

BREAST CANCER CARE IN YEMEN***Prof. Dr. Gamal Abdul Hamid**

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ABSTRACT

Breast cancer is the most common malignancy in Yemen and the first leading cause of cancer death. Breast cancer data from Yemen's main cancer registries NOC, Aden, Taiz, Mukalla, Sayoun and shabwah showed a variation in the number of cases reported by each registry and ranged between 13.8% to 22% according to oncology centers reports. Although the incidence of breast cancer in Yemen is lower than that in industrialized nations, the number of new cases has been significantly increasing, and women present with breast cancer at younger age and with more advanced disease than women in Western countries by at least one decade, as about 73% of women were aged 50 years or younger at the time of diagnosis and the most common age group affected was 41-50 years old. IDC cancer was the most common disease with 76% and 79% of patients having lymph node injury at the time of diagnosis. The lower incidence of breast cancer compared to high-income countries can be attributed to various reproductive factors such as fertility rates, premature birth and the duration of breastfeeding among Yemeni women, unlike women in Western countries. During the years 2019-2020 AD, the diagnosis and treatment of breast cancer witnessed a relative improvement, as sonar and mammogram devices were introduced to some centers, and this helped in the early detection of breast cancer as well as the development of diagnostic techniques and work on examining the ER, PR, Her 2 and this calls for the need to add 6 mammogram devices and pathology laboratories. For oncology centers, the national program of cancer control has worked, in coordination with the World Health Organization, to provide targeted treatment for oncology centers, which has a positive role in improving the patients' condition. Here, we review the epidemiology of breast cancer and the status of breast cancer care in Yemen; we compare our treatment outcomes with international ones.

KEYWORDS: Breast cancer, National program, Diagnosis, Treatment, Prevention, Yemen.**INTRODUCTION**

Breast cancer is an insidious disease that may be present and may develop over many years without signs or symptoms of any kind.^[1]

In 2020, the worldwide incidence of breast cancer estimated to be 2.3 million new cases per year and about 685 000 cases died from the disease. Among women, breast cancer accounts for 1 in 5 cancer cases and for 1 in 6 cancer deaths, ranking first for incidence in the vast majority of countries (159 of 185 countries) and for mortality in 110 countries.

Breast cancer was third in frequency when both sexes were considered together and by far the most prevalent cancer in women. The incidence rates are increasing in all countries with available statistics, and the impact of the disease is magnified because women are at risk from their late thirties. High incidence rates in countries with high HDI reflect a long-standing high prevalence of reproductive and hormonal risk factors (early menstrual age, late menopause, advanced age at first birth, fewer children, fewer breastfeeding and menopausal hormone

therapy) and oral contraceptives. Lifestyle risk factors (alcohol consumption, increased body weight, physical inactivity) as well as increased detection through structured or opportunistic radiological examination especially mammographic.^[2]

Treatment for breast cancer can be very effective, especially if the disease is detected early. Treatment for breast cancer often consists of a combination of surgical intervention, radiation therapy, and drugs (hormone therapy, chemotherapy, and / or targeted biological therapy) to treat microscopic cancer that has spread from the breast tumor to the blood. Such treatment can prevent cancer from growing and spreading, saving lives.^[3-4]

Establishing primary breast cancer prevention programs remains a challenge. However, efforts to reduce obesity and alcohol consumption, and to promote physical activity and breastfeeding, can have an impact on ending breast cancer worldwide. Extensive breast cancer screening programs aim to reduce deaths from breast cancer through early detection and effective treatment. The World Health Organization recommends structured

mammography screening and population screening every two years for women at moderate risk of developing breast cancer between the ages of 50 and 69 in well-equipped settings.^[5-7]

MATERIAL AND METHODS

We used data from the annual reports of the National Cancer Centers in Aden, Taiz, Hadramawt Mukalla, Sayoun and Shabwa for the period 2016-2020. Cancer cases can only be recorded histopathologically and reporting is mandatory. Reports include breast cancer

awareness activities, diagnosis, and treatment and prevention activities.

Breast cancer during 2016-2020

A total of 2201 patients were identified with a diagnosis of invasive breast cancer. Between January 2016 and December 2020, 2160 (98.1%) of female breast cancer and 41 cases (1.9%) of male breast cancer. The mean age of all patients was 47.41 years (Tables 1 and 2). Almost 25% of the patients were younger than 40 years of age at the time of diagnosis and 58.1% were premenopausal.

