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Effects of inpatient palliative psychosocial care on depression, anxiety, and distress in patients with advanced cancer or non-malignant life-limiting conditions

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Abstract: A Psychological distress, including depression, anxiety, and global emotional suffering, is highly prevalent among patients with advanced cancer, particularly during hospitalization in palliative care settings. Although psychosocial care is widely recommended, real-world evidence regarding its short-term effectiveness in inpatient palliative wards remains limited. A prospective pre-post observational study was conducted among 36 patients with advanced cancer and non-malignant life-limiting conditions admitted to an inpatient palliative care ward. Depressive symptoms (PHQ-9), anxiety symptoms (GAD-7), and global psychological distress (NCCN Distress Thermometer) were assessed at admission and after two weeks of structured inpatient psychosocial care. Paired nonparametric tests were used to evaluate changes over time, with effect sizes calculated to estimate the magnitude of improvement. Psychosocial care was delivered by a palliative care team including physicians, nurses, and trained psychosocial staff. Interventions typically involved at least two formal psychosocial contacts per week, each lasting approximately 20-40 minutes, supplemented by ongoing supportive communication during routine care. Significant reductions were observed across all psychological outcomes. Mean PHQ-9 scores decreased from 6.56 to 5.19 ($p < 0.001$), GAD-7 scores from 5.33 to 4.22 ($p < 0.001$), and Distress Thermometer scores from 3.94 to 2.92 ($p < 0.001$), with statistically robust and clinically consistent effect sizes. While no patients met conventional responder thresholds for PHQ-9 or GAD-7, 19.4% achieved clinically meaningful improvement in distress, and one patient transitioned below the clinical distress threshold. Structured inpatient palliative psychosocial care is associated with consistent short-term improvements in depression, anxiety, and global distress among patients with advanced cancer. These findings support the integration of psychosocial services and systematic psychological screening into routine inpatient palliative oncology practice.

Keywords: anxiety; depression; distress; palliative care; psycho-oncology; psychosocial care

1. Introduction

Psychological distress, encompassing symptoms of depression, anxiety, and global emotional suffering, is highly prevalent among patients with advanced cancer and represents a major component of the total burden of disease. As cancer progresses, patients are increasingly confronted with physical symptom escalation, uncertainty regarding prognosis, functional decline, and existential concerns, all of which contribute to heightened vulnerability to psychological morbidity. Epidemiological studies consistently indicate that between 30% and 50% of patients with advanced malignancies experience clinically significant psychological distress during the course of illness, with particularly high rates observed during periods of hospitalization and intensive treatment [1-3]. Left unrecognized and untreated,

such distress is associated with poorer quality of life, impaired treatment adherence, prolonged hospitalization, and increased healthcare utilization [4].

In recognition of these challenges, psycho-oncology has evolved as an essential interdisciplinary field integrating psychological, social, and behavioral dimensions into comprehensive cancer care. Over the past two decades, international clinical guidelines have increasingly emphasized the systematic identification and management of psychological symptoms in oncology populations. The American Society of Clinical Oncology (ASCO), for example, has issued evidence-based recommendations for the management of anxiety and depression in adult cancer survivors, advocating routine screening and timely psychosocial intervention across the cancer trajectory [4-6]. More recently, ASCO has further updated its palliative care guideline, underscoring the importance of early and integrated palliative and psychosocial care for patients with advanced cancer, not only to address physical symptoms but also to mitigate psychological suffering [7].

Within this context, inpatient palliative care settings occupy a particularly critical position. Hospitalized patients with advanced cancer often present with high symptom burden, complex care needs, and limited psychosocial resources, rendering them especially susceptible to emotional distress. Unlike outpatient psycho-oncology services, inpatient palliative care provides an opportunity for continuous, multidisciplinary psychosocial engagement during periods of heightened vulnerability [8]. Nevertheless, despite the theoretical appeal of inpatient psychosocial care, empirical evidence regarding its short-term effectiveness on psychological outcomes remains relatively limited. Most prior studies have focused either on outpatient interventions or on longer-term psychological therapies, such as meaning-centered psychotherapy or dignity therapy, which may not be readily applicable within the time constraints of inpatient care [9-11].

