Demographics and Clinical Profile of Patients Admitted to a Palliative Care Unit of a Tertiary Cancer Center in Nepal

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Abstract

Background: Cancer remains a major cause of morbidity and mortality in Nepal, with increasing demand for palliative care services. This study aimed to describe the demographic characteristics, symptom burden, and clinical outcomes of cancer patients admitted to a tertiary cancer center in Nepal.

Methods: A descriptive, retrospective review of electronic medical records was conducted for all cancer patients admitted to the PCU of B.P. Koirala Memorial Cancer Hospital, Bharatpur, from July 16, 2024, to July 16, 2025; following ethical approval. Data on demographics, diagnosis, symptoms, length of stay (LOS), and clinical outcomes were extracted and analyzed using descriptive statistics.

Results: A total of 170 patients were included, with a median age of 45 years, 59.4% females and highest numbers from Chitwan and Lumbini Province. Lung cancer (11.8%), sarcoma (11.2%), and cervical cancer (10.6%) were the most common diagnoses. Pain was nearly universal (98.8%) with median LOS was 6 days. Clinical outcomes included discharge (49.4%), death (26.5%), discharge on patient request (21.2%), and transfer for active treatment (2.9%).

Conclusion: The findings highlight a relatively young median age (45 years), a predominance of female patients, geographic clustering of admissions, lung cancer as leading diagnoses, high levels of symptom burden—especially pain—and mixed outcomes - nearly half discharged and one-fourth dying in the unit; with median LOS of 6 days; underscoring the importance of strengthening palliative care services in Nepal.

Keywords: Palliative care; Cancer patients; Symptom burden; Clinical outcomes; Nepal

Introduction

Cancer is a leading cause of mortality and morbidity worldwide, posing a significant threat to global health systems. The Global Cancer Observatory (GLOBOCAN) reported 20 million new cancer cases and 10 million deaths in 2022, with a rising burden in low- and middle-income countries like Nepal.[1] In Nepal, cancer is increasingly recognized as a major public health challenge, with over 22,000 new cases and more than 14,000 deaths estimated annually.[2] The rising incidence, coupled with late-stage presentation, places a tremendous burden on the country's healthcare resources, particularly on palliative care services, which aim to alleviate suffering and improve the quality of life for patients with life-limiting illnesses.

Palliative care is an essential component of universal health coverage, integral to the management of advanced cancer. It focuses on the prevention and relief of suffering through early identification, impeccable assessment, and treatment of pain and

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other problems, whether physical, psychosocial, or spiritual. Evidence consistently shows that early integration of palliative care improves patient quality of life, reduces symptom burden, and may even prolong survival in some cases.[3,4] However, in resource-limited settings like Nepal, the development and integration of palliative care services face numerous challenges, including lack of trained personnel, limited access to essential opioids for pain relief, and societal and cultural barriers.[3–6]

Understanding the specific population that accesses palliative care is the first critical step towards improving services. Data on the types of cancers, demographic profiles, symptom burdens, and reasons for admission are crucial for healthcare planners, policymakers, and clinicians to allocate resources effectively, tailor training programs, and develop context-specific palliative care models. While such data are well-documented in high-income countries, there is a stark scarcity of published literature from Nepal describing the demographic and clinical profile of patients requiring palliative care.[5,7–10] This limited information may hinder the effective planning and delivery of palliative care services tailored to the specific needs of the Nepali population. Therefore, this study aims to fill this knowledge gap by describing the clinical and demographic characteristics of patients admitted to a palliative care unit (PCU) in Nepal.

Methodology

A descriptive, retrospective (observational) hospital based study was conducted by reviewing the electronic medical records of all cancer patients admitted to the PCU of B P Koirala Memorial Cancer Hospital (BPKMCH), Bharatpur, Chitwan, a tertiary cancer center in Nepal. The study population included all adult and pediatric confirmed cancer diagnosed patients admitted to the PCU from July 16, 2024 to July 16, 2025. Patients with incomplete medical records where the primary diagnosis or outcome was not documented were excluded from the analysis. Data were extracted from a pre-existing electronic records system (Microsoft Excel) using a structured data abstraction proforma via total enumerative sampling technique. The collected variables encompassed four primary categories: demographic, clinical, symptom burden, and clinical outcome. Demographic variables included age (recorded as a continuous variable in years, later grouped for analysis by children – 00 to 14 years, youth – 15 to 24 years, adult - 25 to 64 years and seniors - 65 and above years),[11] sex (a nominal variable categorized as male or female), and address (a nominal variable that was later grouped for analysis by district, province, and country). The primary clinical variable was the cancer diagnosis, a nominal variable that was grouped into broader diagnostic categories for analysis. Symptom burden was assessed by documenting the presence or absence of seven specific symptoms—pain, shortness of breath (SOB), weakness, wound, loss of appetite, ascites, and constipation—each recorded as a binary (yes/no) variable. Outcome variables included the length of stay (LOS), a continuous numerical variable measured in days, and the clinical outcome, a nominal variable with four categories: death, discharged, discharge on patient request (DOPR), and shifted to ward for active treatment.

