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Tumour types and treatment patterns in hospitalised oncology patients: implications for psychosocial care considerations

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Abstract: Psychosocial distress among oncology patients is heterogeneous and shaped by clinical context, yet tumour characteristics and treatment exposure are seldom integrated into psychosocial care considerations in inpatient oncology nursing. This retrospective observational study analysed routinely collected administrative and clinical records of hospitalised oncology patients to describe tumour types and treatment patterns and explore their implications for psychosocial care considerations. The study did not include direct psychosocial outcome measures (e.g., distress, anxiety, depression, or validated screening tools); therefore, findings describe clinical context rather than quantified potential psychosocial concerns. Tumour diagnoses were categorised as benign or malignant and further grouped by organ system where applicable, while treatment exposure during hospitalisation was classified by modality, including chemotherapy, immunotherapy, and targeted therapy. Descriptive analyses and cross-tabulation were conducted without constructing psychosocial proxy measures. Lung tumours constituted the most prevalent tumour group and were represented across all systemic treatment modalities, with immunotherapy exposure occurring predominantly among patients with lung malignancies. Secondary malignant involvement of lymph nodes, bone, and liver was also frequently associated with chemotherapy and targeted therapy, reflecting advanced or metastatic disease profiles, whereas benign tumours demonstrated minimal exposure to systemic treatments. These tumour–treatment distributions highlight marked variation in treatment intensity across hospitalised oncology populations. The findings suggest that tumour types and treatment patterns form distinct clinical profiles that may provide meaningful contextual information to inform nursing awareness for psychosocial care considerations during hospitalisation, rather than serving as direct measures of psychosocial outcomes.] [Revised] Leveraging routinely available tumour and treatment data may support psychosocially informed oncology nursing assessment, potentially enabling earlier recognition of patients who could benefit from further psychosocial evaluation and more targeted supportive care within inpatient settings.

Keywords: chemotherapy; oncology nursing; psychosocial risk; treatment patterns; tumour type

1. Introduction

1.1. Background

Psychosocial distress is a well-recognised and prevalent concern among individuals diagnosed with cancer, reflecting the substantial psychological burden that accompanies cancer biology and treatment. A robust body of psycho-oncology and nursing scholarship demonstrates that distress is not uniformly distributed across oncology populations; heterogeneous patterns reflect differences in disease

characteristics, trajectories, and therapeutic exposures. Within hospital settings, particularly, patients confront disease-related uncertainty, intensive medical interventions, and disruptions to daily life that collectively amplify potential psychosocial concerns during inpatient care [1,2]. Oncology nursing, by virtue of extended bedside contact and continuous observation of emotional responses and coping strategies, occupies a frontline position for early identification and management of psychosocial risk, an essential component of patient-centred cancer care in inpatient settings [1,3].

The broader literature also emphasizes that cancer biology and treatment exposure shape the psychosocial experience. Tumour aggressiveness, metastatic status, and responsiveness to treatment influence both symptom burden (e.g., pain, fatigue, functional impairment) and patients' perceptions of prognosis and uncertainty. In turn, treatment intensity, duration, and invasiveness can magnify psychosocial strain by increasing care dependency and reducing perceived control, often lengthening hospital stays and intensifying the need for professional nursing support [4,5]. These dynamics underscore the critical role of oncology nurses in recognising when clinical characteristics and treatment patterns escalate psychosocial risk during hospitalisation and in delivering timely, patient-centred supportive care [3,4].

1.2. Tumour type as a psychosocial risk context

Tumour type functions as a meaningful contextual indicator of psychosocial risk because broad clinical distinctions (e.g., malignant versus benign disease, solid versus haematological tumours) map onto divergent disease courses, treatment strategies, and prognostic horizons. From a psychosocial perspective, malignant disease commonly heightens fears of progression, recurrence, mortality, and uncertainty about survivorship, whereas benign conditions, though typically associated with favourable prognoses, can still provoke anxiety related to surgical interventions and diagnostic ambiguity [6,7]. Moreover, tumours involving critical organs or presenting with metastatic spread may intensify concerns about bodily integrity, independence, and long-term planning. Conceptualising tumour type as a psychosocial context, rather than solely a biomedical label, supports more nuanced nursing assessments of vulnerability during hospitalisation and informs risk stratification for targeted psychosocial support [4,5].

