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Psychological care needs among hospitalized liver tumor patients: Insights from clinical profiles and comorbidity burden

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Abstract: Hospitalized liver cancer patients frequently face psychological vulnerability due to disease severity, multiple comorbidities, and intensive treatment. This study analyzed clinical data from 42 patients with confirmed liver malignancy diagnoses to identify psychosocial needs implied by hospitalization patterns and clinical burden. Length of stay (LOS), comorbidity frequency, and treatment intensity were examined as indirect markers of psychological distress, as prolonged hospitalization and high comorbidity burden contribute to anxiety and emotional strain. Patients had a mean LOS of 14.02 days and a median of 15.5 days (range 2–33, SD 8.09), with an average of nearly seven concurrent diagnoses, including cirrhosis, chronic hepatitis B, ascites, hypoproteinemia, and postoperative or treatment-related complications. These factors reflect elevated physical burden and functional impairment, recognized contributors to anxiety, uncertainty, depressive symptoms, and emotional exhaustion in psycho-oncology literature. Extended hospitalization further amplifies stress through loss of autonomy, sleep disruption, and financial strain. Findings emphasize the need for early psychosocial screening and structured psychological care, particularly for patients with prolonged LOS or high comorbidity burden. Clinical indicators can serve as practical triggers for distress assessment where formal psychological measures are not consistently available. Integrating psychological nurses within hepatobiliary oncology units may enhance patient support, optimize coping, and address emotional, social, and existential concerns. Despite the retrospective design and absence of direct psychological measurements, these results provide a framework for future prospective psycho-oncology research. Recognizing and addressing the psychosocial consequences of clinical complexity is essential for improving emotional well-being and delivering comprehensive liver cancer care.

Keywords: anxiety; emotional distress; liver cancer; oncology nursing; psychological burden; psychological intervention; psycho-oncology; symptom burden

1. Introduction

Liver tumors, including hepatocellular carcinoma (HCC) and metastatic liver malignancies, impose a substantial global health burden and frequently present with complex, multi-system clinical manifestations. Patients often experience cirrhosis, ascites, hepatic decompensation, variceal bleeding, malnutrition, and treatment-related toxicity, all of which can drive prolonged hospitalizations, frequent readmissions, and dynamic fluctuations in functional status. These medical challenges amplify emotional strain as patients confront prognosis uncertainty, symptom burden, and socio-economic implications of prolonged treatment and hospitalization [1,2]. The literature across oncology and hepatobiliary medicine

consistently demonstrates that severity of illness and higher comorbidity burden are associated with greater psychological distress, including anxiety, depressive symptoms, sleep disturbance, and coping difficulties an association that persists even when formal distress measures are not routinely documented in clinical records [3,4]. Given the hospitalization context where distress may be heightened by acute symptoms and disruption of daily life, there is a compelling rationale for integrating systematic psychosocial assessment and targeted psycho-oncologic care into routine hepatobiliary oncology care [5,6].

1.1. Clinical burden and psychological vulnerability in liver tumor populations

The hepatobiliary cancer literature converges on a robust link between disease severity, symptom burden, and psychological distress [2,7]. Systematic reviews describe substantial psychological burden in hepatobiliary cancers and show that psycho-oncologic interventions can reduce distress and improve quality of life (QoL) and functioning in this population [5]. Evidence from interventional studies in HCC further indicates that comprehensive education and care programs can reduce anxiety and depression and enhance QoL among patients undergoing surgery or other curative-intent treatments [8]. Prospective and population-based work in HCC identifies risk factors for depressive disorders, including female sex and advanced disease features, underscoring the need for tailored psychosocial screening across the disease continuum [4]. Anxiety and depressive symptoms have also been linked to prognosis in HCC, suggesting possible biobehavioral interactions that merit psychosocial attention as part of holistic cancer care [3,9]. Together, these findings support the premise that liver tumor patients especially those hospitalized warrant proactive psychosocial risk assessment and timely access to psycho-oncology and palliative care services [5].

