Prevalence of different types of cancer in Tertiary Level Hospital of Nepal

Rita Kumari Mahaseth[1], Rashika Upadhyaya[2], Bharati Bhetwal Sapkota[2], Anil Bikram Karki [3], Guru Sharan Sah[3]

[1]Nepal Medical College and Teaching Hospital, Attarkhel, Kathmandu, Nepal.

[2]Helping Hands Community Hospital, Chabahil, Kathmandu, Nepal.

[3]B. P. Koirala memorial Cancer Hospital, Bharatpur, Chitwan, Nepal

Abstract

Introduction: Cancer continues to be the leading cause of death in developed countries and the second leading cause of death in developing nations despite the advancements in curative and therapeutic methods. Hence, this study aims to find out the prevalence of cancer in Tertiary Level Hospital of Nepal and identify the most prevalent cancer amongst the different age groups and sexes.

Methods: This is a retrospective hospital-based study which included a total of 580 patients diagnosed with cancer who visited the Oncology and Pathology Department at Nepal Medical College and Teaching Hospital from April 2021 to March 2024. Data was retrieved from the records and files that contained informations about the patients diagnosed with cancer. The data was analyzed utilizing SPSS version 16.0.

Results: Among the total of 580 patients, cancer was most prevalent in 60-80 years age group, representing 42.24% of cases, while females made up the majority of diagnosed patients at 53.28%. Furthermore, stomach cancer is the most prevalent type of cancer, comprising 14.83% of cases, closely followed by lung cancer at 14.48%. Most of the cancer types demonstrate a significantly higher prevalence among individuals over 40 years of age, with 94.05% of lung cancer cases, 86.05% of stomach cancer cases, and 100% of cervical carcinoma cases occurring in this age group.

Conclusions: The findings of this study reveal a significant prevalence of cancer among older adults which suggests that the aging population is particularly vulnerable and may require enhanced cancer awareness and screening initiatives. This trend presses the need for targeted cancer prevention and treatment strategies tailored to older populations, focusing particularly on the most prevalent types of cancer identified in the study. This approach could significantly improve health outcomes and resource allocation within healthcare systems.

Keywords: Cancer; Prevalence; Tertiary Level Hospital.

Introduction

Cancer remains the leading cause of mortality in developed countries and the second leading cause of mortality in developing countries apart from all the advancements in the curative and therapeutic approaches concerning.[1] According to recent GLOBOCAN data insulated an increasing trend in cancer mortality globally with an incidence of approximately 19 million and

Corresponding Author
Rita Kumari Mahaseth, Nepal Medical College and Teaching Hospital, Attarkhel, Kathmandu, Nepal

mortality of approximately 9 million in 2020.[2]

In 2022, there were around 20 million new cancer cases and 9.7 million deaths, with an estimated 53.5 million surviving 5 years post-diagnosis. Approximately 1 in 5 individuals develop cancer during their life, leading to 1 in 9 men and 1 in 12 women dying from the disease.[3]

Mortality is high in low-and middle-income countries (LMICs) and associated with poor prognosis which is due to lack of awareness, delayed diagnosis, inequity on health accessibility, and affordability as compared to high-income countries.[4]In addition to the internal risk factors (genetics, ethnicity, and race), and external risk factors such as diet, tobacco and alcohol intake, viral infections, and exposure to chemicals and radiation, the incidence and prevalence of cancer also vary due to geography, socio-economic status, religious or cultural practices.[5,6]

In 2022, 10 types of cancer made up the majority of new cases and deaths globally, with data from 185 countries and 36 cancers included. Lung cancer was the most common, followed by female breast, colorectal, prostate, and stomach cancers in common in terms of new cases.[3] Cancer is a multigenic and multicellular disease that can arise from all cell types.[7] In contrary the common sites for cancer are oral cavity, lungs, esophagus and stomach in males and cervix, breast and oral cavity in females.[8]

Lifestyle factors like smoking, alcohol consumption, poor nutrition, physical inactivity, sun exposure, and exposure to toxic chemicals are potential risk factors for certain adult cancers while most children with cancer are too young to have had prolonged exposure to these lifestyle factors. Genetical history may have a significant impact on certain types of childhood cancers. There can be instances where cancer occurs multiple times within a family, but it is uncertain whether this is due to genetic mutations, exposure to chemicals in the vicinity of the family's residence, a combination of these factors, or just random chance.[9]

Similarly, studies have explored potential connections between environmental factors like pesticides, fertilizers, and power lines and some forms of high-dose chemotherapy and radiation with cancer. Besides these, exposure to particular viruses like Epstein-Barr virus and HIV have been associated with higher chances of specific childhood cancers like Hodgkin and non-Hodgkin lymphoma. These viruses may alter cells, leading to the production of cancer cells and subsequent replication.[10]

The WHO survey revealed that just 39% of countries included basic cancer management in their core health services, while only 28% provided coverage for palliative care, including pain relief, within their health benefit packages.[3]

Dr. Cary Adams, from the UICC, highlights that despite advancements in cancer detection and treatment, disparities persist in treatment outcomes globally and within countries. Access to quality cancer care should not be dictated by geographical location. Governments have the means to prioritize cancer services and make them accessible and affordable for all. This challenge goes beyond resources, emphasizing the importance of political commitment to ensure equitable cancer care for everyone.

