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Original research article

DETERMINE THE PREVALENCE OF VARIOUS TYPES OF CANCER AND EXAMINE THE MOST FREQUENT CANCER TYPE ACCORDING TO THEIR GENDER

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Abstract: *The study aimed to determine the prevalence of different cancer types and identify the most frequent cancer type by gender. The study was conducted retrospectively in the Department of Internal Medicine at Mayo Hospital, Lahore. A total of 522 patients were included in the study, and the data was collected from 10 different cancer hospitals in Pakistan. The study was six months, from January 2023 to June 2023. Statistical analysis was performed using SPSS Version 25. The results showed that Breast cancer was the predominant type of cancer (28.4%), followed closely by Lips oral cavity cancer (23.8%). Colorectum cancer affected 18.0% of patients, while skin cancer was observed in 12.6% of cases. Liver and intrahepatic bile duct, Lung and bronchus, Stomach, and Brain cancer collectively constituted approximately 8.0%, 5.9%, 2.1%, and 1.1%, respectively. The study included 209 (40.0%) male and 313 (60.0%) female patients. The study found that the most common type of cancer differed by gender. Cancers of the lip and oral cavity were the most common in males, while breast cancer was the most frequent cancer type among females.*

Keywords: Breast Cancer, Colorectum Cancer, Types of Cancer, Pakistan.

Introduction

Indeed, the understanding of cancer has ancient roots, and historical records indicate that humans were aware of the disease, even though the term "cancer" as we know it today was not used in ancient times. (Ali et al., 2020) Cancer is a significant health concern in Pakistan, as it is in many parts of the world. (Tufail and Wu, 2023) Annually, worldwide, 18.1 million individuals receive a new diagnosis of cancer, with 9.6 million deaths occurring before the age of 70. (Tufail and Wu, 2023) Various factors, including lifestyle, genetics, environmental conditions, and access to healthcare, influence the prevalence of cancer in Pakistan. (Murtaza, 2023) The burden of cancer is indeed significant in regions like Asia, Africa, and Latin America.(Oh and Weiderpass, 2014) These areas face unique challenges related to healthcare infrastructure, access to cancer screening and treatment, and socio-economic factors that can influence cancer outcomes. The Asia-Pacific region, which includes countries such as China, India, Indonesia, and Pakistan, bears a substantial burden of cancer. (Shah et al., 2020) This is partly due to the large populations in these countries, contributing to a higher number of cancer cases. The development of cancer is complex and often involves genetic mutations. (Hassanpour and Dehghani, 2017) Environmental factors play a significant role in causing these mutations. Most cancers (90-95%) are thought to result from acquired genetic mutations due to exposure to various environmental factors. (Anand et al., 2008) These factors include tobacco use, diet, obesity, infections, exposure to radiation, and chronic stress. Alcohol consumption has been identified as a risk factor for several types of cancer.(Cao and Giovannucci, 2016) The link between alcohol and cancer is most evident in cancers of the liver, esophagus, mouth, throat, larynx, and breast.(Pelucchi et al., 2006) The prevalence of alcohol-related cancers can vary by region and population. In Western Europe, a notable percentage of cancer cases in males (9.99%) and females (3%) can be attributed to alcohol exposure. (Ali et al., 2020) Liver cancer and gastric (stomach) cancer are among the cancers strongly associated with alcohol consumption. Malignancy is one of the leading causes of death both internationally and in Pakistan. According to Cokkinides et al. (Жестков and РОМАНЕНКО, 2009), it is the second most prevalent cause of mortality globally, and according to Sankaranarayanan et al. (Sankaranarayanan, 2014) its prevalence could range from 6.1 to 10.7 million in 2030. The present study was conducted to determine the prevalence of various types of cancer, with a specific emphasis on gender-based analysis. The findings from such a study could have significant implications for public health, medical practice, and future research endeavors in the field of oncology. Thus, this study aimed to determine the prevalence of various types of cancer and examine the most frequent cancer types according to their gender.