Table 1: Distribution of all cancers and breast cancer according to oncology cancer centers during 2016-2020.

	Oncology Center	All cancers	Total of breast cancer	% of breast cancer
1	National oncology center, Aden	4350	944	22
2	Al-Amal Oncology center, Taiz	3170	495	16
3	National oncology center, Mukala	3218	404	13.8
4	National oncology center, Sayoun	1402	227	16
5	National oncology center, Shabwah	670	131	20
	Total	12810	2201	17.2

Table 2: Distribution of breast cancer according to age and sex, 2016-2020.

Characteristics, Sex, Age group	No. of patients according to oncology centers					Total	%
	Aden	Taiz	Mukalla	Sayoun	Shabwah		
Gender							
Female	928	486	399	216	131	2160	98.1
Male	16	9	5	11	0	41	1.9
Age group							
< 40 years	232	115	136	71	31	585	26.6
41-50 years	324	166	113	48	42	693	31.5
51-60 years	255	126	77	40	31	529	24.0
>60 years	133	88	78	68	27	394	17.9
Total	944	495	404	227	131	2201	100

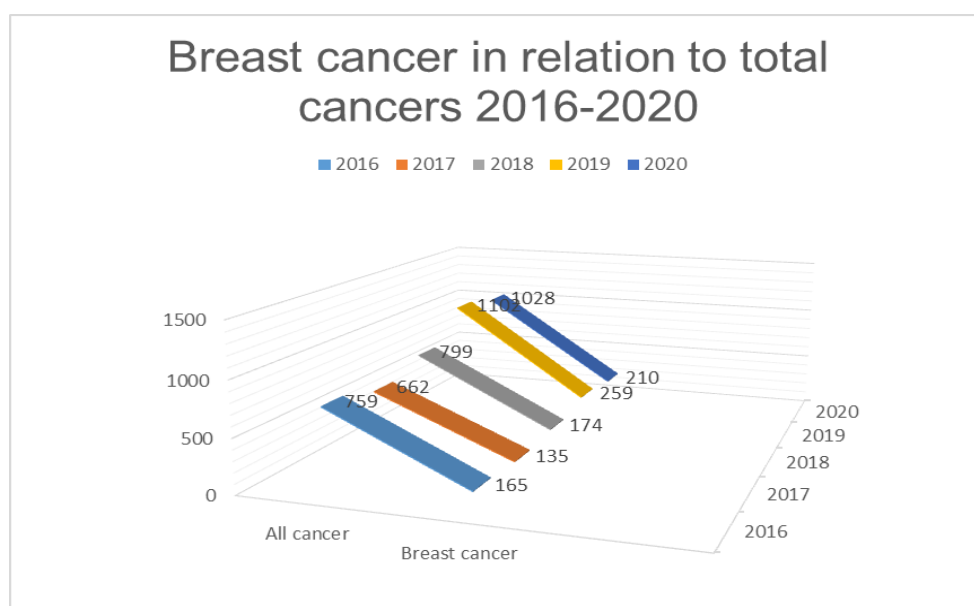


Figure 1: Breast cancer in comparison with total cancers in 5 oncology centers, Yemen, 2016-2020.

The number of breast cancer occurrences in women has increased by 61% during the last 5 years, from 345 in 2016 to 563 in 2020.

Table 3: The ASR of breast cancer was 4.7 in 2016 and 7.7/100,000 population in 2020. The median age at diagnosis was 50 years.

Year	No. of cases	Prevalence/100,000
2016	345	4.7
2017	386	5.3
2018	414	5.7
2019	492	6.7
2020	563	7.7

Diagnosis of breast cancer

During the last 5 years improved the diagnosis of breast cancer by supporting the cancer centers with mammography units and CT scan through ministry of public health and world Health Organization. The pathology laboratory introduced in most of cancer centers with IHC (ER, PR, Her 2) and some private hospitals offer these services. (11-13)

In the next 5 years the ministry of Public Health in cooperation with WHO and IAEA discuss the probability to support cancer centers with magnetic resonance imaging and bone scan.

Treatment

Surgical interventions

It has more than half of all breast cancer patients in Yemen have their operation is performed by general surgeons in teaching hospitals. In many patients with breast cancer at the beginning operated by general surgeon in private hospitals where chest an operation is performed. This sometimes leads to suboptimal results.¹⁸⁻¹⁰¹ The results, like positive margins, are the partial removal of breast lump or poor management of the axilla. Sentinel lymph node biopsies are not available in all hospitals. High percentage of operations complicated

with lymphedema. About 10% of breast cancer patients travel to India, Egypt or Jordan to undergo surgery and start treatment.