The cancer registry is central to any rational program on cancer control. There is a need for obtaining clearer information on cancer epidemiology such as prevalence, incidence

and decision making to prevent and control the cancer epidemic in this part of country.

Rationale of the study:

The number of cancer patients has been increasing significantly in the past few years. Hence, this study aims to find out the prevalence of cancer in Tertiary Level Hospital of Nepal and determine the most prevalent cancer amongst the different age groups and sexes.

Methods

Study Design:

This is a retrospective hospital based Study. The list of all the patients with histologically proven cancer attending Oncology and Pathology Department of Nepal Medical College and Teaching Hospital between April 2021 to March 2024 were obtained. Using total enumerative sampling technique, medical records and reports concerned with oncology and pathology of the patients were reviewed and recorded in the data sheet. Data was analyzed using SPSS version 16.0.

Ethical approval was taken from Institutional Review Committee of Nepal Medical College to analyses the case notes. **Inclusion criteria is** Patient with histo-pathologically proven cancer admitted and received at NMCTH during April 2021 to March 2024. Patient of all age groups and any gender.

Statistics

Data entry was done in SPSS (Statistical Package for Social Sciences) version 16.0. Descriptive statistics such as frequency and percentage were used for data analysis. Chi-square test was used to measure the association between demographic characteristics and clinical profile of patient. p-value less than 0.05 was taken as significant.

Results

Table 1. Demographic characteristics of participants (**n=580)**

Characteristics	Frequency	Percentage
Age Group (In years)		
Less than 40	98	16.9
40-60	204	35.17
60-80	245	42.24
More than 80	33	5.69
Gender		
Male	271	46.72
Female	309	53.28

Table 1 presents the demographic characteristics of 580 participants indicating that cancer is more prevalent among age group 60-80 years (42.24%) followed by age group 40-60 years which accounts for 35.17%. In addition to this, just more than half (53.28%) of the patients with cancer were female.

Table 2 displays the distribution of different types of cancer among 580 participants in which the most common cancer is stomach cancer (14.83%) followed by lungs cancer (14.48%), colorectal cancer (11.9%), breast cancer (11.55%), gall bladder cancer (5.69%) and hepatocellular carcinoma (5.52%) respectively. The least frequent are leukemia and mandibular cancer with 0.52% and 0.35% respectively.

Discussion

This retrospective hospital based study aimed to find out the prevalence of cancer in Tertiary Level Hospital of Nepal and determine the most prevalent cancer amongst the different age groups and sexes. Medical records and reports concerned with oncology and pathology of the patients were reviewed and recorded in the datasheet.

According to the study, cancer is more prevalent among age group 60-80 years (42.24%) which is quite similar to a study conducted in Tertiary Care Level Teaching Hospital in Rural Western Maharashtra, India where almost 2/3rd of cases

Table 2. Distribution of various types of cancer among participants (n=580)

Types of cancer	Frequency	Percentage
Stomach Cancer	86	14.83
Lungs Cancer	84	14.48
Colorectal Cancer	69	11.9
Breast Cancer	67	11.55
Gall Bladder Cancer	33	5.69
Hepatocellular Carcinoma	32	5.52
Cervical Cancer	21	3.62
Non-Hodgkin Lymphoma	17	2.93
Urothelial Carcinoma	16	2.76
GEJ Cancer	15	2.59
Skin Cancer	15	2.59
Pancreatic Cancer	15	2.59
Oesophageal Cancer	13	2.24
Prostate Cancer	12	2.07
Testicular Cancer	11	1.9
Thyroid Cancer	11	1.9
Ovarian Cancer	9	1.55
Cholangio Carcinoma	9	1.55
Osteosarcoma	7	1.21
Bladder Cancer	6	1.03
Hodgkin Lymphoma	5	0.86
Brain Cancer	5	0.86
Renal Cell Carcinoma	5	0.86
Tongue Cancer	4	0.69
Peritoneal Carcinoma	4	0.69
Supraglottic Cancer	4	0.69
Leukemia	3	0.52
Mandibular Cancer	2	0.35

occurred in the age group of 41 to 70 years with maximum frequency observed in age group 51–60 years.[11] Likewise, a retrospective and descriptive study conducted at a Tertiary Care Hospital in Somalia revealed that out of total 1306 patients included in the study, 67 were pediatric (0–17 years) and 468 were in the 18–50 years range.[12]

Besides this, just more than half (53.28%) of the patients with cancer were female in this study. The finding is consistent with the previous study conducted among cancer patients visiting the outpatient clinics of Southern Thailand during 1 January– 31 December 2018 where out of total 9990 patients, 3,628 patients were male and 6,324 were female which accounts for 36.70% and 63.30% respectively.[13]Similarly, a descriptive retrospective cross-sectional study conducted in a tertiary care centre in Eastern India showed that out of the total patients studied, 58.9% belonged to female category.[14]