In addition, tumour type often carries social and existential implications that influence identity, stigma, and social relationships. Visible changes, functional limitations, or associations with poor prognosis can affect self-image and social functioning [8,9], thereby shaping patients' psychosocial needs during inpatient care [10]. Recognizing tumour type as a contextual lens through which psychosocial risk is interpreted enables nurses to tailor assessments and interventions to the patient's disease-specific trajectory and prognosis-related concerns [4,5].

1.3. Treatment patterns and psychosocial burden

Treatment patterns are a major determinant of psychosocial burden among hospitalised oncology patients. Chemotherapy, radiotherapy, surgery, and multimodal regimens vary in their physical and psychological impact, with systemic therapies commonly associated with fatigue, nausea, and cognitive changes, while surgery may affect body image, mobility, and autonomy. Multimodal regimens can amplify these effects through higher treatment intensity and longer exposure, thereby elevating psychosocial strain and dependence on nursing and multidisciplinary care. Hospitalisation frequently coincides with treatment initiation or escalation,

a period marked by heightened uncertainty about side effects, treatment efficacy, and prognosis, which can precipitate acute emotional distress. For oncology nurses, recognizing patterns of treatment that signal increased psychosocial strain is essential for timely assessment and intervention within the inpatient setting [4,11].

Consistent with this view, contemporary nursing and psycho-oncology scholarship identifies that higher treatment intensity is associated with increased symptom burden (pain, fatigue) and emotional distress, as well as increased dependence on healthcare providers and social support resources [12,13]. The inpatient period often entails navigating complex symptom management alongside evolving expectations about treatment outcomes, underscoring the critical role of nurses in monitoring psychosocial functioning and coordinating supportive care during hospital stays [11]. These dynamics reinforce the rationale for embedding psychosocial risk assessment within routine inpatient oncology care, with attention to treatment-related trajectories that may heighten vulnerability at different phases of the care continuum [1,4].

1.4. Gap in current nursing evidence

Despite a substantial psycho-oncology literature base, notable gaps persist in nursing research regarding the integration of tumour type and treatment patterns into psychosocial care considerations and management. Many studies focus on specific cancer types or isolated treatment modalities, limiting generalizability across diverse inpatient oncology populations; others assess psychosocial distress using standard instruments without explicitly integrating the broader clinical context of tumour characteristics and treatment exposure. Real-world evidence derived from routine hospital data is particularly scarce, despite administrative and clinical records containing rich information on tumour diagnoses and treatment patterns that could inform scalable psychosocial risk stratification tools for bedside nursing practice. Addressing these gaps could enable more feasible, context-aware psychosocial assessments that align with routine clinical data without increasing assessment burden for frontline nurses [14].

There is also evidence that nurses face barriers to delivering consistent psychosocial care, including communication challenges in busy wards, limited training opportunities, and concerns about time and resources during high-demand periods. Qualitative and mixed-methods studies highlight that nurses' communication with patients and families in crowded oncology wards is frequently hampered by workload and emotional labour, underscoring the need for targeted training and system-level supports to enable routine psychosocial risk assessment in clinical practice [3,4]. Moreover, burnout and moral distress among oncology nurses driven by high emotional demands, staffing pressures, and the complexity of end-of-life care pose threats to the sustainability of psychosocial care delivery and call for integrated workforce development and organizational strategies to support nurses in providing compassionate, psychosocially informed care [15,16].

1.5. Study aim

Against this backdrop, the study aims to describe tumour type and treatment patterns among hospitalised oncology patients and to explore their implications for psychosocial care considerations in oncology nursing practice. By leveraging routinely collected inpatient data, the study seeks to generate clinically relevant insights into how tumour biology and treatment exposure may serve as contextual indicators to inform psychosocial risk stratification and targeted supportive care during hospitalisation. The work aligns with the broader aim of embedding

psychosocial awareness into everyday nursing practice through data-informed risk assessment and multidisciplinary collaboration, with an emphasis on feasibility in real-world inpatient settings and potential for translation into scalable nursing interventions and triage frameworks [17].