Chemotherapy

Among the most problems that negatively affected the lives of patients was the irregularity in providing chemotherapy and after discussions and dialogues with the World Health Organization and the King Salman Center and the efforts of the Ministry of Public Health, 50% of the chemotherapy list was supported by the World Health Organization and the King Salman Center and 40% supported through the ministry of public health, which had an impact positive for patients' lives and improved recovery rate.

Trastuzumab, a monoclonal antibody specific for HER2, was introduced at the Sana'a Oncology Center shortly after it was approved by the FDA. It has now been introduced in all centers and in all indications in the neoadjuvant, adjuvant and metastatic settings. Most endocrine drugs are available in all centers and free of charge for all patients with breast cancer and some target therapy are not available and still under discussion. (Table 3).

Table 3: Availability of chemotherapy for breast cancer.

Available chemotherapy		Not available chemotherapy
Anastrozole		Abemaciclib
Capacitabine	Methotrexate	Alpelisib
Carboplatin injection	Paclitaxel	Atezolizumab
Cyclophosphamide	Trastuzumab	Eribulin
Docetaxel	Vinorelbine	Everolimus
Doxorubicin	Tamoxifen	Olaparib
Epirubicin	Femara	Palbociclib
5-FU	Goserelin	Pertuzumab
Gemcitabine	Fasoldex	Pembrolizumab(keytryda)
Labatinib		Ribociclib
Liposomal Doxorubicin		

Radiotherapy

Access to radiotherapy is limited in Yemen and exclusive in Sana'a, with significant restrictions on accessing palliative care and low professional training for health care providers. Only one center in Yemen is responsible for implementing radiotherapy, however, it does not satisfy the long queue for patients who wait for a long time (up to more than 4 months). Many patients from the governorates prefer to travel to Egypt, Jordan or India, where the patients suffer a lot.

Ministry of Public Health and Population was agreed with the World Health Organization to equip an accelerated line for the Sana'a Oncology Center and another line for the Aden Oncology Center in 2022 and two radiotherapy centers in Taiz and Hadramout in 2024.

Breast Cancer Awareness Month "October Pink

Every October, for Breast Cancer Awareness Month, all oncology centers and cancer societies and foundations get involved in recognizing this life changing movement

to show solidarity and spread awareness within the community on the most common type of cancer affecting women in Yemen.

October pink! This month, oncology centers joined organizations and individuals across the country fighting breast cancer by donating a portion of the October proceeds to our governorate cancer centers, national oncology centers in all Yemen governorates, and many

associations and institutions working in the fight against breast cancer. Every year in the pink month of October, oncology centers holds many lectures, festivals and exhibitions to raise awareness. By supporting the National Program of Cancer Control and funding efforts to better understand cancer and treat it more effectively, the National Program of Cancer Control reduces suffering and improves the quality of life for cancer patients, survivors, and their families. (Figure 2)



Figure 2: Pink October activities in different institutions arranged by national oncology center, Aden and Aden Cancer Society.

Breast Cancer Research

Although breast cancer research is limited in Yemen. A Google search resulted in a total of 30 research papers between 2001 and 2021. Data are still relatively scarce, especially on treatment outcomes and survival. Breast Cancer Genetics, triple negative breast cancer, trends in risk factors, quality of care; and other aspects of breast cancer care, such as survival and palliative care in the oncology centers in the Yemeni governorates. These shortcomings are being remedied through efforts to improve research and through the conclusion of research agreements and collaborations with universities as well as Arab and international groups.

WHO Cancer Care Support to Yemen 2017-2020

In the shadow of the ongoing war and conflict, cancer care was at the brink of collapse in 2015 due to the lack of medicines and medical supplies as many other services in the health sector. To respond to the humanitarian needs of cancer care WHO has been

conducting the following activities in support of cancer care in Yemen 2017-2020:

- 1• Regular procurement of essential chemotherapy drugs to ensure the regular access to medical treatment for more than 25,000 cancer patients, at the national cancer centers and units across the country.
- 2• Provision of palliative drugs (Oral Morphine) for more than 10,000 patients with advanced cancers;
- 3 • Payment incentives to 10% of the health workers at all functioning 12 cancer care facilities including two centers for early detection of breast and cervical cancers.
- 4• Technical and financial support to the cancer registry in Yemen
- 5• Two mammography machines were provided to Sanaa and Aden to increase the capacity in the early detection of breast cancer;
- 6• One CT scan to Assadaqah hospital in Aden, where the oncology center is located, to improve the access to the diagnostic services used for the detection, staging, and follow-up purposes;

7 • Supporting treatment abroad for a few cancer patients in need of care not available inside the country through the project of mercy flight.



