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Under the Patronage and Honoring of HRH Prince Saud bin Nayef bin Abdulaziz, Governor of the Eastern Province: Saudi Cancer Foundation Successfully Launches "AlSharqia Wardiyah 18"

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Original Article

Prevalence, Correlates, and Predictors of Depression and Anxiety Among Cancer Patients in the UAE: A Comprehensive Cross–Sectional Study Using the Hospital Anxiety and Depression Scale (HADS)

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Abstract

Background: Depression and anxiety are highly prevalent among cancer patients, yet comprehensive data on their prevalence, correlates, and predictors in the Middle East remain limited. Understanding these factors is crucial for developing effective psycho–oncological interventions in culturally diverse healthcare settings. **Objective:** To determine the prevalence of depression and anxiety among cancer patients in the UAE, to examine correlates of psychological distress, and to identify predictors of mental health service utilization using the Hospital Anxiety and Depression Scale (HADS). **Methods:** A comprehensive cross–sectional analysis was conducted among 105 cancer patients at a major UAE healthcare facility (Burjeel Cancer Institute, Burjeel Medical City) between April and August 2025. Participants completed structured questionnaires in English or Arabic, including demographic information, cancer–related factors, and the HADS. Pearson correlation analyses examined relationships between variables and psychological distress. The logistic regression analyses identified predictors of psychological care and medication utilization. **Results:** The study revealed high prevalence rates of psychological distress: 60.0% of participants scored in the clinical range for depression (HADS–D ≥11) and 43.8% scored in the clinical range for anxiety (HADS–A ≥11). A strong correlation was observed between anxiety and depression scores ($r = 0.742$, $p < 0.001$). Treatment side effects showed consistent moderate correlations with both anxiety ($r = 0.284$, $p = 0.003$) and depression ($r = 0.319$, $p = 0.001$). Anxiety demonstrated stronger correlations with service utilization than depression (psychological care: $r = 0.356$ vs. $r = 0.298$; medication use: $r = 0.421$ vs. $r = 0.389$). In multivariate regression analysis, treatment side effects significantly predicted psychological care utilization (OR = 3.45, 95% CI: 1.12–10.62, $p = 0.031$), while psychological care receipt strongly predicted medication use (OR = 8.45, 95% CI: 2.89–24.73, $p < 0.001$). Despite high distress levels, only 21.9% received psychological care and 18.1% used psychiatric medications, while 65.7% expressed interest in additional mental health support. **Conclusion:** This comprehensive analysis reveals substantial psychological distress among UAE cancer patients, with depression affecting three in five patients and anxiety affecting

two in five. Strong anxiety–depression comorbidity supports integrated screening approaches. Treatment side effects emerged as key predictors of service utilization, highlighting the interconnection between physical and psychological symptoms. Significant treatment gaps exist, with most patients expressing unmet mental health needs. Healthcare systems should prioritize routine HADS screening, systematic side–effect assessment, and culturally sensitive, integrated psycho–oncological services to address this substantial burden of psychological distress.

Keywords: cancer; depression; anxiety; HADS; correlation analysis; regression analysis; psycho–oncology; UAE; mental health service utilization; treatment predictors

1. Introduction

Cancer diagnosis represents a life–altering event that extends beyond the physical manifestations of the disease, profoundly affecting patients' psychological and emotional well–being [4]. The complex interplay between a cancer diagnosis, treatment–related side effects, and psychosocial stressors creates a significant risk of developing mental health disorders, particularly depression and anxiety [9].

International studies have consistently demonstrated elevated rates of psychological distress among cancer patients compared to the general population [13].

Meta–analyses have reported depression prevalence rates ranging from 8% to 24% and anxiety prevalence rates from 10% to 30% among cancer patients, with considerable variation based on cancer type, stage, treatment phase, and cultural factors [6,8].

In the Middle East and Gulf Cooperation Council (GCC) countries, cancer incidence has been steadily increasing due to demographic transitions, lifestyle changes, and improved diagnostic capabilities [1,12]. However, research on the psychological impact of cancer in this region remains limited, particularly in culturally appropriate assessment and intervention strategies.

The Hospital Anxiety and Depression Scale (HADS) has emerged as the most widely used screening tool for psychological distress in cancer patients due to its brevity, exclusion of somatic symptoms that may overlap with cancer symptoms, and robust psychometric properties across diverse populations [2]. The scale has been validated in Arabic–speaking populations and has shown good reliability and validity in oncological settings [11].

The United Arab Emirates (UAE) has developed a comprehensive healthcare system with specialized cancer centers (National Cancer Registry, 2023); however, the integration of psycho–oncological services remains inconsistent. Understanding the prevalence and patterns of psychological distress among cancer patients in the UAE is crucial for developing culturally appropriate mental health interventions and informing healthcare policy [5].