1.2. Hospitalization context as a driver of psychological care needs

Hospitalized cancer patients consistently exhibit elevated symptom burden and distress, with symptom monitoring and proactive management associated with better patient-reported outcomes and QoL. Inpatient symptom monitoring trials in cancer populations demonstrate feasibility and potential QoL benefits, and electronic symptom monitoring has shown promise for improving symptom control during hospitalization [3]. Early integration of palliative care into hospital care has been associated with improved QoL and symptom management, and with treatment alignment with patient preferences, highlighting a practical model for addressing psychological distress alongside physical symptoms in hepatobiliary cancer care[5]. Evidence from liver disease and liver cancer-specific psycho-oncology programs also indicates that rapid psychosocial assessment, patient education, and structured care pathways can reduce anxiety and depression and improve QoL among liver cancer patients [1]. The overlap of inpatient palliative care, psycho-oncology, and comprehensive education forms the basis for a hospital-based psychosocial care pathway tailored to liver tumor patients [5].

1.3. Comorbidity burden as a central determinant of psychosocial care needs

Comorbidity burden is common in HCC and other liver malignancies and shapes treatment choices, prognosis, and health service utilization. Hypertension, diabetes, and ischemic heart disease are frequently observed comorbidities in HCC cohorts, and higher comorbidity burdens can intensify symptom burden and functional impairment, thereby augmenting psychosocial distress and reducing coping capacity [10]. Standardized comorbidity indices (e.g., Elixhauser) provide a rigorous framework to quantify this burden and to adjust analyses investigating psychosocial outcomes, facilitating targeted resource allocation and integrated medical-psychosocial care in highly comorbid liver disease populations [11]. In transplant contexts, where comorbidity assessment informs care planning, the emphasis on addressing psychosocial needs aligns with broader trends toward integrated medical-psychosocial strategies in complex liver disease [11]. Socioeconomic disparities further intersect with depressive symptoms and inflammatory markers in HCC, underscoring the biopsychosocial nature of distress in liver cancer and the need to consider social determinants when planning psychosocial interventions [4].

1.4. Psychosocial interventions and care models for hospitalized liver tumor patients

A convergent body of work supports psycho-oncology as a core component of comprehensive cancer care, including liver tumors [12–14]. Systematic reviews across hepatobiliary cancers document substantial psychological burden and demonstrate that psycho-oncologic interventions reduce distress and improve QoL, functioning, and coping in this population [5]. Intervention studies in HCC show that education, nursing support, and integrated care programs can meaningfully reduce anxiety and depression and improve QoL and even survival indicators in perioperative or post-treatment phases [8]. Early or integrated palliative care during hospitalization improves QoL and symptom burden and helps clarify patient goals of care in serious illness, with broader applicability to hepatobiliary cancer where prognosis is often uncertain [5]. Trial-based models including behavioral coaching, patient education, and rapid psychosocial assessment pathways have demonstrated reductions in distress and improvements in QoL in liver cancer cohorts, informing scalable hospital-based psychosocial care pathways for hepatology and oncology units [1]. Portugal's national experience illustrates that implementing a multidisciplinary psycho-oncology project within cancer care can reduce distress and improve patient outcomes, reinforcing the feasibility and value of institutionalized psycho-oncology programs in capturing the psychological care needs of cancer patients, including those with liver tumors [5]. Complementary work on end-stage liver disease and nonhospice palliative care emphasizes the expansion of palliative and psychosocial care to chronic liver disease contexts, further supporting integrated care for hospitalized liver tumor patients [15].

1.5. Clinical and research implications

Clinical practice: Hospitals should implement standardized psychosocial screening for liver tumor patients at admission and key milestones, with streamlined pathways to psycho-oncology and inpatient palliative care. Given the link between disease burden, comorbidity, and distress, care models should integrate medical and psychosocial teams and utilize comorbidity indices to tailor interventions and allocate resources while monitoring psychosocial outcomes [1,5].

Research: Future studies should examine how comorbidity burden interacts with psychological distress in hospitalized liver tumor patients, employing standardized measures (e.g., Elixhauser) to adjust analyses and identify high-risk subgroups. Randomized trials of inpatient psycho-oncology and palliative care interventions in hepatobiliary cancer populations are needed to establish causal effects on distress, QoL, and clinical outcomes, with attention to sociodemographic diversity [5].

Policy/program development: Health systems should invest in multidisciplinary psycho-oncology and inpatient palliative care pathways within hepatology/oncology units, recognizing psychosocial care as a core component of comprehensive cancer care that can reduce hospital morbidity associated with high comorbidity burden [5].