In this study, the most common cancer is stomach cancer (14.83%) followed by lungs cancer (14.48%), colorectal cancer (11.9%), breast cancer (11.55%), gall bladder cancer (5.69%) and hepatocellular carcinoma (5.52%) respectively. Similar to this study, overall data analysis of a study carried out in a Tertiary Cancer Hospital in Pakistan indicated head and neck cancer, breast cancer, gynecological tumors, esophageal cancer, lung cancer, colorectal cancer, liver cancer, lymphoma, urinary tract cancer and prostate cancer as the trending cancers in both the sexes.[15] Contrary to this, a study conducted in a Tertiary Care Hospital in Somalia revealed that out of 1306 patients included in the study, the most common cancer was esophageal cancer (284) in both genders.[12]

In addition to this, the study shows that there is highly significant association of age group with the types of cancer among participants with the p-value of 0.000***.Most types of cancer in this study population show a markedly higher prevalence among age group over 40 years. But a study conducted in Kathmandu Valley (urban area) and Rukum (rural area) found that the age adjusted incidence rate in Kathmandu was higher than that in Rukum (1.6 times among males and 1.9 times among females).[16]

In nutshell, the study highlighted that cancer presents a growing challenge, impacting not only hospitals but also patients and their families, due to the high costs associated with treatment. However, the burden of cancer can be alleviated through the implementation of preventive measures and the adoption of healthier lifestyle changes.

Table 3. Association of age group with selected variables (n=580)

Characteristics	Age Group			
	Less than 40 years	More than 40 years	Total	p-value
	Frequency (%)	Frequency (%)		
Types of Cancer				
Stomach Cancer	12 (13.95%)	74 (86.05%)	86	
Lungs Cancer	5 (5.95%)	79 (94.05%)	84	
Colorectal Cancer	16 (23.19%)	53 (76.81%)	69	
Breast Cancer	24 (35.82%)	43 (64.18%)	67	
Gall Bladder Cancer	2 (6.06%)	31 (93.94%)	33	
Hepatocellular Carcinoma	2 (6.25%)	30 (93.75%)	32	
Cervical Cancer	0 (0%)	21 (100%)	21	
Non-Hodgkin Lymphoma	3 (17.65%)	14 (82.35%)	17	
Urothelial Carcinoma	1 (6.25%)	15 (93.75%)	16	
Gastroesophageal junction Cancer	0 (0%)	15 (100%)	15	
Skin Cancer	4 (26.67%)	11 (73.33%)	15	
Pancreatic Cancer	3(20%)	12(80%)	15	
Oesophageal Cancer	0 (0%)	13 (100%)	13	
Prostate Cancer	0 (0%)	12 (100%)	12	
Testicular Cancer	1 (9.09%)	10 (90.91%)	11	
Thyroid Cancer	8 (72.73%)	3 (27.27%)	11	0.000***
Ovarian Cancer	2 (22.22%)	7 (77.78%)	9	
Cholangio Carcinoma	1 (11.11%)	8 (88.89%)	9	
Osteosarcoma	4 (57.14%)	3 (42.86%)	7	
Bladder Cancer	0 (0%)	6 (100%)	6	
Hodgkin Lymphoma	3 (60%)	2 (40%)	5	
Brain Cancer	1 (20%)	4 (80%)	5	
Renal Cell Carcinoma	1 (20%)	4 (80%)	5	
Tongue Cancer	2 (50%)	2 (50%)	4	
Peritoneal Carcinoma	1 (25%)	3 (75%)	4	
Supraglottic Cancer	0 (0%)	4 (100%)	4	
Leukemia	1 (33.33%)	2 (66.67%)	3	
Mandibular Cancer	1 (50%)	1 (50%)	2	

Note: Chi-square test was used for association analysis where significant *** **p-value <0.001.**

Table 3 shows that there is highly significant association of age group with the types of cancer among participants with the p-value of 0.000***. Most types of cancer in this study population show a markedly higher prevalence among age group over 40 years. 94.05% of lungs cancer, 86.05% of stomach cancer and 100% of cervical carcinoma are found in those over 40 years.

Conclusion

The findings of this study reveal a significant prevalence of cancer among older adults, particularly those aged 60 to 80 years, who represent 42.24% of all cases. This trend suggests that the aging population is particularly vulnerable and may require enhanced cancer awareness and screening initiatives. Furthermore, the data highlight that the majority of diagnosed cancer patients are female, pointing to a potential gender-specific risk that warrants attention in public health strategies.

Stomach cancer emerges as the most common type, followed by lung cancer, which underscores

the urgency of addressing these specific cancers as major health threats. Importantly, the study highlights that many cancer types exhibit a notably higher prevalence in individuals over the age of 40, with lung cancer (94.05%) and stomach cancer (86.05%) showing particularly high rates. Cervical carcinoma is also exclusively found in this age group, stressing the need for early detection and preventive healthcare measures tailored to older adults.

Taken together, these insights point to a pressing need for targeted cancer prevention and treatment strategies tailored to older populations, focusing particularly on the most prevalent types of cancer identified in the study. This approach could significantly improve health outcomes and resource allocation within healthcare systems.

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