The conceptual foundation of integrating psychosocial care into oncology was further strengthened by early evidence demonstrating that palliative care interventions could improve not only symptom burden but also psychological well-being and survival [12]. In a landmark randomized trial, Temel et al. (2010) showed that early integration of palliative care in metastatic lung cancer significantly improved quality of life and reduced depressive symptoms, establishing palliative care as a psychologically active intervention rather than merely supportive care [13,14].

A growing body of literature supports the clinical value of structured psychosocial interventions in advanced cancer populations. A systematic review published in *Psycho-Oncology* by Teo et al. (2019) concluded that psychosocial interventions, including counseling, cognitive-behavioral approaches, and supportive therapies, are associated with improvements in psychological well-being among patients with advanced cancer [15,16]. However, the authors also highlighted substantial heterogeneity in intervention formats, outcome measures, and care settings, noting a particular scarcity of data derived from inpatient palliative wards. Similarly, Perusignhe et al. (2021), in their systematic review on the evidence-based management of depression in palliative care, emphasized that although pharmacological and psychotherapeutic strategies are efficacious, real-world implementation within palliative inpatient environments remains underexplored [2,17].

The challenge of evaluating psychosocial outcomes in clinical oncology is further compounded by the need for valid, efficient, and clinically meaningful assessment tools. Among the most widely used instruments are the 9-item Patient

Health Questionnaire (PHQ-9) for depression, the 7-item Generalized Anxiety Disorder scale (GAD-7) for anxiety, and the NCCN Distress Thermometer (DT) for global psychological distress. Hartung et al. (2017) demonstrated the strong psychometric performance of PHQ-9 in oncology populations, supporting its use as a brief yet reliable measure of depressive symptom severity [1,18]. Likewise, GAD-7 has been validated across diverse clinical contexts and is now routinely employed in cancer settings for rapid anxiety screening. The NCCN Distress Thermometer, endorsed by the National Comprehensive Cancer Network, offers a single-item global measure of distress that has shown good sensitivity and acceptability in both outpatient and inpatient oncology populations [14,19,20].

Importantly, these instruments differ not only in their construct focus but also in their clinical interpretation and responsiveness to change. While PHQ-9 and GAD-7 are symptom-specific and anchored to diagnostic frameworks, the Distress Thermometer captures a broader, patient-defined experience of suffering that integrates emotional, social, and practical concerns. Several validation studies have suggested that DT may be particularly sensitive to short-term fluctuations in psychological state, making it potentially well-suited for monitoring psychosocial changes during brief inpatient stays [19]. However, few studies have directly compared the responsiveness of these tools to short-term psychosocial interventions in inpatient palliative care settings [19,21].

Despite advances in guideline development and instrument validation, a notable gap persists between theoretical recommendations and real-world clinical practice. Most existing studies on psychosocial care effectiveness in advanced cancer rely on randomized controlled trials conducted in specialized outpatient or research contexts, such as the CALM (Managing Cancer and Living Meaningfully) trial [9] or music and biographical therapies [10,19]. While methodologically rigorous, such studies may not fully reflect the operational realities of routine inpatient palliative care, where interventions are often shorter, less standardized, and delivered within complex multidisciplinary frameworks [22].

Furthermore, while early palliative care has been associated with improved psychological outcomes and quality of life [7], less is known about the psychological impact of structured psychosocial care delivered specifically during hospitalization. Brinkman et al. (2020), for example, reported improvements in quality of life following palliative care team consultation in oncology settings, yet psychological outcomes were not the primary focus, nor were standardized depression and anxiety measures systematically applied [23,24]. This underscores the need for focused investigations into how inpatient psychosocial care influences discrete psychological domains using validated instruments.

Against this backdrop, the present study seeks to address several critical gaps in the literature. First, it provides real-world evidence on the short-term psychological effects of structured inpatient palliative psychosocial care in patients with advanced cancer. Second, it simultaneously examines depression, anxiety, and global distress using three widely accepted clinical instruments (PHQ-9, GAD-7, and NCCN Distress Thermometer), thereby enabling a multidimensional characterization of psychosocial change. Third, by adopting a prospective pre-post design within a routine inpatient palliative care setting, this study contributes clinically relevant insights that complement existing randomized and outpatient-focused research.