2. Methods

2.1. Study design

This study employed a descriptive observational design based on retrospective clinical records obtained from hospitalized patients diagnosed with liver tumors. The objective of this design was to summarize and interpret existing clinical patterns without manipulating variables or applying experimental interventions. A retrospective observational approach was chosen because it allows for the systematic examination of real-world clinical characteristics, including disease severity, comorbidity burden, and hospitalization patterns, which together provide meaningful insights into the psychological care needs of this patient population. This design is widely used in psycho-oncology and nursing research when the aim is to infer psychosocial vulnerabilities from established clinical indicators.

2.2. Data source

All data were extracted from hospital inpatient records collected during routine clinical care. The dataset included key variables relevant to both medical and psychosocial assessment, comprising patient identifiers (later anonymized), recorded diagnoses at discharge, documented comorbidities, and hospitalization timelines such as admission date, discharge date, and length of stay (LOS). These variables offer a comprehensive clinical overview and serve as proxy markers for evaluating the psychological burden associated with liver tumors. No psychological scale data were available; therefore, analyses focused on how clinical complexity may reflect underlying psychosocial needs. These clinical indicators were selected as surrogate measures of psychological burden, consistent with psycho-oncology evidence that greater disease complexity, prolonged hospitalization, and intensive treatment

correlate with higher levels of emotional distress, anxiety, and caregiver strain.

2.3. Data extraction and processing

Data extraction involved systematically reviewing each inpatient entry to ensure accuracy and completeness. Diagnoses and comorbidities listed within the discharge summaries were categorized into clinically meaningful groups, such as hepatic malignancy, cirrhosis-related complications, ascites, gastrointestinal bleeding, metabolic disorders, hypertension, and other chronic conditions. This categorization allowed for the identification of common comorbidity patterns among liver tumor patients.

Length of stay was calculated using the documented admission and discharge dates, and descriptive statistics were generated to examine distributional characteristics. Clinical complexity was defined based on the number and nature of comorbidities, with patients exhibiting multiple complications or high-severity diagnoses classified as clinically complex. This classification serves as an indirect indicator of heightened psychosocial risk, consistent with established psycho-oncology frameworks.

2.4. Ethical considerations

Given that this study utilized retrospective clinical records, all data were anonymized prior to analysis to ensure patient confidentiality. Identifying information such as names and hospital numbers was removed or replaced with coded identifiers. The study adhered to institutional standards for the ethical use of clinical data and complied with the ethical principles outlined by relevant regulatory and publication bodies, including those of Psycho-Oncology. As the study did not involve direct patient contact or intervention, formal informed consent was not required; however, all procedures respected the ethical mandate to protect patient privacy and data security.

3. Results

3.1. Clinical profile of liver malignancy patients

A total of 42 patients were identified as having liver malignancy-related diagnoses, including primary liver cancer, postoperative liver cancer follow-up, interventional oncology treatment, targeted therapy, and immunotherapy. This subgroup represents 59.8% of the total inpatient cohort and reflects a population facing substantial oncologic and physiological burden. Many of these patients presented with multiple overlapping diagnoses such as cirrhosis, viral hepatitis, ascites, hypoproteinemia, and metabolic disorders. The coexistence of malignancy with chronic liver dysfunction underscores the medical fragility of this cohort. Such fragility has important psychosocial implications, as complex disease trajectories often heighten patients' vulnerability to worry, fear of deterioration, and emotional distress throughout hospitalization.

3.2. Length of stay (LOS) and psychosocial implications

Mean LOS was 14.02 days, median 15.5 days (range 2–33, SD 8.09), with an interquartile range of 7–19 days (**Table 1**). These statistics are calculated only for patients with confirmed liver malignancy diagnoses consistent with the cohort analyzed in Section 3.4 ($N = 42$). Prolonged hospitalization serves as an indirect marker of psychological burden, as patients with extended stays are at higher risk for anxiety, emotional fatigue, uncertainty about disease progression, and financial strain. Longer LOS may also disrupt sleep patterns, limit autonomy, and amplify concerns about treatment outcomes, thereby increasing vulnerability to depressive symptoms and reduced coping capacity. These clinical patterns highlight the importance of early psychosocial screening and structured psycho-oncology care for patients experiencing prolonged admissions.

Table 1. Length of stay statistics for liver malignancy patients ($N = 42$).