Data were cleaned and analyzed using IBM SPSS Statistics version 26.0. Descriptive statistics were used to summarize the data. Categorical variables were described using frequencies and percentages. Continuous variables were assessed for normality using the Shapiro-Wilk test, with a significance level set at $p\text{-value} < 0.05$. Normally distributed data were described using mean and standard deviation (SD), while non-normally distributed data were described using median and interquartile range (IQR). The extent of missing data was evaluated for all variables. A simple imputation method using an average of the available data for the variable was selected as a pragmatic approach to treat missing value, for less than 5% of missingness. For more than 5%, multiple imputation method was planned for handling missing data. A sensitivity analysis comparing results from the imputed dataset with a complete-case analysis was performed to assess trustworthiness of data. Ethical approval for this study was obtained from the Institutional Review Committee of BPKMCH. As a retrospective study involving record review, the requirement for individual informed consent was waived by the IRC. All data were anonymized during abstraction to ensure confidentiality and privacy.

Results

A total of 170 cancer patients were included in the analysis. The age of the participants was not

normally distributed (Shapiro-Wilk test, p-value = 0.01), with a median age of 45 years (IQR: 32 - 58) and a range from 2 to 84 years. The majority of patients were adults and seniors (143, 84.20%) and female (101, 59.41%). Almost all patients were from Nepal (167, 98.24%), with only three (1.76%) from India (Table 1). Geographically, patients presented from 38 different districts within the country (N = 167) (Figure 1). The highest proportions came from Chitwan (26, 15.57%), Rupandehi (14 patients, 8.4%) and Nawalparasi-East (12 patients, 7.19%). This was followed by Tanahun (11, 6.59%), Dang (11, 6.59%), Parsa (10, 5.99%), and Rautahat (10, 5.99%). When grouped by province, the largest representations were from Lumbini (41, 24.60%), followed by Bagmati (38, 22.80%), Madesh (36, 21.60%) and Gandaki (34, 20.4%) provinces. Least representation were from Karnali (3, 1.80%) and Koshi (6, 3.60%).

Table 1: Demographics of cancer patients admitted to the palliative care unit, BPKMCH (N=170)

Variables	Frequency	Percentage
Age group in years		
Children	16	9.40
Youth	11	6.50
Adults	114	67.10
Seniors	29	17.10
Median (IQR) = 45 (32 – 58) years		
Sex		
Female	101	59.41
Male	69	40.59
Country		
India	3	1.76
Nepal	167	98.24
Province (N=167)		
Koshi	6	3.60
Madhesi	36	21.60
Bagmati	38	22.80
Gandaki	34	20.40
Lumbini	41	24.60
Karnali	3	1.80
Sudurpachchim	9	5.40

Fig. 1: District-wise distribution of cancer patients admitted to the PCU of BPKMCH (N=167)

Of the 170 patients admitted to the palliative care unit, the most common diagnoses were lung cancer (20, 11.76%), sarcoma (19, 11.18%), cervical cancer (18, 10.59%), gallbladder (17, 10.00%) and breast cancer (11, 6.47%) (Table 2). Nearly all reported pain (168, 98.82%), followed by weakness (132, 77.65%), loss of appetite (125, 73.53%), while shortness of breath (42, 24.71%) and ascites (24, 14.12%) were less common (Table 3).

Table 2: Frequency distribution of primary cancer diagnoses (N=170)

Cancer diagnoses	Frequency	Percentage
Lung cancer	20	11.76
Sarcoma	19	11.18
Cervical cancer	18	10.59
Gallbladder cancer	17	10.00
Breast cancer	11	6.47
Liver cancer	10	5.88
Hematological malignancies	10	5.88
Bladder/prostrate cancer	10	5.88
Head and neck cancer	9	5.29
Ovarian cancer	9	5.29
Stomach cancer	7	4.12
Colorectal cancer	7	4.12
Lip/oral cavity cancer	6	3.53
Pancreatic cancer	4	2.35
Brain/CNS tumors	3	1.76
Skin cancer	3	1.76
Vulvar cancer	3	1.76
Kidney cancer	2	1.18
Cancer of unknown primary	2	1.18

Table 3: Symptoms burden at admission in PCU (N=170)

Symptoms*	Frequency	Percentage
Pain	168	98.82
SOB	42	24.71
Weakness	132	77.65
Wound	71	41.76
Constipation	54	31.76
Loss of appetite	125	73.53
Ascites	24	14.12

*Multiple response

Out of the 170 patients, the length of stay in PCU had one missing data (<5%) and was imputed through its average value. A sensitivity analysis comparing the imputed results with a complete-case analysis showed no substantial differences. It was not normally distributed (Shapiro-Wilk test, p-value < 0.01), with a median of 6 days (IQR: 2-15) and

was ranged from 1 to 106 days. The most common outcome was discharge (84, 49.41%), followed by death (45, 26.47%) and DOPR (36, 21.18%) while 5 (2.94%) patients were shifted to a general ward for further active treatment such as chemotherapy or gastrointestinal surgery (Table 4).