The evidence base for distress screening and management supports systematic psychosocial risk assessment as a standard part of cancer care, with consensus documents and validated approaches guiding implementation in clinical practice. In particular, distress is endorsed as a vital sign, and standardized screening workflows have been proposed and refined through professional society guidance and empirical studies, including five-step screening approaches and formal recommendations for program deployment in cancer centres [17,18]. These foundations underpin the rationale for situating tumour type and treatment pattern data within a distress-risk framework that is actionable for frontline oncology nurses in inpatient settings [1,3,4].

2. Methods

2.1. Study design

This study employed a retrospective observational design based on the secondary analysis of hospital administrative and clinical records. Routinely collected inpatient data were used to characterise tumour types and treatment patterns among hospitalised oncology patients. The study was descriptive in nature and did not involve intervention or manipulation of patient care. This design was selected to allow examination of real-world clinical patterns relevant to psychosocial care considerations within routine oncology nursing practice.

2.2. Setting and participants

The study population comprised hospitalised patients with a recorded tumour diagnosis who were admitted during the defined study period. All admissions were identified from institutional administrative and clinical databases.

Inclusion and Exclusion Criteria

Patients were included if they:

- Had a confirmed tumour diagnosis, classified as either benign or malignant, documented in the medical record; and
- Underwent inpatient admission within the study period.

Exclusion Criteria

Patients were excluded if:

- Tumour type information was missing or could not be reliably classified; or
- Treatment pattern data during the hospitalisation episode were unavailable.
- Only de-identified records meeting the inclusion criteria were retained for analysis.

2.3. Variables and definitions

2.3.1. Tumour type

Tumour type was defined based on the recorded clinical diagnosis in the hospital database. Tumours were categorised as:

- Benign tumours, or
- Malignant tumours

Where available, tumour diagnoses were further grouped into organ-based categories (e.g., lung, breast, bone) for descriptive purposes. These sub-classifications were used solely to contextualise clinical patterns and were not intended to represent

disease staging or prognosis.

2.3.2. Treatment patterns

Treatment patterns were defined according to oncological interventions administered during the inpatient admission. Based on the available data, treatment exposure was categorised as follows:

- No active oncological treatment during admission
- Chemotherapy
- Immunotherapy
- Targeted therapy

Note: Surgery, radiotherapy, and combined/multimodal treatment (as originally described) were not present in the current dataset; therefore, these categories are not reported in the Results or Table 1. The treatment categories reported below reflect the modalities available in the extracted administrative and clinical records.

Treatment categories were derived from documented clinical and administrative records and reflected routine care delivery rather than protocol-driven interventions.

2.3.3. Supporting clinical indicators

Several clinical indicators were extracted as contextual variables to support interpretation of tumour and treatment patterns. These indicators were not analysed as primary outcomes and included:

- Length of hospital stay, measured in days
- Nursing care intensity proxies, such as recorded nursing costs
- Discharge outcome, including discharge to home, transfer, or in-hospital death

These variables were used to describe the clinical environment in which psychosocial care considerations by nursing staff occurs.

2.4. Data analysis

Data analysis was conducted using descriptive statistical methods. Categorical variables were summarised using frequencies and proportions, while continuous variables were described using appropriate summary statistics.

Unit of analysis: The analysis was based on treatment records rather than patient counts or admission counts. One patient could contribute multiple treatment records during a single hospitalisation episode. Therefore, frequencies reported in Table 1 represent summed treatment records across all admissions, not the number of unique patients or admissions.

Primary analyses included:

- Description of the distribution of tumour types among hospitalised patients
- Description of the distribution of treatment modalities during inpatient admissions

To explore the clinical context relevant to psychosocial care considerations, stratified analyses were performed to examine treatment patterns across tumour types (tumour type $\times$ treatment pattern).