Methodology

The present study was designed as a retrospective study conducted in the Department of Internal Medicine at Mayo Hospital, Lahore, Pakistan. The study was carried out from

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January 2023 to June 2023. The study's primary objective was to evaluate the incidence of cancer in adult patients aged 18 years and older.

Inclusion criteria consisted of individuals who were diagnosed with any cancer histologically and cytologically, had a documented medical history of cancer, and were both males and females. Exclusion criteria included individuals without a confirmed diagnosis of cancer, pregnant women, individuals who have previously participated in a similar study to avoid duplication of data, individuals who refused to provide informed consent, and those in which the specific type of cancer was not clearly stated or confirmed.

The study was conducted in 10 different cancer hospitals in Pakistan, where around 300 patients visited from 2021 to 2023. The data were collected from cancer registries. All the patients included in the study were Pakistani and had a valid Pakistani identity card. For statistical analysis, we used SPSS Version 25.

Ethical approval was obtained from the hospital's ethical committee before commencing the study. During data collection, we only included patients who were complete in all respects. This means all patients who met the inclusion criteria were included in the study, while those who did not or had incomplete data were excluded.

Overall, this study aimed to provide valuable insights into cancer incidence in Pakistan. The study is expected to contribute to developing effective cancer prevention and treatment strategies in the country.

Results

A total of 522 patients with a mean age of 51.4483±13.9 years were enrolled (Table 1). The mean ages of male and female patients were 51.77±13.9 and 51.23±14.01 years, respectively. In the present study, the most prevalent type of cancer in our study is Breast cancer (28.4%), followed by 23.8% Lips oral cavity cancer. 18.0% of patients had Colorectum cancer, while patients who had skin cancer were 12.6%. Liver and intrahepatic bile duct, Lung and bronchus, Stomach, and Brain cancer contribute to about 8.0%, 5.9%, 2.1%, and 1.1%, respectively (table 2, graph 1). There were 209 (40.0%) male patients and 313(60.0%) were female patients. The distribution of the prevalence of cancer type based on gender is given in Table 4 and table 5. In male patients, the most common cancer was Lips oral cavity cancer, while in female patients, the most common type of cancer was breast cancer.

Table 1: Mean age of all enrolled Patients *(n=522)*

Variables	Mean±SD
Overall Age (Years)	51.4483±13.9
Male age	51.77±13.9
Female age	51.23±14.01

Table 2: Distribution of patients according to types of cancer *(n=522)*

Types of cancer	Frequency	Percentage
Breast cancer	148	28.4
Lips oral cavity	124	23.8
Colorectum	94	18.0
Skin cancer	66	12.6
Liver and intrahepatic bile duct	42	8.0
Lung and bronchus	31	5.9
Stomach	11	2.1
Brain	6	1.1