Table 4: Clinical outcomes and LOS of palliative care patients (N=170)

Variables	Frequency	Percentage
Clinical outcomes		
Death	45	26.47
Discharged	84	49.41
DOPR	36	21.18
Shifted to ward	5	2.94
Length of stay (LOS)		
Median (IQR) days	6 (2 – 15) days	

Discussion

This descriptive, retrospective study provides an important snapshot of the clinical and demographic characteristics, symptoms burden, and outcomes of cancer patients admitted to the PCU of BPKMCH, Nepal in the recently completed Nepalese Fiscal Year, which started on July 16, 2024 and ended on July 16, 2025. The study finding reported that the median age (45 years) of cancer patients admitted to the PCU is younger than that conveyed in many global studies.[4,12–15] According to National Cancer Institute, the median age was 63 years for breast cancer, 66 years for colorectal cancer, 71 years for lung cancer, and 68 years for prostate cancer. A retrospective review stated average age of 78.9 years among cancer patients who were admitted to a palliative care, which is higher than that of our study.[6] This disparity likely reflects Nepal's younger national demographic profile, lower life expectancy, a higher burden of infection-related cancers and potentially delayed detection leading to earlier progression to advanced, symptomatic disease and palliative care.

The predominance of female patients (59.4%) is consistent with studies reporting 58-61% female cancer patient's representation in palliative care units.[6,9,16,17] A retrospective observational study from Nepal also reported higher incidence of cancer in females between 2015 and 2020.[8] The higher representation of female cancer patients in palliative care units is not due to a single reason but rather a complex interplay of biological, epidemiological, social, environmental and systemic factors. Cancers like ovarian, uterine, and advanced metastatic breast cancer are often diagnosed at later stages and can be difficult to treat curatively, leading to a longer palliative phase.

The minimal cross-border utilization from India (1.76%) is noteworthy, particularly given the open border between Nepal and India. In addition, geographic diversity, with patients coming from 38 districts, shows the central role of BPKMCH as a national referral center. Most came from Lumbini, Bagmati, Madhesh and Gandaki provinces, a trend consistent with Nepal's population distribution and healthcare access disparities.[18] Moreover, the high concentration of patients from Chitwan district is expected, given BPKMCH's location in Bharatpur, and reflects the common pattern of higher healthcare utilization near tertiary facilities. The significant representation from adjacent Terai districts—Rupandehi, Nawalparasi (East), Parsa, and Rautahat - demonstrates the hospital's role as a regional referral center for the central-southern part of Nepal. This suggests that these provinces/districts may have more healthcare facilities, higher population densities, or relatively better transportation infrastructure connecting these regions to Chitwan. which can influence patient presentation.[19,20]

Conversely, the low representation from Karnali Province may reflect its remoteness and limited healthcare access. These findings are consistent with healthcare access patterns documented throughout Nepal and similar low-resource settings. Studies of specialty care utilization in Nepal have consistently identified distance, transportation costs, and loss of income during travel as major barriers for patients from remote regions.[21–23]

Our study identified lung cancer as the leading diagnosis with sarcoma, cervical cancer, gallbladder and breast cancer in the top five list. The finding is consistent with national cancer registry data from Nepal.[24,25] Similarly, GLOBOCAN Cancer today published lung cancer in the rank first among both sexes and all ages globally and nationally.[1,2,26] Its dominance reflects widespread exposure to established carcinogens, primarily tobacco use and household air pollution from solid fuels, which are significant issues within Nepal.[27,28] This high

incidence, coupled with the disease's aggressive nature and frequent late-stage diagnosis due to limited screening, results in a disproportionate number of patients developing the severe symptom burden—such as debilitating pain, breathlessness, and fatigue—that necessitates specialized palliative care.[29] Moreover, the significant proportion of sarcoma patients is unusual when compared with global datasets, where sarcomas typically account for <1% of cancers.[30,31] This may reflect referral patterns or delayed diagnosis in Nepal,[32] where sarcoma cases often present at advanced stages requiring palliative management.