No psychosocial scales or direct psychosocial outcome measures (e.g., distress, anxiety, depression, quality of life) were available in the dataset; therefore, no psychosocial proxy measures or imputed indicators were constructed. Analyses were strictly descriptive and intended to inform nursing awareness of potential psychosocial concerns based on clinical context, rather than to quantify psychosocial outcomes.

2.5. Ethical considerations

This study was conducted using de-identified secondary data extracted

from hospital administrative and clinical systems. As no direct patient contact or identifiable information was involved, the study posed minimal risk to participants. Ethical approval or institutional exemption was obtained in accordance with local regulatory requirements and institutional guidelines.

3. Results

3.1. Overview of tumour group distribution

A total of hospitalised oncology admissions was included in the analysis. Tumour diagnoses were successfully classified into predefined tumour groups based on recorded diagnosis information. The majority of admissions could be assigned to specific tumour categories, while a proportion of cases fell outside the predefined high-frequency tumour groups and were classified as “Other/Not in top list”.

3.2. Distribution of major tumour types

Among the predefined tumour categories, lung tumours (primary and secondary combined) represented the most frequently recorded tumour group, accounting for 5535 admissions. This was followed by benign neoplasms of the colon (1303 admissions) and secondary malignant neoplasms of lymph nodes (843 admissions). Other commonly recorded tumour types included malignant neoplasms of the breast (634 admissions) and bone tumours, comprising secondary malignant neoplasms of bone and bone marrow (633 admissions).

Secondary malignant involvement of other organs was less frequent, including secondary malignant neoplasms of the liver and intrahepatic bile ducts (368 admissions), secondary malignant neoplasms of the pleura (26 admissions), and secondary malignant neoplasms of the brain (5 admissions).

A substantial number of admissions (7984 cases) were classified as “Other / Not in top list”, reflecting the wide heterogeneity of tumour diagnoses encountered in routine inpatient oncology care. As shown in **Figure 1**, lung tumours constituted the largest proportion of hospitalised admissions, followed by secondary malignant involvement of lymph nodes and bone.

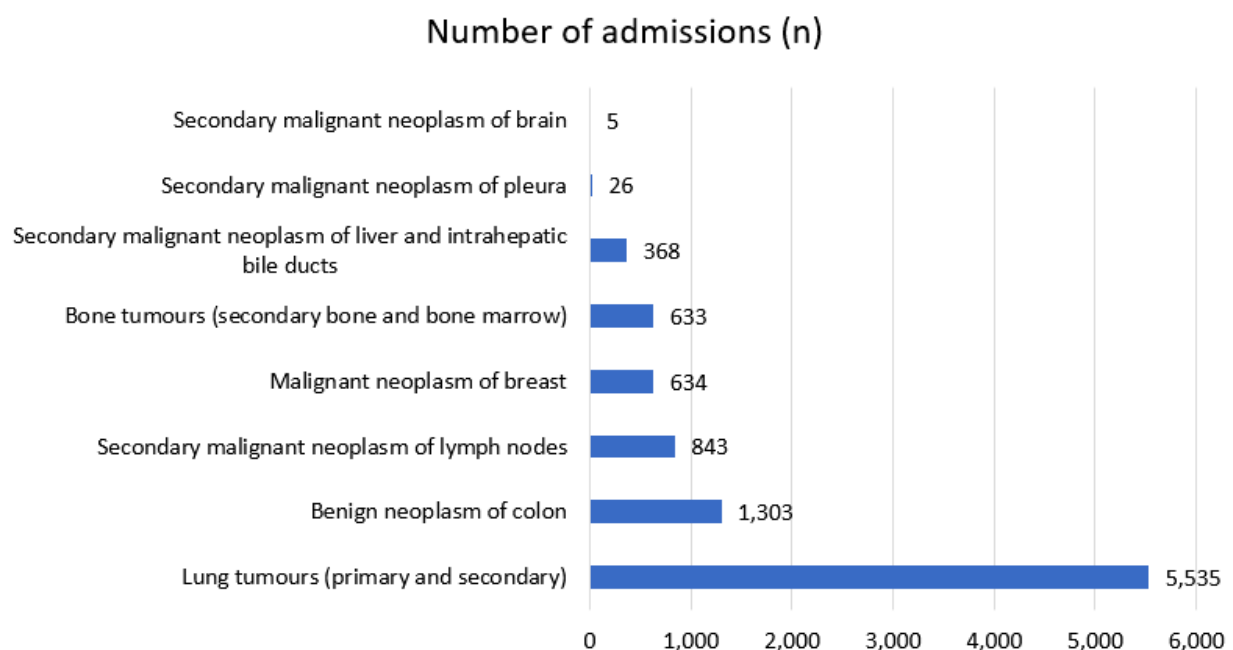


Figure 1. Distribution of major tumour types among hospitalised oncology patients.