Specifically, this study aims to evaluate changes in depressive symptoms,

anxiety symptoms, and overall psychological distress over a two-week period among hospitalized patients with advanced malignancies receiving structured psychosocial care. In doing so, it seeks to clarify the feasibility, sensitivity, and clinical utility of routine psychosocial assessment and intervention in inpatient palliative oncology practice. By integrating validated measurement tools with real-world clinical delivery, the present work aspires to strengthen the empirical foundation for embedding psychosocial services as a standard component of inpatient palliative care.

2. Materials and methods

2.1 Study design and setting

This study adopted a prospective, single-centre, pre-post observational design to evaluate short-term changes in psychological outcomes among patients with advanced cancer receiving inpatient palliative psychosocial care. The study was conducted in Palliative Care Unit, Yangming Hospital Affiliated to Ningbo University (Yuyao People's Hospital), a tertiary referral centre providing specialized palliative and supportive oncology services.

Participants were assessed at two time points: upon admission to the palliative care ward (baseline) and after two weeks of inpatient psychosocial care (follow-up). This design was selected to reflect real-world clinical practice and to capture short-term psychological changes occurring during routine hospitalization, rather than under experimental or highly controlled intervention conditions.

2.2 Participants

2.2.1 Eligibility criteria

Patients were eligible for inclusion if they:

1. Had a confirmed diagnosis of advanced malignant disease or advanced life-limiting illness requiring palliative care;
2. Were admitted to the palliative care ward during the study period;
3. Were aged 18 years or older;
4. Were able to communicate and complete self-report psychological questionnaires, either independently or with assistance;
5. Provided informed consent for participation.

Patients were excluded if they:

1. Had severe cognitive impairment, delirium, or consciousness disturbance precluding valid psychological assessment;
2. Were unable to complete baseline or follow-up assessments due to rapid clinical deterioration or early discharge.

2.2.2 Sample characteristics

A total of 36 patients were included in the final analysis. The cohort comprised both male and female patients across a wide age range, with a variety of primary diagnoses, including hepatic, gastric, pancreatic, pulmonary, esophageal, and biliary malignancies, as well as selected non-malignant life-limiting conditions. Length of hospital stay ranged from short-term admissions to prolonged inpatient courses, reflecting the heterogeneity typical of palliative care populations.

2.3 Psychosocial care intervention

All participants received structured inpatient palliative psychosocial care as part of routine clinical practice. This care was delivered by a palliative care team comprising physicians and nurses trained in psycho-oncology and palliative

support.

Psychosocial care components included:

1. Emotional support and active listening;
2. Psychoeducation regarding illness, prognosis, and symptom management;
3. Supportive counselling addressing anxiety, depressive symptoms, and existential concerns;
4. Family communication facilitation where appropriate;
5. Coping strategy guidance and adjustment support.

The intervention was individualized based on patient needs and clinical condition, and was integrated with routine medical and nursing care. No additional experimental psychological therapies were introduced for the purpose of this study.

2.4 Measures

2.4.1 Depression: patient health questionnaire-9 (PHQ-9)

The Patient Health Questionnaire-9 (PHQ-9) was originally developed as a brief and valid measure of depressive symptom severity in general medical populations [25] and has since been extensively validated in oncology settings, supporting its suitability for use in patients with advanced cancer [26]. Depressive symptoms were assessed using the PHQ-9, a widely used self-report instrument that measures the frequency of depressive symptoms over the preceding two weeks. Each item is rated on a four-point scale ranging from 0 (“not at all”) to 3 (“nearly every day”), yielding a total score from 0 to 27, with higher scores indicating greater depressive symptom severity. The PHQ-9 has demonstrated strong reliability and construct validity in cancer populations and is recommended for routine depression screening in oncology care [5].

2.4.2 Anxiety: generalized anxiety disorder-7 (GAD-7)

Anxiety symptoms were assessed using the 7-item Generalized Anxiety Disorder scale (GAD-7). Items are scored from 0 to 3, with total scores ranging from 0 to 21. Higher scores reflect greater anxiety severity. GAD-7 has been extensively validated across clinical populations and is widely used in oncology and palliative care settings for efficient anxiety screening.

