

**Original Article**  
**The pattern and distribution**  
**of malignancies reported**  
**in Hadhramout Sector, Yemen**  
**– 2002-2011**

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**Dr. Ahmed Mohamed Badheeb & Dr. Abubakir Baamer**  
Faculty of Medicine, Hadhramout University

## Original Article

# The pattern and distribution of malignancies reported in Hadhramout Sector, Yemen – 2002-2011

**Background:** Hadhramout Sector in Yemen constitutes of three governorates (Hadhramout, Shabwa, & Almahra) with a population of 1,684,373 inhabitants. Cancer cases reported from the different health care facilities are registered in Hadhramout Cancer Registry (HCR) as a population based cancer registry. This paper describes the incidence of cancer in the period of 10 years time (2002-2011).

**Methodology:** The data was analysed using the CanReg4 programme and the incidence rate was calculated based on mid-time total population in each period.

**Results:** The cancers were more frequent in females (55.5%) than males (44.5%). The three most common types were breast (17.5%), leukemia (7.1%), and Non Hodgkin's Lymphoma (7.1%). In the pediatric group, leukemia (25.2%) was most common cancer.

**Conclusions:** Breast cancer in females and hematological malignancies in males were the most frequent types of malignancies. Leukemias were the most common cancers in children.

Our results generally indicate that the pattern of the most common registered cancer bears some similarities with the Aden and Gulf's data with some differences that necessitate further evaluation.

**Key Words:** Cancer Registry, Incidence, Hadhramout, Yemen

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\*Ahmed M Badheeb, MD.

Department of Medicine, Faculty of Medicine, Hadhramout University.

P.O. Box 56004, Mukalla, Hadhramout, Yemen

Email: [Badheebdr@gmail.com](mailto:Badheebdr@gmail.com)

## Introduction

Cancer is still one of the major health problems worldwide with increasing frequency, especially with increased exposure to large

number of carcinogenic agents.

In 2008, cancers accounted for over 7.6 million deaths (13% of total mortality) and there were more than 12.7 million new cases worldwide. More than 60% of cancer deaths and approximately half of new cases occurred in developing regions. (2,3). The most commonly diagnosed cancers worldwide are lung, breast and colorectal cancers. The most common causes of cancer death are lung, stomach and liver cancers.

Profound demographic, socioeconomic, and behavioral changes have taken place in Eastern Mediterranean Region over the past three decades. Longevity has progressively increased, and there has been steady shift from traditional and rural ways of life to more urbanized and modern lifestyle. With modernization, life styles linked with physical inactivity, smoking, and new eating habits have emerged which promote non communicable diseases, including cancer. (4)

There is a significant variation in the distribution of site-specific cancer mortality and incidence by region. In India as an example, the genital tract cancers are the largest overall group of cancers. (3)

In Saudi Arabia, gastrointestinal tract malignancies are the commonest type of cancers followed by Hodgkin's disease, Non Hodgkin lymphoma, and thyroid cancer. (6) The Republic of Yemen lacks a national cancer registry and there are no reliable data available.

However, if we consider the WHO recommendation for estimating cancer incidence (100 per 100000 for countries with more than half of the population under 20 years of age), the number of new cases in Yemen should be around 16000 annually. (7)

Some studies conducted in Yemen revealed that the commonest cancers was that of gastrointestinal tract, followed by lymphomas and head and neck, while in Aden Cancer Registry the hematopoietic cancers were the commonest.(7-9). The aim of this study is to

describe the pattern of The aim of this study is to describe the pattern of and to explore association with age, sex, and site of cancer according to the international classification of disease (oncology).

### **Methodology:**

This retrospective descriptive study was carried out in Hadhramout Sector at east of Yemen by analyzing data from Hadhramout Cancer Registry. The study included all malignant cases diagnosed in the period (2002 - 2011). The patient's name, sex, age, diagnosis, site of tumor, governorate, and source of data were fed into an internationally approved computerized data base called Can Reg 4 Program.

The neoplasms had been coded and classified according to the international classification of diseases for oncology (ICD-O, 10th). The patients were divided into 16 age groups, according to their ages (with class interval = 4 years). Pediatric malignancies were separated (< 15 years), according to site of cancer.

The neoplasms were arranged at first according to the main topographic classification of tumors and then re- arranged by using sub-classification to specify the most affected site in both males and females. The data were analyzed to find percentage, means, and standard deviations. The results of our study were compared with other local; the results of our study were compared with other local regional and international studies.

### **Results:**

In the study period (2002-2011), a total of 1879 cases were analyzed. There were 836 males (44.5%) and 1043 females (55.5 %). Age standardized rate (ASR) per 100,000 inhabitants was 21.8 for females and 17 for males .Age distribution shows that the peak incidence of cancers was between (45 - 74 years) age group. (Figure 1 and 2)