3.3. Predominance of malignant and metastatic disease profiles

Overall, malignant tumours, particularly those involving primary lung malignancies and secondary (metastatic) disease, constituted a substantial proportion of hospitalised cases. The prominence of secondary malignant neoplasms affecting lymph nodes, bone, liver, and pleura indicates that a large segment of the inpatient oncology population was experiencing advanced or disseminated disease.

In contrast, benign tumours were less frequently represented, with benign neoplasms of the colon emerging as the only benign diagnosis among the most common tumour groups.

3.4. Clinical complexity and contextual awareness for psychosocial care considerations

The observed tumour distribution highlights the clinical complexity of the hospitalised oncology population. High frequencies of lung tumours and secondary malignant involvement suggest patient profiles commonly associated with greater symptom burden, functional limitation, and treatment intensity—all of which may be relevant contextual factors for nurses to consider when identifying patients who could benefit from psychosocial assessment during hospitalisation. The diversity of tumour types captured under the "Other" category further underscores the need for flexible, context-aware strategies to support nursing awareness of potential psychosocial risk.

3.5. Tumour types and treatment patterns

Cross-tabulation of tumour groups and treatment patterns revealed distinct distributions of oncological therapies across hospitalised patient populations (**Table 1**). Lung tumours (primary and secondary combined) constituted the largest tumour category and were represented across all systemic treatment modalities. In particular, lung tumours accounted for the majority of immunotherapy exposure (351 of 369 treatment records), indicating that immunotherapy use during hospitalisation was predominantly concentrated among patients with lung malignancies. Lung tumours were also frequently associated with chemotherapy (30,772 records) and targeted therapy (45,395 records), reflecting intensive and multimodal treatment trajectories in this group.

Secondary malignant involvement of lymph nodes was also commonly linked to systemic treatment exposure, with substantial representation in both chemotherapy (8179 records) and targeted therapy (10,463 records) datasets. Similar patterns were observed for bone tumours, where secondary malignant neoplasms of bone and bone marrow were primarily associated with chemotherapy (3901 records) and targeted therapy (5124 records). Secondary malignant neoplasms of the liver and intrahepatic bile ducts demonstrated a comparable distribution, with 3275 chemotherapy and 3907 targeted therapy records.

In contrast, benign tumours, represented mainly by benign neoplasms of the colon, showed minimal exposure to systemic therapies, with only seven chemotherapy records and no recorded immunotherapy or targeted therapy exposure. Less frequent tumour groups, including secondary malignant neoplasms of the pleura and brain, accounted for a small number of treatment records across systemic modalities.

Overall, the distribution presented in **Table 1** highlights that systemic and targeted therapies were predominantly administered to patients with malignant and metastatic tumour profiles, while benign tumours were rarely associated with such treatments. These tumour–treatment patterns illustrate the clinical complexity of hospitalised oncology care and may provide important contextual information to help

nurses identify patient groups who could benefit from closer psychosocial attention during inpatient treatment.

Table 1. Cross-tabulation of tumour groups and systemic treatment patterns among hospitalised oncology patients.

Tumour group	Chemotherapy	Immunotherapy	Targeted therapy	Total
Lung tumours (primary + secondary)	30,772	351	45,395	100,448
Secondary malignant neoplasm of lymph nodes	8179	18	10,463	19,865
Bone tumours (secondary bone + bone marrow)	3901	0	5124	10,211
Secondary malignant neoplasm of liver & intrahepatic bile ducts	3275	0	3907	7972
Malignant neoplasm of breast	1079	0	4228	5348
Other/Not in top list	12,326	0	12,733	30,426
Secondary malignant neoplasm of pleura	166	0	220	471
Secondary malignant neoplasm of brain	5	0	6	11
Total	59,710	369	82,076	174,759

Note: The unit of analysis is treatment records (not patient counts or admission counts). One patient may contribute multiple treatment records during a single hospitalisation. Frequencies represent summed treatment records across all admissions.