Statistic	Value
Count (N)	42
Mean LOS	14.02 days
Median LOS	15.5 days
Minimum LOS	2 days
Maximum LOS	33 days
Standard deviation	8.09 days
25th percentile (Q1)	7 days
75th percentile (Q3)	19 days

3.3. Comorbidity burden and emotional vulnerability

Liver cancer patients in this dataset exhibited a high comorbidity load, with many individuals presenting with five or more concurrent diagnoses. Although comorbidity frequency varies among individuals, chronic hepatitis B, cirrhosis decompensation, hypoproteinemia, infections, metabolic conditions, and postoperative complications were common. These accumulated clinical challenges not only increase physical burden but also compound the psychological impact of a cancer diagnosis. Patients frequently experience persistent fatigue, reduced functional ability, dietary restrictions, and ongoing procedural demands, all of which diminish quality of life and heighten emotional exhaustion.

From a psychosocial perspective, comorbidities amplify distress by reinforcing perceptions of deteriorating health, limiting independence, and increasing caregiver demands. This is illustrated in work examining caregiver burden and involvement in cancer care across diverse settings, including informal caregivers of cancer patients and the dynamics of caregiver decision-making and support needs [16,17]. New treatment regimens and additional appointments may further increase caregiver responsibilities, requiring repeated hospital visits and home-care tasks, thereby elevating caregiver stress and vigilance regarding patient decline [18].

Patients with complex clinical presentations are more likely to experience heightened hopelessness, fear of future decline, and anticipatory anxiety about treatment outcomes. This aligns with findings on distress and needs among patients

with advanced cancer and their partners, emphasizing the bidirectional nature of psychological experiences in oncology contexts [19]. Increased clinical needs also place additional burdens on caregivers, indirectly affecting patients' emotional states through caregiver stress, reduced emotional availability, and potential coping fatigue [20–22].

Accordingly, the comorbidity patterns observed in this cohort reflect a broader psychosocial risk landscape consistent with established psycho-oncology frameworks. The dyadic orientation of patient and caregiver experiences underscores the importance of caregiver-informed interventions and the integration of palliative care, as represented in the literature on caregiver interventions and family-centered palliative care [23–25].

3.4. Liver cancer diagnosis patterns

Among the 42 patients identified with liver malignancy, diagnosis patterns varied across treatment and follow-up categories (**Figure 1**). The most common diagnosis was personal history of liver malignancy (16 patients), followed by postoperative follow-up for liver malignancy (11 patients). Targeted therapy and immunotherapy were documented in 8 and 7 patients, respectively, while interventional therapy was performed in 7 patients. These patterns indicate a heterogeneous cohort with diverse clinical trajectories, reflecting differences in treatment stage, intervention requirements, and follow-up intensity. The distribution of diagnoses underscores the importance of tailoring psychological screening and support to patient-specific clinical pathways, as different treatment modalities and follow-up regimens may impose distinct emotional and functional burdens.

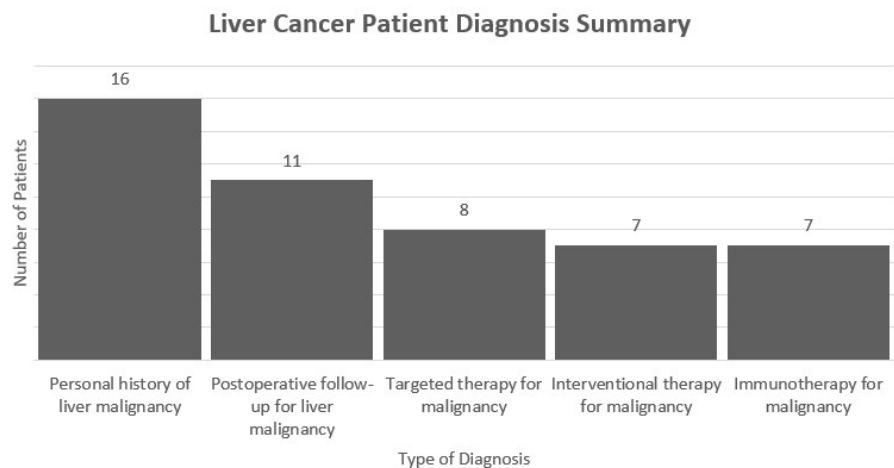


Figure 1. Liver cancer patient diagnosis summary.

