



# Cancer Pattern among Adults in Najran, Saudi Arabia - 2014-2019

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## Abstract

**Background:** Najran is one of the thirteen regions in Saudi Arabia, located in the southwest of the country with a recently established oncology center and cancer registry. This paper describes for the first time the incidence of cancer in this region which has a unique geographic and demographic attribute. **Methodology:** This is a retrospective descriptive study that included all adult (diagnosis age >14 years) cancer patients captured by Najran regional cancer registry in the period of 2014 to 2019. Available data, including demographics, diagnosis, site of the tumor, and histopathology were analyzed. Pediatric malignancies were excluded. During the studied period, a regional registry was established and linked to the central Saudi Cancer Registry. All confirmed cancer cases in Najran were captured in this registry. **Results:** The Total number of records was 1600 diagnosed over a 6-year period (range, 200-330 per year). More females were reported (54.6%) than males (45.4%). The median age was 52 years (SD, ±19). The three most common cancers were breast (14.2 %), thyroid (11.8%), and Colorectal (8.4%). Among the females, breast (25.3%) was the most common cancer followed by thyroid (16.7%), and colorectal (7%); while in males, colorectal cancers (10.2%), hepatocellular carcinoma (6.7%), and leukemia (6.6) were the most common. **Conclusions:** Breast cancer in females and colorectal cancer in males were the most frequent types of solid malignancies in Najran, Saudi Arabia. Our study shows that the pattern of cancers bears some similarities with the national and Gulf data with some differences that warrant further exploration.

**Keywords:** Saudi Cancer Registry, Incidence, Najran, Saudi Arabia

## Introduction

Cancer is a leading cause of death worldwide in countries of all income levels. The incidence and mortality are expected to increase rapidly as populations grow, age, and adopt lifestyle risk factors that increase cancer risk such as tobacco use, physical inactivity, obesity, and reproductive patterns are increasingly worldwide [1].

“In 2018, cancers accounted for over 9.6 million deaths and there were more than 18.1 million new cases worldwide. 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 “(The International Agency for Research on Cancer 2018) [2].

In Saudi Arabia, breast, colorectal cancers are the commonest type of cancers followed by the thyroid, Non-Hodgkin lymphoma, and leukemia [3].

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

## Materials and Methods

This is a retrospective descriptive study that included all adult (diagnosis age >14 years) cancer patients captured by Najran regional cancer registry in the period of 2014 - to 2019. Available data, including demographics, diagnosis, site of tumor, and histopathology was analyzed. Pediatric malignancies were excluded. During the studied period, a regional registry was established and linked to the central Saudi Cancer Registry. All confirmed cancer cases in Najran, were captured in this registry.

The cancers were arranged according to the affected organ to specify the most affected site in both males and females. The data were analyzed to find percentages, means, and standard deviations. All confirmed cancer cases that from Jan 2014 to December 2019 were revised retrospectively. The cases identified from the cancer registry. Demographic, clinical, and histopathological data had been collected.

## Results

The Total number of cases was 1600 for the period 2014-2019. Cancer was more frequent in females (54.6%) than males (45.4%) (figure1).

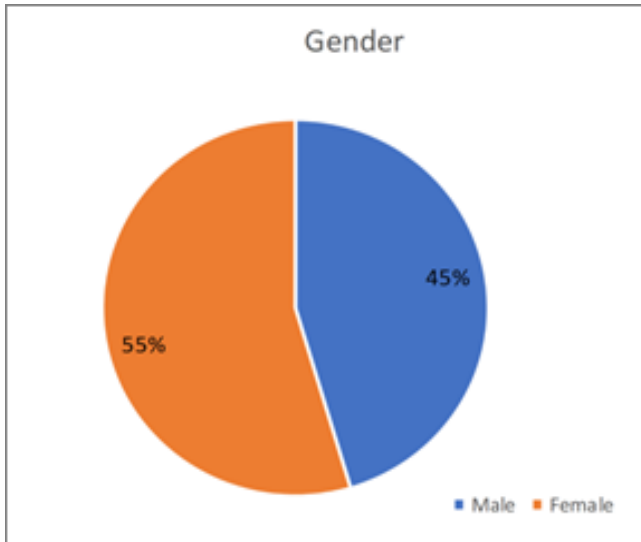


Figure: Distribution of cases by sex

The median age was 52 years with a standard deviation (SD) of 19. The three most common cancers were breast (14.2 %), thyroid (11.8%), and Colorectal (8.4%). Among the females, breast (25.3%) was the most common cancer followed by thyroid (16.7%), and colorectal (7%). On the other hand, colorectal cancers (10.2%), hepatocellular carcinoma (6.7%), and leukemia (6.6) were the most prevalent among males. The five most common types were breast (14.2 %), thyroid (11.8%), and Colorectal (8.4%), gastric (4.8%), and leukemia (4.7%). (Table 1)