2.4.3 Global psychological distress: NCCN distress thermometer (DT)

The Distress Thermometer was originally introduced by Roth et al. (1998) as a rapid screening tool for identifying psychological distress in cancer patients, and has subsequently been validated across diverse oncological and palliative settings [19,20,27]. Global psychological distress was measured using the NCCN Distress Thermometer, a single-item visual analogue scale ranging from 0 (“no distress”) to 10 (“extreme distress”), recommended by the National Comprehensive Cancer Network for routine psychosocial screening in cancer care. The DT has demonstrated good sensitivity and clinical utility in advanced cancer populations and inpatient settings [19,20]. A cut-off score of ≥ 6 was used to indicate clinically significant distress in threshold transition analyses.

2.5 Data collection procedure

Psychological assessments were administered at two time points:

1. Baseline (T0): within 72 hours of admission to the palliative care ward;
2. Follow-up (T1): after approximately two weeks of inpatient psychosocial care.

Questionnaires were completed by patients independently where possible, or

with assistance from trained nursing staff when physical limitations were present. Sociodemographic and clinical data, including age, sex, diagnosis, admission date, discharge date, and length of hospital stay, were extracted from electronic medical records.

2.6 Statistical analysis

2.6.1 Data preparation

Data were entered into Microsoft Excel and subsequently imported into Python (version 3.10) for statistical analysis. Continuous variables were inspected for missing values and plausibility. For psychological outcomes, only cases with complete paired pre-post data were included in the respective analyses.

2.6.2 Primary outcome analysis

Changes in PHQ-9, GAD-7, and DT scores between baseline and follow-up were analyzed using paired statistical tests.

For each outcome:

1. The distribution of change scores (post-pre) was assessed using the Shapiro-Wilk test to evaluate normality.
2. If the normality assumption was met, paired-sample t-tests were applied.
3. If not, the Wilcoxon signed-rank test was used.

Effect sizes were calculated to quantify the magnitude of change:

1. Cohen's d_z for paired t-tests;
2. Rank-based r for Wilcoxon tests.

For parametric analyses, 95% confidence intervals were computed for mean change estimates.

2.7 Clinical response analysis

In addition to statistical significance, clinical relevance was assessed using responder analyses based on established minimal clinically important differences:

1. PHQ-9: decrease ≥ 5 points;
2. GAD-7: decrease ≥ 4 points;
3. DT: decrease ≥ 2 points.

For DT, threshold transition analysis was also conducted, calculating the proportion of patients shifting from $DT \geq 6$ at baseline to $DT < 6$ at follow-up.

2.8 Visualization

Outcome distributions and changes were visualized using raincloud-style plots (violin distributions with individual data points and mean $\pm$ 95% confidence intervals), enabling simultaneous representation of individual variability and group-level trends.

2.9 Software

All statistical analyses and figure generation were performed using Python, including the pandas, numpy, scipy, and matplotlib libraries. A two-sided p-value < 0.05 was considered statistically significant.

2.10 Ethical considerations

This study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from the institutional ethics committee of Affiliated Yangming Hospital of Ningbo University (Yuyao People's Hospital), Palliative Care Unit, Yuyao, Zhejiang, China.

All participants provided informed consent prior to inclusion. Patient data were

anonymized prior to analysis, and no identifiable personal information is presented in this manuscript.

3. Results and discussion

3.1 Patient characteristics

A total of 36 patients admitted to the inpatient palliative care ward were included in the final analysis. The cohort comprised both male and female patients with a wide age range and heterogeneous primary diagnoses, including hepatobiliary, gastric, pancreatic, pulmonary, and esophageal malignancies, as well as selected non-malignant life-limiting conditions. Patients demonstrated a broad range of lengths of hospital stay, reflecting the clinical diversity typical of palliative care populations. All participants completed baseline and two-week follow-up psychological assessments, enabling paired outcome analyses. A summary of patient characteristics is presented in **Table 1**.

Table 1. Patient characteristics (n = 36)

Characteristic	Value
Sample size	36
Sex	Mixed (male and female)
Primary diagnoses	Hepatic, gastric, pancreatic, pulmonary, esophageal, biliary, and others
Length of hospital stay	Variable (short-term to prolonged admissions)
Care setting	Inpatient palliative care ward

Note: detailed demographic distribution not shown to preserve anonymity and because no subgroup analysis was performed