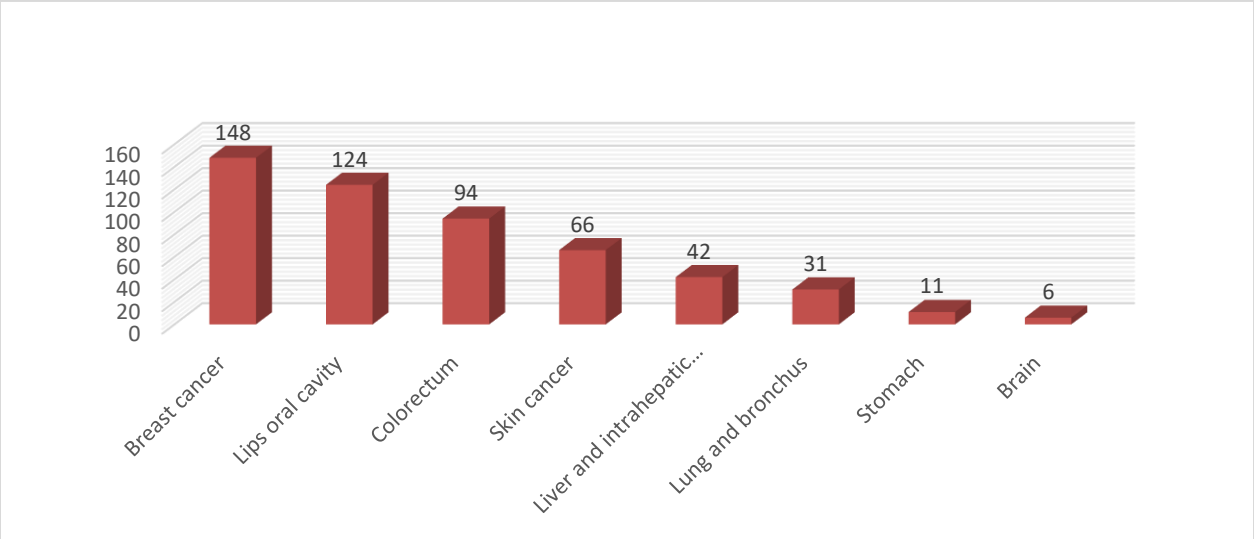

FIG 1: ***Bar graph showing different types of cancer***

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Table 3: Distribution of infants based on gender (*n=522)*

Gender	Frequency	Percentage
Male	209	40.0
Female	313	60.0
Total	522	100.0

Table 4: Distribution of patients according to types of cancer in males *(n=129)*

Types of cancer	Frequency	Percentage
Lips oral cavity	84	40.2
Colorectum	44	21.1
Skin cancer	36	17.2
Liver and intrahepatic bile duct	23	11.0
Lung and bronchus	14	6.7
Stomach	5	2.4
Brain	3	1.4
Total	209	100