Figure 3: WHO Regional Director for the Eastern Mediterranean Dr Ahmed Al-Mandhari opening CT scan in national oncology center in /Aden.

What are hopes for the future of breast cancer care?

1. To complete establishment of breast cancer care units in national oncology cancer centers.
 2. Improve current application of screening mammography
 3. Improve multidisciplinary approach with input from the patient, the surgeon, the diagnostic radiologist, the pathologist, the general practitioner, the radiation oncologist, the medical oncologist, nurses, and other health professionals. The outcome of patients with breast and other cancers is better if a clinician who has access to a full range of treatment options in a multidisciplinary setting treats them.
 4. Improve the surgical technique must ensure adequate excision. Obtaining a tumor-free surgical margin decreases the incidence of a local recurrence (LR) of the primary tumor
 5. Completion of the agreement concluded with the King Salman Center, the Islamic Development Bank, the World Health Organization and the International Atomic Energy Agency to complete the construction and equipment of radiotherapy, provide mammograms, CT devices, and laboratory equipments, and secure chemotherapy according to the agreed list.
2. Brinton LA, Gaudet MM, Gierach GL. Breast cancer. In: M Thun, MS Linet, JR Cerhan, CA Haiman, D Schottenfeld, eds. *Cancer Epidemiology and Prevention*. 4th ed. Oxford University Press, 2018; 861-888.
 3. Moo TA, Sanford R, Dang C, Morrow M. Overview of Breast Cancer Therapy. *PET Clin.*, 2018; 13(3): 339-354. doi:10.1016/j.cpet.2018.02.006
 4. Hamid GA, Yassin S, Al-Ahdel F (2015) Triple-Negative Breast Cancer; Future Treatment in Limited Resource Centers. *J Develop Drugs*, 4: e141. doi:10.4172/2329-6631.1000e141
 5. Independent UK Panel on Breast Cancer Screening. The benefits and harms of breast cancer screening: an independent review. *Lancet*, 2012; 380: 1778- 1786.
 6. Coldman A, Phillips N, Wilson C, et al. Pan-Canadian study of mammography screening and mortality from breast cancer. *J Natl Cancer Inst.*, 2014; 106: dju261.
 7. Tabar L, Dean PB, Chen TH, et al. The incidence of fatal breast cancer measures the increased effectiveness of therapy in women participating in mammography screening. *Cancer*, 2019; 125: 515-523.
 8. Kreike B, Hart AA, van de Velde T, Borger J, Peterse H, Rutgers E, et al. Continuing risk of ipsilateral breast relapse after breast-conserving therapy at longterm follow-up. *Int J Radiat Oncol Biol Phys.*, 2008; 71: 1014–21.
 9. Yildirim E. Locoregional recurrence in breast carcinoma patients. *Eur J Surg Oncol*, 2009; 35: 258–63.
 10. Jacobs L. Positive margins: The challenge continues for breast surgeons. *Ann Surg Oncol*.

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REFERENCES

1. Abdul Hamid G, Tayeb MS, Bawazir AA. Breast cancer in south-east Republic of Yemen. *East Mediterr Health J.*, 2001 Nov; 7(6): 1012-6. PMID: 15332743.

11. *Amani S Hadi, Gamal Abdul Hamid, Refaat Al-Aregee, Wafa Abdullah.* Invasive papillary ductal carcinoma of the breast: A case report; *Journal of solid tumors*, 2020; 10(1), <https://doi.org/10.5430/jst.v10n1p17>
12. Al-Kahiry W, Omer HH, Saeed NM, Hamid GA. Late presentation of breast cancer in Aden, Yemen. *Gulf J Oncolog*, 2011 Jan; (9): 7-11. PMID: 21177203.
13. El-Zaemey, S; Nagi, N; Fritschi, L; Heyworth, Brest cancer among Yemeni women using the National Oncology Centre Registry 2004-2010; *J. Cancer Epidemiology*, 2012, 3; 36: 249-53. DOI:10.1016/j.canep.2012.01.006