3.2 Changes in psychological outcomes following inpatient psychosocial care

3.2.1 Depression (PHQ-9)

At baseline, patients demonstrated mild to moderate depressive symptom severity, with a mean PHQ-9 score of 6.56 ± 1.93 . After two weeks of inpatient palliative psychosocial care, the mean PHQ-9 score decreased to 5.19 ± 1.72 , corresponding to a mean change of -1.36 points. The distribution of change scores significantly deviated from normality (Shapiro-Wilk $p = 5.64 \times 10^{-7}$), and therefore the Wilcoxon signed-rank test was applied. This analysis revealed a highly significant reduction in depressive symptoms ($Z \approx -5.23$, $p = 7.48 \times 10^{-8}$), with a large effect size ($r = -0.87$). The median change was -1 point (IQR = 1), indicating a consistent downward shift across the cohort. Although none of the patients achieved a reduction ≥ 5 points (the commonly used threshold for minimal clinically important difference [1]), the magnitude and consistency of improvement support a meaningful group-level effect. **Figure 1** illustrates the distributional shift and individual variability in PHQ-9 scores over time.

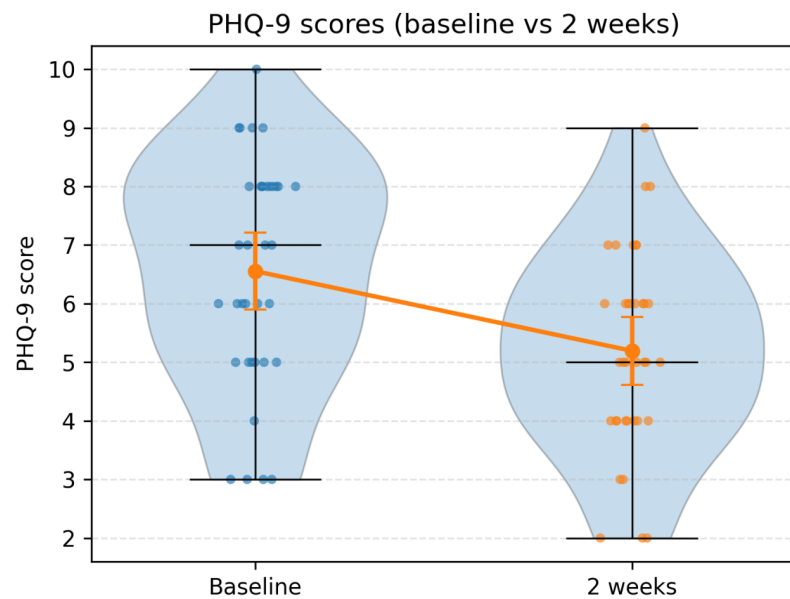


Figure 1. Changes in depressive symptoms (PHQ-9) following inpatient palliative psychosocial care

3.2.2 Anxiety (GAD-7)

Mean GAD-7 scores decreased from 5.33 ± 2.33 at baseline to 4.22 ± 2.13 at follow-up, representing a mean change of -1.11 points. As with PHQ-9, change scores were non-normally distributed (Shapiro-Wilk $p = 2.49 \times 10^{-7}$), and Wilcoxon signed-rank testing demonstrated a statistically significant reduction in anxiety symptoms ($p = 9.32 \times 10^{-8}$, effect size $r = -0.87$). The median change was -1 point, with an interquartile range of 0, indicating that most patients experienced small but consistent improvements rather than large individual shifts. No patients met the predefined responder criterion of a ≥ 4 -point decrease. However, the uniform directionality of change and the large effect size underscore the sensitivity of GAD-7 to short-term inpatient psychosocial intervention, consistent with prior psycho-oncology literature [2,15]. These findings are visually summarized in **Figure 2**.