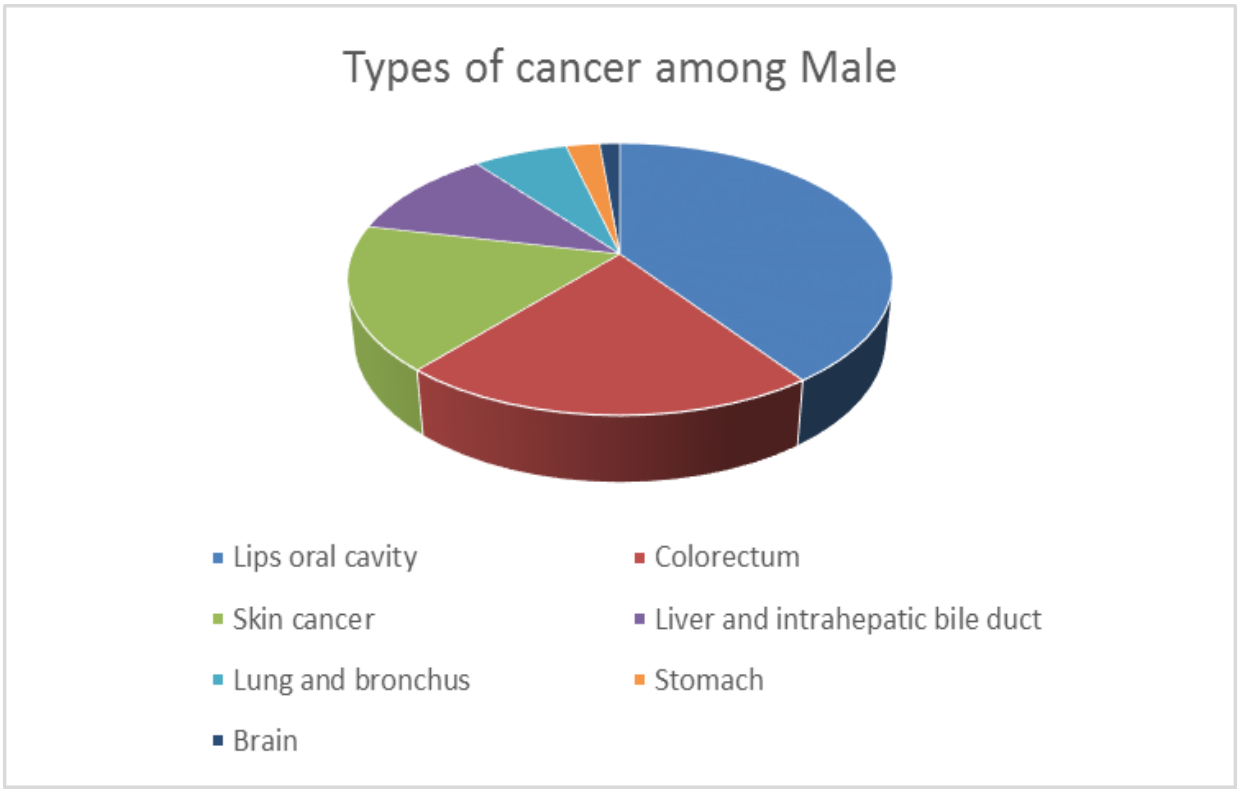

FIG 2: ***Graph showing different types of cancer in male patients***

Table 5: Distribution of patients according to types of cancer in females *(n=313)*

Types of cancer	Frequency	Percentage
Breast cancer	148	47.3
Lips oral cavity	40	12.8
Colorectum	50	16.0
Skin cancer	30	9.6
Liver and intrahepatic bile duct	19	6.1
Lung and bronchus	17	5.4
Stomach	6	1.9
Brain	3	1.0
Total	313	100.0

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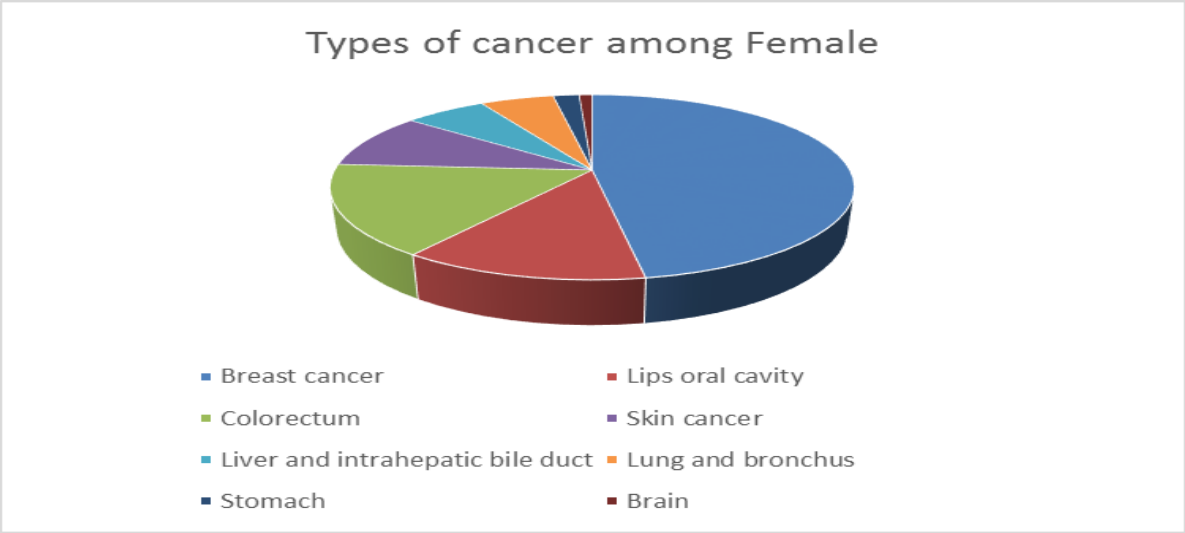

FIG 3: ***Graph showing different types of cancer in female patients***

Discussion

It has been suggested that around 28.4 million cases of cancer are anticipated to occur in the year 2040. In Pakistan, the prevalence is increasing day by day. So, the main aim of the present study was to determine the prevalence of various types of cancer and examine the most frequent cancer types according to their gender.