3.5. LOS comparison by diagnosis type

A one-way ANOVA was conducted to examine whether length of stay (LOS) differed among liver cancer patients across the five diagnosis types identified in Section 3.4: Personal history, Postoperative follow-up, Targeted therapy, Interventional therapy, and Immunotherapy. The ANOVA results indicated no statistically significant difference in LOS between the groups ($F(4,16) = 1.53$, $p = 0.241$). Tukey HSD post-hoc tests confirmed that none of the pairwise comparisons

were statistically significant (all p -adjusted > 0.05), reflecting the limited sample size in several groups.

Descriptive statistics highlight variation in LOS among diagnosis types: Personal history (mean 12.42 days, median 11.0, $n = 12$), Postoperative follow-up (mean 6.8 days, median 5.0, $n = 5$), Targeted therapy (mean 15.5 days, median 15.5, $n = 2$), Interventional therapy (mean 20.0 days, median 20.0, $n = 1$), and Immunotherapy (mean 4.0 days, median 4.0, $n = 1$). Standard deviations indicate moderate variability, particularly in Personal history and Postoperative follow-up groups, while groups with only one or two patients do not have meaningful SD values.

Although statistical significance was not observed, patients with longer LOS such as those in the personal history, Targeted therapy, and Interventional therapy groups may experience increased clinical burden, which could elevate psychological stress, anxiety, and emotional strain. These findings support using LOS in combination with comorbidity and treatment intensity as indirect markers of psychosocial vulnerability, emphasizing the importance of tailored psycho-oncology interventions for hospitalized liver cancer patients.

Figure 2 shows the mean LOS for each diagnosis types. This bar graph illustrates the mean length of stay (LOS) for 42 unique liver cancer patients, grouped by diagnosis type: Immunotherapy, Postoperative follow-up, Personal history, Targeted therapy, and Interventional therapy. Differences in LOS reflect variability in clinical complexity and treatment intensity across treatment and follow-up categories. These data support the use of LOS, in combination with comorbidity burden and treatment intensity, as an indirect marker of psychosocial vulnerability, supporting targeted psycho-oncology interventions for hospitalized patients.

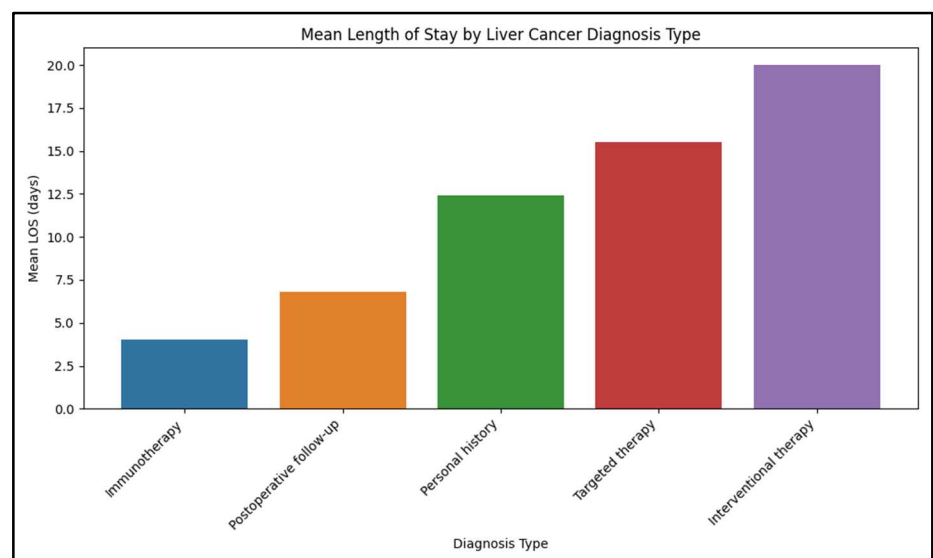


Figure 2. Mean length of stay by liver cancer diagnosis type.

3.6. Treatment intensity and psychosocial stressors

Many of the 42 liver cancer patients required interventional oncology procedures, targeted systemic treatments, or immunotherapy. These therapies, while essential for disease control, often introduce uncertainty and emotional strain.

Patients undergoing such treatments must cope with side effects, fluctuating physical symptoms, and repeated cycles of evaluation and adjustment, which may disrupt daily routines and increase psychological fatigue. Those undergoing postoperative monitoring similarly encounter heightened anxiety regarding recurrence or complications. Treatment intensity therefore functions not only as a clinical marker but also as a predictor of psychological stress, reinforcing the need for integrated psychosocial assessment [26].