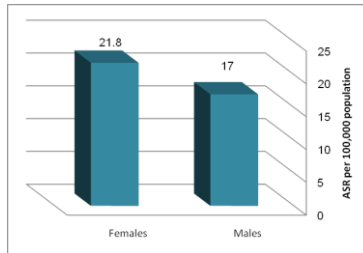


Figure (1): Age Standardized Rate (ASR) 100 000 for all cancers by sex

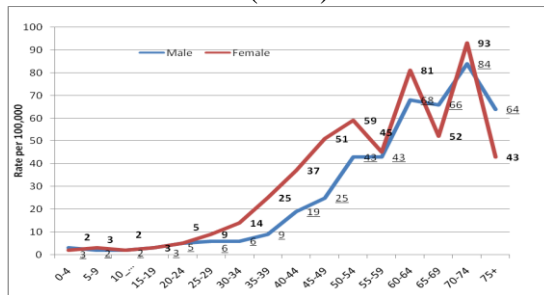


Figure (2): Age-specific incidence rates of all cancers by sex,  
The five most common types were breast (17.5%), Leukemias (7.1%),  
Non –Hodgkin’s Lymphoma (7.1%), Hodgkin’s lymphoma (5.4%) and  
liver (4%). (Table 2)

| Site of Cancer       | Number | % of all sites |
|----------------------|--------|----------------|
| Breast               | 328    | 17.5%          |
| Leukemia             | 133    | 7.1%           |
| Non-Hodgkin lymphoma | 133    | 7.1%           |
| Hodgkin disease      | 102    | 5.4%           |
| Liver                | 76     | 4.0%           |
| Bone                 | 71     | 3.8%           |
| Lung                 | 63     | 3.4%           |
| Cervix Uteri         | 60     | 3.2%           |
| Colon                | 57     | 3.0%           |
| Bladder              | 53     | 2.8%           |
| Other sites          | 803    | 42.7%          |
| All sites Total      | 1879   | 100.0%         |

Table 2: The 10 Most Common Cancers

Regarding topographic distribution by sex, the four major cancers in males were leukemia (9.4 %), Non –Hodgkin’s Lymphoma (9.1%), Hodgkin’s Lymphoma, (7.9%) liver (6.2%), and lung (6.2%). While in females, the most common cancers were breast (30.6%), cervix (5.8%), Non –Hodgkin’s Lymphoma (5.5%), (30.6%), cervix (5.8%) ,Non –Hodgkin’s Lymphoma (5.5%), leukemias (5.3%) and ovary (4.3%)

The most common malignancies in children under 15 years of age were leukemias (25.2%), brain & nervous system (16.2%), followed by Non-Hodgkin’s Lymphoma (11.9%) Hodgkin’s lymphoma (10.6%), and bone tumors (6.6%) (Table 3).

Table 3: The 5 Most Common Childhood Cancers

| Site of Cancer        | Number | %*    |
|-----------------------|--------|-------|
| Leukaemia             | 38     | 25.2% |
| Brain, Nervous system | 25     | 16.6% |
| Non-Hodgkin lymphoma  | 18     | 11.9% |
| Hodgkin disease       | 16     | 10.6% |
| Bone                  | 10     | 6.6%  |

\*Calculated from total childhood cancers (151)

### Discussion:

This study was performed to analyze Hadhramout Cancer Registry’s data (2002-2011) which is a population-based cancer registry covering “three” Yemeni governorates (Hadhramout, Shabwah and Almahrah).

The results of our study showed that the malignancies were more frequent in females (55.5%) than males (44.5%) , and this is similar to a study carried out in south-eastern

governorates of Yemen.

The first five organs in our data were breast, hematopoietic, liver, bone, and lung and this is a similar pattern to what was quoted by other studies (6, 7, 10, 11). In another study performed in Sana'a (capital of Yemen) revealed that the breast cancer ranked the 7<sup>th</sup>, and this difference may be due the fact that reported cases from referral hospitals in Sana'a were not representative to all cancer cases in Yemen. Skin cancer ranked sixth in this study comparable with other studies. (6, 9).

Unlike our study, other studies revealed high incidence of brain tumors (7, 9). This difference can be accounted by undetailed histopathological diagnosis of brain tumors and other parts of the central nervous system, which cannot differentiate between benign and malignant tumors.

Urinary tract malignancies constituted the 9<sup>th</sup> common cancer in the current series, which is comparable with that found in South-Eastern governorates of Yemen.

Thyroid gland cancers constituted the 9<sup>th</sup> common cancer which is comparable to other studies. (7, 9). Like other studies, our study revealed that the thyroid cancer was more frequent in females than males. (12, 13).

Incidence of lung cancer and intra-thoracic malignancies is comparable to Aden's data which ranked 7<sup>th</sup> among cancers in general.

Regarding old age, male genital system, skin, and digestive organs malignancies were seen in an older age; a comparable finding with other studies. (6,7,9)

In males, the incidence of male genital system malignancies (including prostate cancers), like other Arabian Gulf and Asian countries, is very low compared to Western despite

the high intake of calories and high consumption of animal fat. (7, 10, 14).

Among females, the malignant tumors of the breast were the most frequent as reported almost in all studies carried out in Yemen (7, 9, 15).

Internationally, also, the most common malignancies in females are of breast, in both developed and less developed regions, while in south central Asian countries, cervical (uterine) tumors are reported to be the most frequent followed by breast tumors. (10).

Unlike other studies, liver tumors were the most common GI cancers. Comparable findings were found in Aden's data. While the colorectal cancer was the first in several studies in Yemen, Saudi Arabia, and Pakistan. (8, 16-19)

In children under 15 years of age, the hematopoietic and reticulo-endothelial systems malignancies (leukemia) were the commonest type of tumor, and this in accordance with that found in Pakistan (10). The age group between (60-74) years is the most affected age group, which is similar to other studies (7). The five most common cancers in males (by specific site) were leukemia, lymph node, liver, and lung. A comparable distribution as found in Pakistan. (10). About (86.52%) of patients were from Hadhramout followed by patients from Shabwa and Al-Mahrah. This does not indicate that the incidence of cancer is lower in those governorates. It can be attributed to in-accessibilities to health care facilities and cancer registry.

### **Conclusions:**

The most common type of cancers found in our study were breast cancer in females and hematopoietic cancers in males



while in children under 15 years of age was leukemia. Cancers were reported more frequently in the age group of 46-74 years with high frequency in females than males.

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