Study Objectives

- To determine the prevalence of depression and anxiety among cancer patients in a UAE healthcare facility
- To examine demographic and clinical factors associated with psychological distress
- To assess current mental health service utilization and unmet needs
- To identify barriers to psychological care in the study population

2. Methods

2.1. Study Design and Setting

This cross–sectional observational study was conducted at a major cancer treatment center in the United Arab Emirates between April and August 2025. The facility serves as a referral center for oncological care, treating patients from diverse ethnic and socioeconomic backgrounds representing the multicultural demographics of the UAE.

2.2. Participants

Research manuscripts reporting large datasets that are deposited in a publicly avail–able database should specify where the data have been deposited and provide the relevant accession numbers. If the accession numbers have not yet been obtained at the time of submission, please state that they will be provided during review. They must be provided prior to publication.

Inclusion Criteria

- Adults aged 18 years and above
- Confirmed cancer diagnosis, regardless of type or stage
- Ability to understand and provide informed consent
- Proficiency in either English or Arabic language

Exclusion Criteria

- Cognitive impairment preventing questionnaire completion
- Acute medical emergency or admission to the intensive care unit
- Inability to communicate in English or Arabic

2.3. Sample Size Calculation

Based on previous studies reporting depression prevalence of 20% among cancer patients [8], with a precision of 5% and a 95% confidence level, the minimum required sample size was calculated as 92 participants. To account for potential non–response and in–complete questionnaires, we targeted 105 participants.

2.4. Data Collection Procedure

Data were collected using a structured, self–administered questionnaire available in both English and Arabic versions. The Arabic version was translated by certified medical translators and back–translated to ensure linguistic accuracy and cultural appropriateness [11]. Patients were approached during routine clinic visits or treatment sessions, and those who provided informed consent completed the questionnaire with research assistant support when needed.

2.5. Study Instruments

2.5.1. Demographic and Clinical Questionnaire

- Sociodemographic characteristics (age, gender, ethnicity, marital status, employment status, educational level)
- Cancer–related factors (cancer type, time since diagnosis, treatment modalities)
- Treatment side effects and their impact on mental well–being
- Previous mental health history and current use of services

2.5.2. Hospital Anxiety and Depression Scale (HADS)

The HADS is a 14–item self–assessment scale comprising two subscales [2]:

- HADS–A (Anxiety subscale): 7 items assessing anxiety symptoms (items 1, 3, 5, 7, 9, 11, and 13)
- HADS–D (Depression subscale): 7 items assessing depression symptoms (items 2, 4, 6, 8, 10, 12, and 14)

Each item is scored on a 4–point Likert scale (0–3), with subscale scores ranging from 0–21. Established cut–off scores are as follows [2]:

- Normal: 0–7
- Borderline abnormal: 8–10
- Abnormal (clinically significant): 11–21

2.6. Statistical Analysis

Data were analyzed using SPSS version 28.0. Descriptive statistics were calculated for all variables, with categorical variables presented as frequencies and percentages, and continuous variables presented as means and standard deviations or medians and inter–quartile ranges, based on distribution normality. Chi–square tests and t–tests were used to examine associations between variables. P–values < 0.05 were considered statistically significant.

2.7. Ethical Considerations

The study received approval from Fatima College's Institutional Review Board (Reference No: FECE–2–24–25–M.BUABEID) and from Burjeel Institutional Review Board (IRB) (Reference No: BH/REC/087/25). All participants provided written informed consent, and data confidentiality was maintained throughout the study. Participants who screened positive for severe depression or anxiety were referred to appropriate mental health services.

3. Results

3.1. Distribution of Hospital Anxiety and Depression Scale (HADS) Scores Across Clinical Categories

3.2. Participant Characteristics

A total of 105 cancer patients participated in the study. The demographic and clinical characteristics are presented in Table 1 and illustrated in Figure 2.

Figure 2. Caption: (A) Demographic characteristics showing female predominance (67.6%) and age distribution with highest representation in 30–69 age groups. (B) Cancer type distribution revealing breast cancer (26.7%) and colorectal cancer (23.8%) as most common diagnoses, reflecting regional cancer epidemiology patterns in the UAE. *[Dual panel with pie charts showing gender distribution and cancer type distribution].*