3.7. Integrated interpretation: Clinical burden as a driver of psychological distress

Collectively, the findings of this analysis indicate that liver cancer patients face a substantial combination of extended hospitalization, diverse and severe comorbidities, and demanding treatment regimens. These clinical realities create an environment in which psychological distress is highly likely, even in the absence of direct psychological assessment measures. Emotional states such as anxiety, sadness, uncertainty, sleep disturbance, and financial stress are intrinsic to prolonged and complex cancer care. Therefore, the clinical characteristics of these 42 liver malignancy patients strongly support the integration of psycho-oncologic care interventions and structured psychosocial support as essential components of comprehensive liver cancer management.

Figure 3 summarizes the pathway through which liver malignancy, clinical complexity, hospitalization burden, and symptom clusters converge to produce psychological stressors that culminate in emotional distress among hospitalized liver cancer patients. This conceptual model illustrates how liver malignancy and its associated clinical burden including multiple comorbidities, cirrhosis, hepatitis B infection, ascites, bleeding, and high-intensity treatments lead to hospitalization burden, prolonged length of stay, and symptom clusters such as pain, fatigue, sleep disturbance, and functional decline. These clinical factors generate psychological stressors including fear of deterioration, anxiety, uncertainty, depressive symptoms, and financial strain, which collectively contribute to psychological distress. The diagram reflects the cumulative impact of disease complexity on emotional well-being and highlights the need for structured psycho-oncology interventions in hospitalized liver tumor populations.

4. Discussion

4.1. Interpretation of key findings

The present study provides important insights into the psychosocial needs of hospitalized liver malignancy patients by examining their clinical complexity, comorbidity burden, and hospitalization patterns. Among the 42 patients identified as having liver cancer or receiving cancer-related treatments, the mean length of stay (LOS) exceeded ten days, with some patients requiring up to 33 days of inpatient management. Prolonged hospitalization serves both as a marker and a contributor to psychological distress. In psycho-oncology research, extended admissions are associated with anxiety related to treatment uncertainty, fear of deterioration,

emotional fatigue, and a diminished sense of control. Recent AI-based analyses of postoperative hepatobiliary patients show that while clinical complexity explains most variation in length of stay, nonclinical factors still contribute significantly to prolonged hospitalization. This finding reinforces the role of psychosocial influences in recovery [27]. The variability in LOS observed, ranging from short admissions for stabilization to lengthy stays for managing complications, mirrors the unpredictable trajectory of hepatobiliary malignancies. Such variability can drive psychological vulnerability.