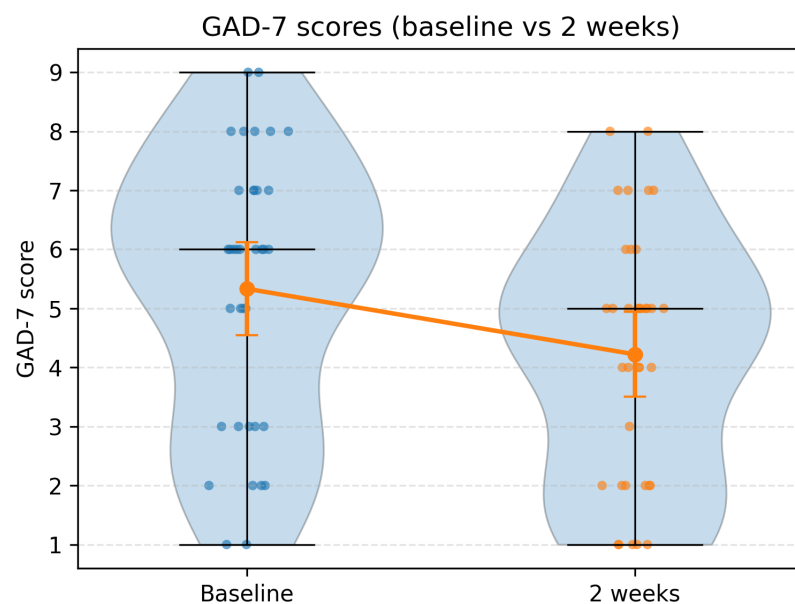


Figure 2. Changes in anxiety symptoms (GAD-7) following inpatient palliative psychosocial care

3.2.3 Global psychological distress (NCCN distress thermometer)

Global psychological distress, measured using the NCCN Distress Thermometer (DT), also showed significant improvement following inpatient psychosocial care. Mean DT scores decreased from 3.94 ± 0.92 at baseline to 2.92 ± 0.69 at two weeks, yielding a mean change of -1.03 points. The distribution of change scores was non-normal (Shapiro-Wilk $p = 2.22 \times 10^{-5}$), and Wilcoxon signed-rank testing confirmed a statistically significant reduction in distress ($p = 6.60 \times 10^{-7}$, effect size $r = -0.87$). The median change was -1 point (IQR = 0), indicating a robust and consistent improvement across patients. Importantly, 7 patients (19.4%) achieved a decrease of ≥ 2 points, representing a clinically meaningful improvement in distress. Furthermore, 1 patient (2.8%) transitioned from above the commonly used clinical distress threshold ($DT \geq 6$) to below threshold, highlighting the utility of DT for detecting short-term clinically relevant changes in inpatient palliative settings [19,20]. **Figure 3** demonstrates a clear downward shift in DT score distributions.

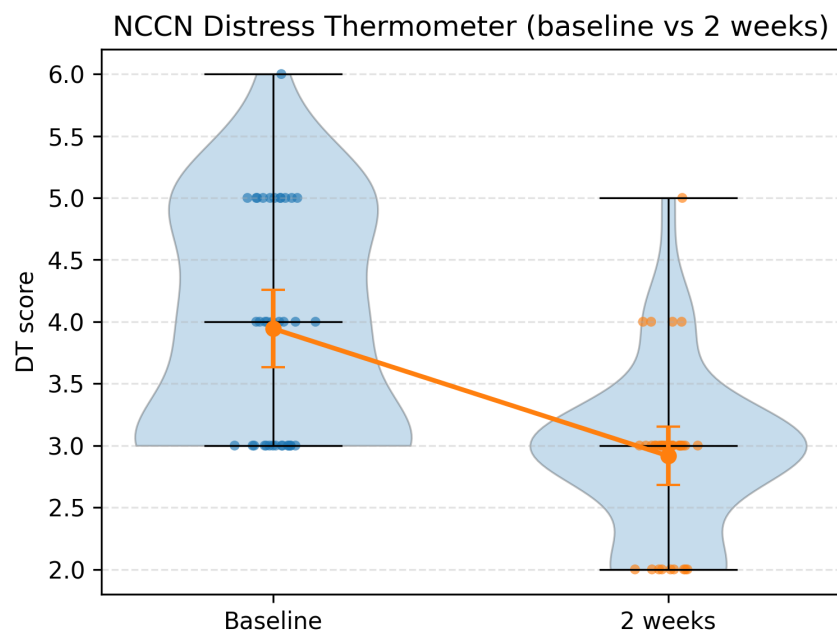


Figure 3. Changes in global psychological distress assessed by the NCCN Distress Thermometer

3.3 Summary of outcome changes

A comprehensive summary of psychological outcome changes is presented in **Table 2**.

