft, Visualization, Funding Acquisition, Data Curation, Software.

Data availability

Supplementary data can be shared with the corresponding author upon reasonable request

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