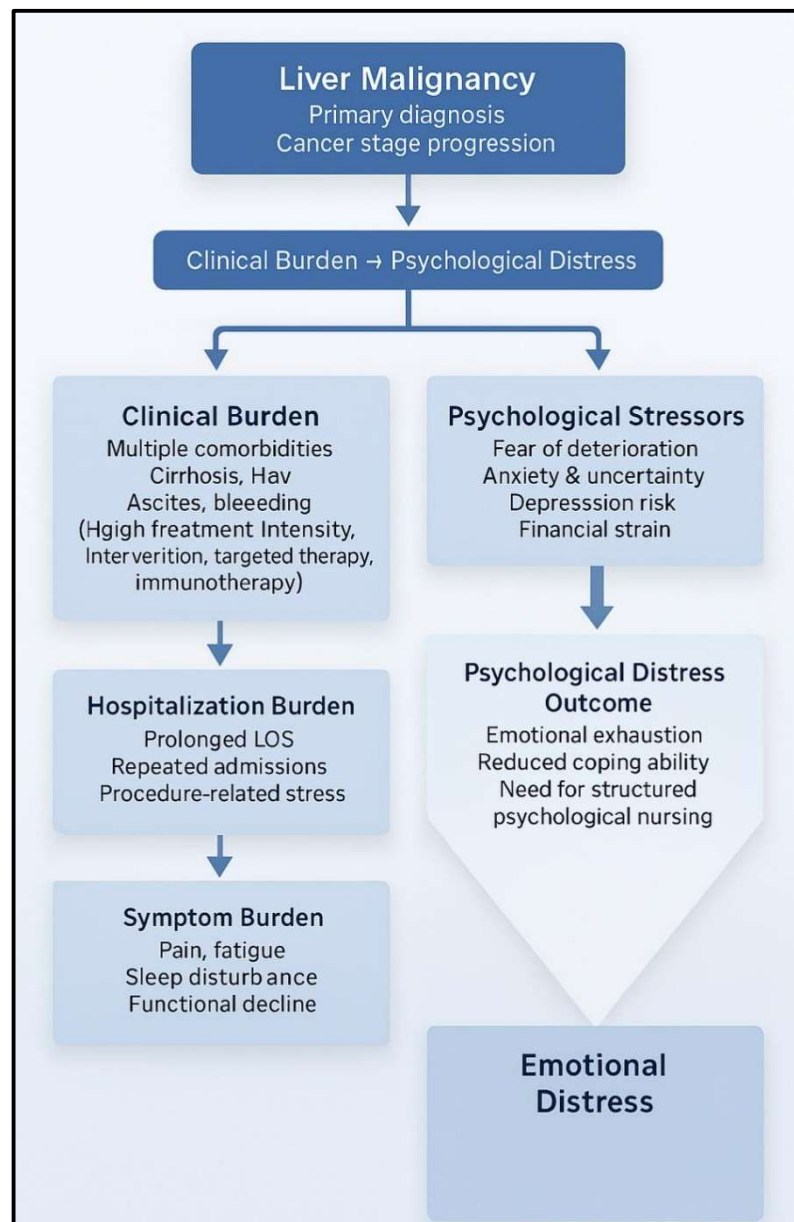


Figure 3. Clinical burden → psychological distress pathway in liver cancer patients.

The high comorbidity burden further underscores the emotional complexity faced by liver cancer patients [28]. On average, patients presented with nearly seven coexisting diagnoses, including cirrhosis, viral hepatitis, hypoproteinemia, ascites, and metabolic disorders. These conditions often produce symptom clusters such as fatigue, pain, abdominal distension, and weakness. These symptom clusters are

known precursors to depression and anxiety in oncology populations [3]. Patients coping with chronic viral infections or advanced cirrhosis may also experience stigma, financial strain, and existential distress. Collectively, these factors contribute to an increased risk for depressive symptoms and impaired coping. The integration of cancer-specific complications with long-standing chronic diseases highlights these patients' high-risk psychological profile, consistent with the "clinical complexity–psychological distress" model widely discussed in psycho-oncology literature [29].

4.2. Implications for psycho-oncologic care

The findings highlight several implications for psycho-oncologic care within hepatobiliary oncology settings. First, the significant length of hospitalization supports the implementation of early psychological screening. Patients with a LOS exceeding one week, particularly those experiencing repeated admissions, should be prioritized for distress screening tools (e.g., Distress Thermometer, PHQ-9, GAD-7). Early detection allows for timely intervention. This approach can potentially prevent the escalation of anxiety, depressive symptoms, or maladaptive coping [30].

Second, the heterogeneity of comorbidities indicates the need for tailored communication strategies. Patients with chronic viral hepatitis or cirrhosis often carry emotional concerns related to stigma, fear of progression, or guilt regarding the disease's origin. Nurses play a central role in addressing misconceptions, normalizing emotional reactions, and providing supportive dialogues that validate the patient's experience. For patients undergoing invasive cancer treatments such as interventional procedures or targeted therapies, pre-treatment counseling can reduce anticipatory anxiety and enhance psychological preparedness [5].

Third, prolonged hospitalization disrupts sleep patterns, family responsibilities [31,32], employment stability, and finances [33]. Psycho-oncologic care should include routine emotional check-ins, sleep hygiene counseling, and financial coping strategies where appropriate. Family psychoeducation is also critical. Caregivers often experience parallel stress, and their emotional state directly influences patient well-being. Structured psychoeducation sessions, either bedside or digitally delivered, may significantly improve coping and perceived support [5].

4.3. Comparison with existing literature

The results align closely with established findings in the psycho-oncology field. Studies have consistently shown that patients with hepatocellular carcinoma or advanced liver disease report substantial emotional distress due to prognostic uncertainty, high symptom burden, and treatment intensity. Comorbidity-driven psychological vulnerability has been documented extensively. Patients with cirrhosis and metabolic comorbidities demonstrate significantly higher rates of depression and anxiety compared to non-cirrhotic cancer populations [4,10]. The LOS patterns in our cohort also mirror previous research indicating that prolonged hospitalization independently predicts higher distress, lower quality of life, and increased financial toxicity, an emerging focus within psycho-oncology research. Similarly, literature on targeted therapy suggests that these treatments carry psychological implications beyond physical side effects. These include treatment-related fear and cognitive

overload from information processing. The findings of this study reinforce these observations and extend them by showing that even within a single hospital cohort, cancer patients with complex medical trajectories demonstrate significant psychosocial needs identifiable through clinical data alone [8].