4. Discussion

4.1. Tumour–treatment profiles as contextual indicators for nursing awareness

This study demonstrates that tumour types and treatment patterns observed among hospitalised oncology patients form distinct clinical profiles that may serve as contextual indicators to inform nursing awareness of potential potential psychosocial concerns [19,20]. In particular, tumour groups characterised by high exposure to systemic and targeted therapies, such as lung tumours and secondary malignant disease, represent patient populations that may experience elevated psychosocial strain during hospitalisation [21,22]. However, because the study did not include direct psychosocial outcome measures (e.g., distress, anxiety, depression, or validated screening tools), these findings describe clinical context rather than quantified psychosocial risk.

4.2. Metastatic disease, treatment intensity, and potential psychosocial burden

Secondary malignant involvement of lymph nodes, bone, and liver was frequently associated with systemic and targeted therapies, indicating that a substantial proportion of hospitalised patients were receiving treatment in the context of advanced or disseminated disease [19,20]. Metastatic disease is commonly associated with persistent symptom burden, including pain, fatigue, and functional limitation, which may cumulatively erode psychological resilience over time [21,23]. These clinical features may prompt nurses to consider whether further psychosocial evaluation may be appropriate, although the present data do not directly measure distress, psychosocial burden, or vulnerability.

4.3. Treatment initiation and escalation as potential stress points

Hospital admission often coincides with initiation or escalation of oncological treatment, particularly for systemic therapies such as chemotherapy and targeted therapy [20]. The findings of this study indicate that these treatment modalities were most frequently administered to patients with malignant and metastatic tumour profiles [19]. Such periods are recognised as potential psychosocial stress points, during which patients may experience anxiety related to anticipated side effects, treatment efficacy, and disease progression [21,22]. The absence of formal psychosocial assessment data in routine hospital records underscores the importance of contextual indicators, such as tumour type and treatment pattern, to support early psychosocial care considerations [20]. Integrating awareness of treatment intensity into routine nursing assessments may help nurses identify patients who could benefit from timely psychosocial support, patient education, and referral to specialist services [22].

4.4. Benign tumours and differentiated psychosocial needs

In contrast to malignant and metastatic tumour profiles, benign tumours demonstrated minimal exposure to systemic therapies and were infrequently represented within treatment-intensive categories [19,24]. While patients with benign tumours may still experience anxiety related to diagnosis or procedural interventions, their overall treatment trajectories during hospitalisation appear less complex [19,24]. This contrast highlights the importance of differentiated psychosocial assessment; whereby nursing attention is calibrated according to tumour–treatment context rather than applied uniformly across all oncology admissions [20]. Such an approach may enhance the efficiency and relevance of nursing awareness for psychosocial care considerations within busy inpatient settings [19].

4.5. Implications for psychosocially informed oncology nursing practice

The findings of this study suggest that tumour–treatment profiles derived from routinely collected hospital data may offer a practical framework to support nursing awareness for psychosocial care considerations in oncology nursing practice [19,20]. Tumour types associated with intensive systemic therapies and metastatic involvement may serve as contextual markers to help nurses recognise patients who could benefit from proactive psychosocial assessment and supportive interventions [21]. By incorporating tumour type and treatment pattern information into routine nursing workflows, oncology nurses may be better equipped to prioritise psychosocial care, initiate supportive conversations, and coordinate multidisciplinary support [22]. Such an approach aligns with psychosocially informed oncology nursing practice and may contribute to more holistic and patient-centred inpatient cancer care.