It is surprising that our study found lung cancer to be the most common diagnosis despite a female-predominant cohort. Both the national and global data of GLOBOCAN presented breast cancer as the most incident cancer among female.[1,2] South eastern Asia revealed lung cancer as the most dominant cancer among male but reported breast cancer as the most common in both sexes as well as in female.[33] This apparent discrepancy can be explained by the nature of the study population: palliative care units capture patients with advanced, inoperable, or treatment-refractory disease rather than all incident cancers. This is further supported by our study that showed cervical cancer and breast cancer were also frequent in our cohort and made in the top 5. These figures mirror the broader South Asian burden, where late presentation and limited screening programs lead to high palliative care needs.[33] Globally, breast cancer is the second most common cancer[1]; and it was top most cancer in south east Asia[33]; but in Nepal, cervical and gallbladder cancers surpass breast cancer, showing regional variation in cancer epidemiology.

Pain, weakness and loss of appetite was common in our study population, reinforcing global evidence that these remains the most prevalent and debilitating symptom in advanced cancer. Similar high rates of pain were documented in palliative cohorts.[34–36] Tumor progression commonly causes gastrointestinal disturbances, such as nausea, vomiting, constipation, dysphagia, and reduced gastrointestinal motility, and limit food intake and worsen nutritional deficiencies causing weakness. Further, pain frequently worsen appetite, highlighting the importance of a comprehensive, multidisciplinary approach to care. This consistency across cancer types underscores that regardless of the primary diagnosis, advanced cancer produces a predictable constellation of symptoms that require specialized palliative management.

The median LOS of our study is shorter than that was reported around the globe.[37,38] The short median LOS of 6 days is a strong indicator of late referral to specialized palliative care. Patients are often referred only when their symptoms become unmanageable in other settings or in the very terminal phase of their illness. It aligns with the high mortality rate observed in the unit, suggesting that for a substantial cohort, admission occurs in the final days of life, transforming the unit's role into that of an end-of-life care facility for these patients.[38] Moreover, the extremely wide range (1 to 106 days) reveals the remarkable heterogeneity of the patient population and the dual function of the unit. The very short stays likely represent patients who were admitted in crisis, rapidly stabilized, and either passed away quickly or were discharged. On the other end of the spectrum, the exceptionally long stays represent a different, but equally important, patient profile. These are typically patients with complex, refractory symptoms, who require long-term, intensive palliative support that cannot be provided elsewhere, highlighting the unit's role as a provider of long-term supportive care for the most complex cases.

The profile of clinical outcomes observed in this study provides a critical lens into the functioning of a PCU within a resource-limited setting and reflects complex interplays between clinical necessity, patient autonomy, and socio-cultural norms. The high rate of discharge is a positive indicator that for a substantial subset of patients, the PCU successfully provided stabilization, effective symptom control, and a care plan manageable at home. This aligns with studies, where between 40%–88% of palliative admissions end in home discharge.[10,39] However, the notably high rate of DOPR is arguably the most significant and culturally informative finding. This figure is substantially higher than the rates of less than 5% typically reported in palliative care studies. This finding resonates strongly with studies from other South Asian countries, where similar high rates of against-medical-advice discharge are documented in terminal illness. This divergence is not a marker of

poor care but rather a profound reflection of socio-economic and cultural realities. This illustrates the tension between medical recommendations and family decisions, often influenced by financial burdens, limited trust in institutional care, or desire for spiritual and familial rituals to be performed at home. In the Nepalese context, DOPR is often driven by a powerful confluence of factors: a deep-seated cultural and spiritual desire to die at home surrounded by family; the catastrophic financial burden of prolonged hospitalization, including lost wages for family caregivers; and limitations in communication that may lead to families feeling that "nothing more can be done" in the hospital.

Strengths of this study include its comprehensive coverage of one year's admissions in Nepal's leading cancer center and the use of robust statistical handling of missing data. Limitations include its retrospective design, which may underreport psychosocial factors influencing discharge decisions, and its single-center scope, which limits generalizability. The categorization of cancers, while clinically meaningful, may mask heterogeneity within broader categories. Additionally, we did not capture post-discharge outcomes, which would provide a fuller picture of care trajectories.

Future studies should prospectively examine the relationship between specific cancer types and symptom profiles, quality of life measures, and outcomes in palliative care. Multi-center studies across Nepal would help determine if our findings represent national patterns or regional variations.

Conclusions

The results showed a relatively young patient population (median age 45 years), a predominance of female patients, and wide geographic representation with underutilization from remote provinces. Lung cancer was leading diagnoses, and nearly all patients experienced severe pain alongside other distressing symptoms. Clinical outcomes were mixed, with almost half discharged, one-fourth dying in the unit, and a notable proportion leaving on patient request, reflecting cultural and financial influences on care decisions.

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