4.4. Practical recommendations

Based on the clinical and psychological patterns observed, several actionable recommendations can be made to strengthen psychosocial care for liver cancer patients. First, psychological nurses should be integrated directly into hepatobiliary wards to facilitate continuous emotional monitoring and early intervention. Standardized psychosocial assessment triggers such as LOS > 7 days, ≥ 5 comorbidities, or the initiation of targeted therapy should be implemented to identify high-risk individuals. Based on study, nurse psychological intervention can reduce the incident of complication and eradicate the negative emotions [34].

Second, multidisciplinary collaboration is essential. Joint rounds involving oncologists, hepatologists, psychological nurses, dietitians, and social workers ensure that emotional, nutritional, financial, and medical concerns are addressed cohesively [5,35]. Third, institutions should consider implementing structured psycho-educational programs, mindfulness-based interventions, or supportive counseling services tailored specifically for liver cancer patients, whose distress profiles may differ from other oncology populations due to comorbidity burden and rapid clinical fluctuations. [8]

Finally, given the strong association between financial strain and psychological distress in this group, early referral to social services for financial counseling is recommended. Integrating psychosocial support into routine cancer care not only improves emotional well-being but may also enhance adherence to treatment, reduce readmission rates, and improve overall quality of life [36].

5. Conclusion, limitations, and practice implications

This study demonstrates that routine clinical data, even in the absence of formal psychological assessment tools, can provide meaningful insight into the psychosocial needs of hospitalized liver cancer patients. Among the 42 patients analyzed, prolonged hospitalization, high comorbidity burden, and intensive oncology-related treatments identified a population at substantial risk for psychological distress. Although ANOVA showed no statistically significant difference in LOS across diagnosis types, descriptive trends indicated that patients with personal history and targeted therapy experienced relatively longer hospitalizations, suggesting increased clinical and emotional burden. These clinical indicators function as indirect yet powerful markers of vulnerability, aligning with established psycho-oncology evidence linking disease complexity to anxiety, depressive symptoms, treatment-related uncertainty, and financial or caregiving strain.

Several limitations must be acknowledged. The study relied on retrospective clinical records and did not include direct psychological measures such as anxiety or depression scores, distress ratings, or quality-of-life indices. While LOS, comorbidity, and treatment intensity serve as practical proxies for psychosocial

vulnerability, they cannot replace validated psychological instruments. Additionally, the single-center design may limit generalizability to broader liver cancer populations with different healthcare structures, cultural attitudes, or psychosocial support systems. The retrospective approach further precludes causal interpretation, as temporal relationships between clinical events and psychological outcomes cannot be established. Future prospective, multicenter studies incorporating validated psychological measures and longitudinal distress monitoring would strengthen the evidence base and clarify how distress evolves across the cancer care continuum.

Despite these limitations, the findings provide a valuable foundation for integrating psychosocial perspectives into liver cancer care. Clinical indicators such as prolonged LOS, high comorbidity complexity, and treatment intensity can be incorporated into structured screening protocols to identify patients at high risk for emotional distress. Nurses, who maintain close and continuous contact with patients, are well-positioned to recognize early signs of psychological strain, facilitate timely referrals, and provide in-hospital coping support. Embedding psychological nurses or multidisciplinary psycho-oncology teams within hepatobiliary units may further strengthen care coordination, ensuring that emotional, social, and existential needs are addressed alongside medical management.

Recognizing the psychological implications of clinical complexity also supports holistic communication strategies. Patients with advanced disease or frequent complications often require tailored guidance, reassurance, and emotional validation to manage uncertainty and fear. By operationalizing LOS, comorbidity burden, and treatment intensity as early-warning signals of psychological vulnerability, healthcare providers can enhance responsiveness and precision in psycho-oncology services. Ultimately, this study reinforces the importance of a proactive, risk-based framework for psychosocial care in liver cancer, promoting patient well-being and supporting more compassionate, comprehensive cancer management.

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Informed consent statement: This study is a retrospective analysis and does not require patients to sign an informed consent form.

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

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