However, several limitations should be noted. First, due to the absence of individual-level patient identifiers and validated psychosocial outcome measures in the secondary dataset, we were unable to perform association analyses (e.g., regression models), risk stratification, or examine direct relationships between tumour–treatment profiles and patient-reported distress. Second, the descriptive nature of the analysis means that causal inferences cannot be drawn. Third, the unit of analysis (treatment records rather than patients) should be considered when interpreting the magnitude of frequencies in Table 1.

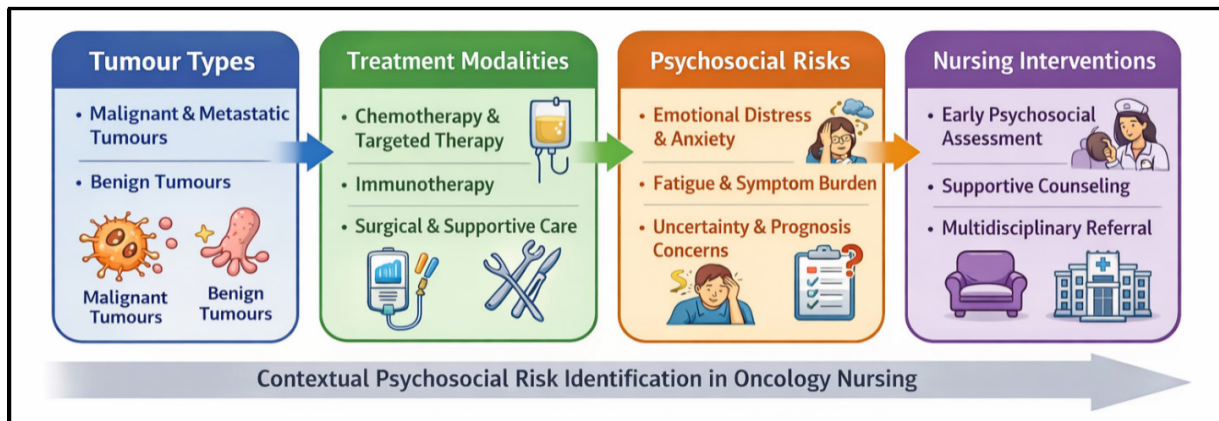


Figure 2. Proposed conceptual framework illustrating relationships between tumour types, treatment patterns, and psychosocial care considerations in oncology nursing.

5. Conclusion

This study demonstrates that tumour types and treatment patterns among hospitalised oncology patients form distinct clinical profiles that are closely linked to the clinical context in which potential psychosocial concerns may arise during inpatient care. Tumour groups characterised by malignant and metastatic disease, particularly those exposed to intensive systemic and targeted therapies, were prominently represented among hospitalised admissions, underscoring the complexity of clinical trajectories encountered in routine oncology nursing practice.

By situating awareness for psychosocial care considerations within the framework of tumour–treatment profiles, this study highlights the potential value of routinely collected clinical data in supporting psychosocially informed nursing care. Awareness of tumour types associated with intensive treatment exposure may help oncology nurses recognise clinical situations that warrant closer psychosocial attention, initiate timely supportive conversations, and prioritise nursing assessment within busy inpatient settings.

Importantly, the study did not include direct psychosocial outcome measures (e.g., distress, anxiety, depression, quality of life, or validated screening tools). Therefore, the findings describe clinical context and should not be interpreted as direct measures of potential psychosocial concerns. The observed tumour–treatment profiles are best understood as contextual indicators that may inform nursing judgement, rather than substitutes for formal psychosocial assessment.

Future research should build upon these descriptive findings by incorporating validated psychosocial screening tools, individual-level patient data, and longitudinal designs to examine associations between tumour–treatment profiles and patient-reported distress, and to further refine psychosocial risk stratification in oncology care. Overall, this study supports a more contextualised and proactive approach to nursing awareness for psychosocial care considerations, reinforcing the central role of oncology nursing in delivering holistic, patient-centred cancer care.

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Ethical approval: This study was reviewed and approved by the Ethics Committee of the 903rd Hospital of the Joint Logistic Support Force (approval number: 20260214/01/01/002O).

Informed consent statement: Informed consent was obtained from all subjects involved in the study.

Conflict of interest: The authors declare no conflict of interest.

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