Table 1: The 10 Most Common Cancers

	Site of Cancer	Number	% of all sites
1	Breast	228	14.2
2	Thyroid	189	11.8
3	Colorectal	135	8.4
4	Gastric	77	4.8
5	Leukemia	75	4.7
6	NHL	74	4.6
7	Liver	72	4.5
8	Head & Neck	56	3.5
9	Pancreas	55	3.4
10	Brain	53	3.3
	All sites total	1600	100.0%

Regarding topographic distribution by sex, the five major cancers in males were colorectal (10.2 %), liver (6.7), leukemia (6.6%), NHL (6.2%), & gastric (6.1%), (Table 2), while in females, the most common cancers were breast (25.3%), thyroid (16.7%), colorectal (7 %), ovarian(5.8%), and gastric (3.8%) (Table:3).

Table 2: The 10 Most Common Male Cancers

	Site of Cancer	% of all sites
1	Colorectal	10.2
2	Liver	6.7
3	LEUKEMIA	6.6
4	NHL	6.2
5	Gastric	6.1
6	THYROID	5.9
7	HEAD & NECK	5.8
8	BLADDER	5.6
9	Brain	4.7
10	Pancreatic	4.4

Table 3: The 10 Most Common Female Cancers

	Site of Cancer	% of all sites
1	Breast	25.3
2	THYROID	16.7
3	Colorectal	7.0
4	OVARIAN	5.8
5	Gastric	3.8
6	Uterine	3.4
7	NHL	3.3
8	LEUKEMIA	3.1
9	Hodgkin’s Lymphoma	2.7
10	Liver	2.6

## Discussion

This study was performed to analyze the incidence of cancer among adults at Najran region in Saudi Arabia constitutes of six governorates (Najran, Sharourah, Yadama, Thar, Haboona, & Badr-Aljanoob) with a population of 408,272 according to “2010 census” [4].

The results of our study showed that the malignancies were more frequent in females (54.6%) than males (45.4%), and this is similar to the National Saudi Cancer registry data were the females (53.8%) while the males (46.2%).

The top ten cancers in this study were breast, thyroid, colorectal, gastric, leukemia, Non-Hodgkin’s Lymphoma, liver, head & neck, pancreas, and brain. There is a similarity in the incidence of breast cancer (the first) & leukemia (the fifth position) with the Saudi cancer registry 2015 and the Gulf Cooperation Council (GCC) results [5,6].

Thyroid cancer as the fastest growing cancer in terms of its incidence comes as the second common cancer (11.8%) which is higher than the national (8.5%), GCC (6.3%), and the international figures, this may be related to two factors, the first one is the overdiagnosis by the fine needle aspiration biopsy, while the second possible cause is the low iodine intake in Najran region as showed in meta-analysis where a higher intake of dietary iodine was as a protective factor against thyroid cancer [7-9].

Although our study showed a lower incidence of the colorectal (8.4%) in comparison with the national figure of 12.2 % we are in concordance with the GCC (9%) and the world (10%).

Gastric cancer ranked as the fourth (4.8%), while not seen among the top 10 national cancers, but we are again in concordance with the GCC, where the gastric cancer is the 8th one (3.4%) and all over the world as the fifth (5.7%) [10].

The most commonly diagnosed cancer worldwide is the lung cancer, while our study showed a low incidence of this cancer (2.8%) mostly as a result of the lower prevalence of tobacco smoking in Najran in contradictory to the higher prevalence of tobacco chewing that may explain the higher incidence of head & neck cancer (8th, 3.5%) as a unique finding differs from the local & worldwide figures [11].

Our study showed pancreatic cancers among the top ten with global similarity where about 338000 people had pancreatic cancer in 2012 worldwide, making it the 11th most common cancer. To date, the causes of pancreatic cancer are still insufficiently known, although certain risk factors have been identified, such as smoking, obesity, genetics, diabetes, diet, inactivity. Our figures are higher than the national and GCC figures, this warrants further exploration [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 [12-14]. This may be attributed to the lack of prostate screening programs [15].

## Conclusion

In conclusion, breast cancer in females and colorectal cancer in males were the most frequent types of solid malignancies in Najran, Saudi Arabia. Our results generally indicate that the pattern of the most common registered cancer bears some similarities with the national and Gulf data with some differences that warrant further exploration.

## Ethics approval and consent to participate

This study was conducted after approval of the Cancer Research Committee in the oncology Department at King Khalid Hospital in Najran. No informed consent needed for this type of study with no extra burden for participants and anonymized data.

## Data Availability

Data are available at Saudi Cancer Registry - Najran and it will be included in the periodic report of the national registry.

## Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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## Authors' contributions

AB analyzed and interpreted the patient data. NN and MB performed were contributors in writing the manuscript. All authors read and approved the final manuscript.

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