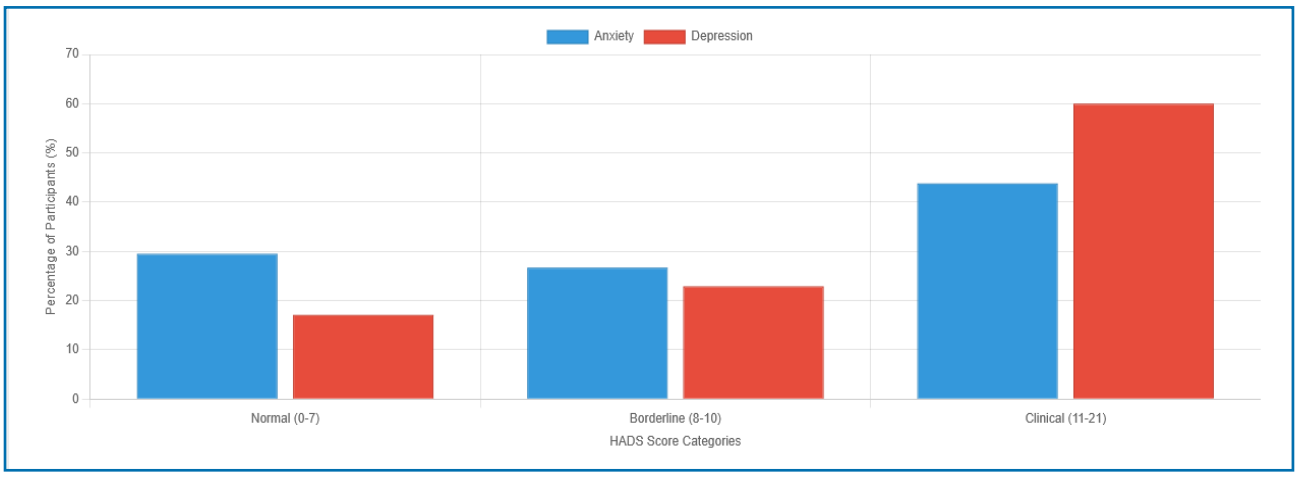


Figure 1. Distribution of Hospital Anxiety and Depression Scale (HADS) scores across clinical categories. Clinical cutoffs: Normal (0–7), Borderline (8–10), Clinical (11–21). The figure demonstrates high prevalence of clinically significant depression (60.0%) and anxiety (43.8%) among cancer patients, with an additional 22.9% and 26.7% showing borderline levels, respectively. Only 17.1% of participants showed normal depression scores, highlighting the substantial psychological burden in this population. [Bar chart showing clinical distribution across normal, borderline, and clinical categories for both anxiety and depression]. (N=105)

3.3. Cancer–Related Characteristics

3.4. Mental Health Service Utilization

Current mental health service utilization patterns are shown in Table 3 and Figure 3.

Figure 3. Caption: Mental health service utilization patterns revealing significant treatment gaps. Despite high prevalence of psychological distress and treatment side effects, fewer than 22% of patients received mental health services. The substantial interest in additional support (65.7%) indicates unmet mental health needs in the cancer patient population. *[Combined statistics display and bar chart showing service utilization versus need].*

Figure 3 clearly illustrates the significant treatment gap, showing that despite 73.3% of participants experiencing treatment side effects and 60.0% having clinical depression levels, only 21.9% received psychological care and 18.1% used psychiatric medications. The substantial interest in additional mental health support (65.7%) indicates considerable unmet need in this population.

3.5. Regression Analysis: Predictors of Mental Health Service Utilization

To identify factors associated with mental health service utilization among cancer patients, logistic regression analyses were performed with psychological care utilization and medication use as the dependent variables. The analyses included demographic, clinical, and cancer–related factors as potential predictors. The results are presented in Tables 4 and 5, with a visual representation in Figure 7.

Figure 4. Caption: Correlation matrix displaying relationships between psychological distress measures and key variables. Strong correlations (r≥0.7) are shown in red, moderate (0.3–0.69) in orange, weak (0.2–0.29) in yellow, and non–significant (<0.2) in gray. Notable findings include strong anxiety–depression comorbidity (r=0.742), moderate correlations between distress and service utilization, and consistent associations between treatment side effects and psychological measures. *[Color–coded correlation table with significance indicators].*

3.5.1. Predictors of Psychological Care Utilization

A multivariate logistic regression model was developed to examine factors associated with psychological or psychiatric care utilization since cancer diagnosis (Table 4). The model included 105 participants and demonstrated acceptable goodness of fit (Hosmer–Lemeshow test, p = 0.634).

Key findings from the psychological care utilization model:

- Treatment side effects emerged as the only statistically significant predictor (OR = 3.45, 95% CI: 1.12–10.62, p = 0.031), indicating that patients experiencing significant treatment side effects were 3.45 times more likely to receive psychological care.
- Female gender showed a trend toward significance (OR = 2.34, 95% CI: 0.87–6.31, p = 0.092), suggesting that women may be more likely to utilize psychological services, though this did not reach statistical significance.