Table 2. Changes in psychological outcomes following inpatient palliative psychosocial care

Outcome	n	Baseline mean $\pm$ SD	Follow-up mean $\pm$ SD	Mean change	Test	p-value	Effect size
PHQ-9	36	6.56 ± 1.93	5.19 ± 1.72	-1.36	Wilcoxon	7.48×10^{-8}	$r = -0.87$
GAD-7	36	5.33 ± 2.33	4.22 ± 2.13	-1.11	Wilcoxon	9.32×10^{-8}	$r = -0.87$
NCCN DT	36	3.94 ± 0.92	2.92 ± 0.69	-1.03	Wilcoxon	6.60×10^{-7}	$r = -0.87$

3.4 Clinical response rates

Responder analyses revealed differing patterns across psychological domains. No patients met the responder thresholds for PHQ-9 (≥ 5 -point decrease) or GAD-

7 (≥ 4 -point decrease). In contrast, 7 patients (19.4%) met the responder criterion for DT (≥ 2 -point decrease), indicating that DT may be particularly sensitive to short-term changes in inpatient psychosocial interventions. These findings suggest that while symptom-specific instruments (PHQ-9 and GAD-7) capture statistically robust group-level changes, global distress measures may be more responsive to clinically meaningful short-term psychosocial improvement in palliative care contexts, consistent with prior validation studies [19,20].

4. Discussion

This prospective inpatient study demonstrates that structured palliative psychosocial care is associated with significant short-term improvements in depression, anxiety, and global psychological distress among patients with advanced cancer. Across all three outcome measures (PHQ-9, GAD-7, and NCCN Distress Thermometer), statistically robust reductions were observed over a two-week hospitalization period, with large effect sizes despite the relatively modest absolute score changes. These findings contribute real-world evidence supporting the psychological benefits of inpatient palliative psychosocial care, a setting that remains underrepresented in the psycho-oncology literature [28-30].

The greater clinical responsiveness observed in the NCCN Distress Thermometer compared with PHQ-9 and GAD-7 may reflect the original intent of DT as a rapid, context-sensitive screening tool for global suffering in oncology populations [27,31,32], capturing dimensions of distress that extend beyond discrete psychiatric symptom categories [33,34].

4.1 Interpretation of key findings

The observed reductions in depressive and anxiety symptoms are consistent with prior evidence that psychosocial interventions can meaningfully improve psychological well-being in patients with advanced cancer [2,15]. Notably, while the mean changes in PHQ-9 and GAD-7 scores were modest in absolute terms (approximately one point), the changes were highly consistent across patients and accompanied by large nonparametric effect sizes. This pattern suggests that inpatient psychosocial care may exert a stabilizing and symptom-modulating effect rather than inducing dramatic symptom resolution over short timeframes, which is clinically plausible in advanced cancer populations.

Importantly, none of the patients met conventional responder thresholds for PHQ-9 or GAD-7. This finding should not be interpreted as a lack of clinical benefit, but rather reflects the challenges of achieving large symptom reductions within short inpatient stays and among patients with complex medical and existential distress. Previous studies have similarly reported that psychosocial interventions in palliative settings tend to produce incremental rather than categorical improvements, particularly when delivered within constrained time windows [9,10,29,30,35].

In contrast, the NCCN Distress Thermometer demonstrated greater clinical sensitivity, with nearly one-fifth of patients achieving a clinically meaningful reduction (≥ 2 points) and one patient transitioning from above to below the distress threshold. This supports previous validation studies suggesting that the Distress Thermometer may be particularly responsive to short-term psychosocial change and suitable for routine inpatient monitoring [19,20]. The differential responsiveness observed between DT and symptom-specific scales underscores the conceptual distinction between global distress and discrete psychiatric symptoms, with the former potentially more amenable to rapid modulation through supportive care [36,37].

4.2 Clinical implications

These findings have several important implications for psycho-oncology and palliative care practice. First, they reinforce current guideline recommendations advocating the integration of psychosocial care into routine oncology and palliative services [5,7]. The present study extends this evidence by demonstrating that meaningful psychological benefits can be achieved within real-world inpatient palliative care settings, not only in outpatient or research-intensive contexts [29,30].

Second, the results highlight the practical value of systematic psychological screening during hospitalization. The consistent improvements observed across all three instruments indicate that even brief, non-experimental psychosocial interventions embedded in routine care can exert measurable psychological effects. This supports the feasibility of implementing standardized screening and monitoring protocols in inpatient palliative wards, a practice that remains uneven across institutions.