In this current study, breast cancer emerged as the most frequent and widespread form of cancer, with lips and oral cavity cancer ranking second in prevalence. As has been stated by Anwar Ali et al. in their study, Breast cancer cases have increased by 2.26 million according to cancer statistics.(Ali et al., 2022; Ferlay et al., 2021)

Our research findings align with another study, reinforcing that breast cancer was the most prevalent cancer, accounting for 31.8% of all cancers. Subsequently, cancers of the lip and oral cavity ranked second at 19.2%. (Qureshi et al., 2020) Breast cancer stands out as the most prevalent cancer across both genders, while cancer of the lip and oral cavity takes the lead among males and holds the second position among females. The elevated occurrence of lip and oral cavity cancers in Pakistan aligns with findings from other regional reports, underscoring its significant prevalence.(Bhurgri et al., 2005; Bhurgri et al., 2006b; Iqbal, 2020; Qureshi et al., 2016) Breast cancer emerged as the predominant malignancy among females, and these results align with similar observations in both national and international reports. (Qureshi et al., 2020) Although breast cancers are generally challenging to prevent, several socioeconomic factors, including heightened contraceptive use, lack of breastfeeding, and obesity, are recognized as known risk factors. (Britt et al., 2020) It has been stated in the literature that breast cancer affects approximately one in 20 individuals globally, with the incidence rising to as high as one in eight in high-income countries. (Britt et al., 2020) Cancer of the lips and oral cavity can have various causes, and it often results from a combination of factors. Smoking and the use of smokeless tobacco are significant risk factors for oral cavity cancers. The chemicals in tobacco can damage the cells in the oral cavity and contribute to the development of cancer. In Pakistan, approximately 19.1% of adults aged 15 and above presently use tobacco in various forms, with a breakdown indicating that 31.8% of men and 5.8% of women are current tobacco users. (Organization, 2010) According to the State Bank of Pakistan report, 64.48 billion cigarettes were consumed in 2014.(Saqib et al., 2018) In the 1990s, estimates suggested that in Pakistan, there were 22–25 million smokers, and approximately 55% of households had at least one individual who smoked. (Saqib et al., 2018) According to WHO data published in 2020, lips and oral cavity cancer occupied the 2nd number in the overall prevalence of different cancers. According to the statement, men were generally at a higher risk than women. (Miranda-Filho and Bray, 2020) In our study, it has been stated that men had more lips and oral cavity cancer as compared to female. As of the latest report from the Global Cancer Observatory, in 2020, Pakistan recorded the second-highest number of new cases of cancers of the lip and oral cavity across both sexes and all age groups.

In the present study, we found that 18.0% of patients have Colorectum cancer. It exhibits substantial international variation in its occurrence. Globally, it ranks as the third most common cancer among males and the second most common among females, displaying notable differences in both incidence and mortality rates. (Jemal et al., 2011) like our study finding, a study conducted by Muhammad Asif Qureshi et al.(Qureshi et al., 2020) stated that 6.7% of patients had colorectum cancer. Several studies also supported our study findings.(Bhurgri et al., 2006a; Iqbal, 2020; Qureshi et al., 2016)

In our study, skin cancer was recorded in 12.6% of patients. Out of total patients, in male patients, skin cancer was found in 17.2% of patients. Several risk factors contribute to the development of skin cancer. Understanding these risk factors can help individuals take preventive measures and monitor their skin health. Prolonged exposure to sunlight, especially without protection, increases the risk of skin cancer. UV radiation induces changes in the structure of biomolecules, contributing to various diseases. (Andersen and Sarma, 2012; Tian and Yu, 2009) The skin, the body's most frequently exposed to UV radiation, is particularly susceptible to these effects. Pakistan experiences significant sunlight exposure due to its geographical location. (Riaz et al., 2016) It is essential for individuals in Pakistan, as in any

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region with high sun exposure, to take preventive measures to decrease the risk of skin cancer.
In our study, several other cancers were also found, but their prevalence is low compared to the above-discussed types.

Conclusion

It was concluded that female patients had breast cancer and Lips oral cavity cancer were detected in both genders. There were different types of cancer in the Pakistani population. We should develop an effective national-level cancer registration system to keep the record correctly and on the basis of which we take precautions to describe the accurate picture of cancer incidence, its prevalence, and mortality in Pakistan.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department Concerned.
Consent for publication
Approved
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Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

Author Contribution

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Data entry and Data analysis, drafting article.
ATTA UL HAQ BURKI
Data acquisition and analysis.

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