Third, the differential responsiveness of outcome measures suggests that scale selection should be tailored to clinical context and assessment objectives. While PHQ-9 and GAD-7 are indispensable for identifying clinically significant depressive and anxiety disorders, the Distress Thermometer may be particularly useful for capturing short-term psychosocial fluctuations and evaluating immediate care effects in inpatient environments. This finding aligns with prior calls to adopt a multimodal assessment strategy in psycho-oncology [1,19].

The present findings further align with the conceptual framework established by early palliative care trials, which demonstrated that palliative interventions exert psychologically meaningful effects beyond symptom palliation alone [13,29,34]. Although the current study did not assess survival or long-term quality of life, the observed short-term psychological improvements reinforce the notion that psychosocial care is an integral therapeutic component of inpatient palliative oncology rather than a purely supportive adjunct [32].

4.3 Comparison with existing literature

Most existing studies on psychosocial interventions in advanced cancer focus on structured therapies delivered in outpatient or trial settings, such as meaning-centered psychotherapy or biographical therapies [9,10]. While these interventions demonstrate efficacy, their generalizability to routine inpatient palliative care is limited by resource intensity and patient selection.

By contrast, the present study reflects routine clinical practice, without experimental manipulation or highly specialized therapeutic protocols. In this respect, it complements controlled trials by providing ecological validity and highlighting what can be achieved through integrated psychosocial care within standard palliative workflows. Similarly, while prior reviews have emphasized the effectiveness of psychosocial interventions in advanced cancer [15], few have specifically examined inpatient palliative settings using validated symptom measures in a prospective design.

The modest magnitude of symptom change observed in this study is also consistent with broader palliative care literature, which suggests that psychological improvement in advanced cancer is often gradual and closely intertwined with physical symptom control, relational support, and existential adaptation rather than isolated psychological techniques alone [2,29,37].

4.4 Strengths and limitations

This study has several strengths. First, it employed validated, widely used

psychological instruments (PHQ-9, GAD-7, and NCCN Distress Thermometer), enhancing comparability with existing psycho-oncology research. Second, the prospective pre-post design allowed for within-subject assessment of change, reducing confounding by inter-individual variability. Third, the study was conducted in a real-world inpatient palliative care setting, increasing its clinical relevance and translational value.

Nevertheless, several limitations should be acknowledged. The absence of a control group precludes causal inference, and improvements observed may partially reflect natural symptom fluctuation, regression to the mean, or concurrent medical stabilization. The relatively small sample size limits statistical power for subgroup analyses and may restrict generalizability. In addition, the two-week follow-up period captures only short-term effects and does not inform the durability of psychological improvement after discharge.

Furthermore, the psychosocial intervention was delivered as part of routine care and not standardized across patients, limiting the ability to identify specific therapeutic components responsible for observed improvements. Finally, reliance on self-report measures may introduce response bias, particularly in medically fragile populations [1,35].

4.5 Future directions

Future research should seek to replicate these findings in larger, multi-centre cohorts and incorporate controlled designs where feasible. Longer follow-up periods are needed to determine whether short-term psychological improvements are sustained after discharge. Moreover, disentangling the relative contributions of specific psychosocial components (e.g., counseling, family support, symptom control) would provide valuable insights for optimizing inpatient palliative care models. The observed differential sensitivity among assessment tools also warrants further investigation, particularly regarding the role of the Distress Thermometer as a dynamic monitoring instrument in inpatient psycho-oncology practice.

5. Conclusion

This prospective inpatient study provides real-world evidence that structured palliative psychosocial care is associated with significant short-term improvements in depression, anxiety, and global psychological distress among patients with advanced cancer. Despite modest absolute symptom reductions, the consistency and magnitude of effects underscore the clinical relevance of integrating psychosocial support into routine inpatient palliative care. The findings further highlight the value of systematic psychological screening and the complementary roles of symptom-specific and global distress measures in monitoring psychosocial outcomes. Collectively, these results support contemporary psycho-oncology guidelines advocating comprehensive, multidisciplinary approaches to cancer care and emphasize the importance of addressing psychological suffering alongside physical symptom management in advanced disease.

Author contributions: Conceptualization, YW and KW; methodology, YW; software, YW; validation, YW and KW; formal analysis, YW; investigation, YW; resources, YW; data curation, YW; writing—original draft preparation, YW; writing—review and editing, YW; visualization, YW; supervision, YW; project administration, YW; funding acquisition, KW. All authors have read and agreed to the published version of the manuscript.

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

Data availability statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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

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