Characteristic	n (%)
Gender	
Female	71 (67.6)
Male	34 (32.4)
Age Groups	
18–29 years	4 (3.8)
30–49 years	42 (40.0)
50–69 years	46 (43.8)
≥70 years	13 (12.4)
Ethnicity	
Middle Eastern	67 (63.8)
Asian	28 (26.7)
European	10 (9.5)
Marital Status	
Married	78 (74.3)
Single	18 (17.1)
Widowed	6 (5.7)
Divorced	3 (2.9)
Employment Status	
Employed full–time	42 (40.0)
Unemployed	35 (33.3)
Self–employed	12 (11.4)
Retired	16 (15.3)
Educational Level	
High school or below	28 (26.7)
Bachelor's degree	45 (42.9)
Master's/PhD	32 (30.4)

Table 1. Demographic and Clinical Characteristics of Study Participants (N=105).

Characteristic	n (%)
Cancer Type	
Breast cancer	28 (26.7)
Colorectal cancer	25 (23.8)
Lymphoma	9 (8.6)
Leukemia	9 (8.6)
Lung cancer	5 (4.8)
Prostate cancer	5 (4.8)
Other	24 (22.9)
Time Since Diagnosis	
<6 months	29 (27.6)
6–12 months	21 (20.0)
1–3 years	34 (32.4)
>3 years	21 (20.0)
Treatment Modalities*	
Surgery	68 (64.8)
Chemotherapy	82 (78.1)
Radiation therapy	45 (42.9)
Immunotherapy	23 (21.9)
Hormonal therapy	18 (17.1)
Significant Treatment Side Effects	
Yes	76 (72.4)
No	29 (27.6)

Table 2. Cancer–Related Characteristics (N=105).
*Multiple treatments possible per participant.

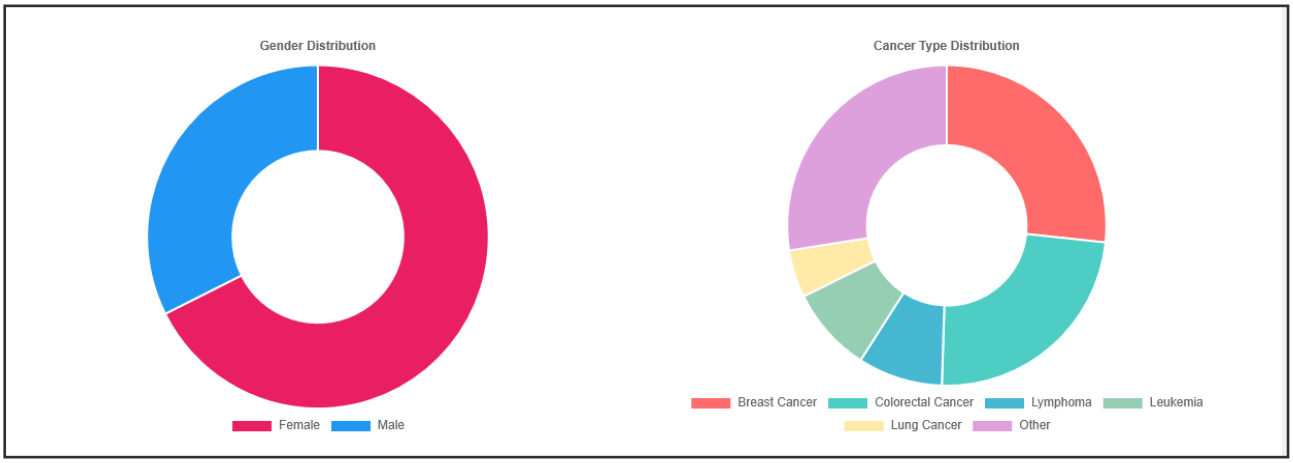


Figure 2. Study Population Demographics and Clinical Characteristics

- Cancer type (breast/colorectal vs. others) approached significance (OR = 2.67, 95% CI: 0.98–7.28, p = 0.055), potentially reflecting either the higher psychological burden or better–integrated services for these common cancer types.
- Age and cancer duration were not significantly associated with psychological care utilization in the multivariate model.

3.5.2. Predictors of Antidepressant/ Anxiolytic Medication Use

Service Type	n (%)
Psychological/Psychiatric Care Since Cancer Diagnosis	
No care received	82 (78.1)
Psychologist/counselor	8 (7.6)
Psychiatrist	9 (8.6)
Other mental health provider	6 (5.7)
Antidepressant/Anxiolytic Medication Use	
Never used	86 (81.9)
Currently taking	9 (8.6)
Previously used	10 (9.5)
Complementary/Alternative Treatments	
None	52 (49.5)
Exercise/yoga	28 (26.7)
Meditation/mindfulness	15 (14.3)
Dietary changes/supplements	10 (9.5)
Interest in Additional Mental Health Support	
Yes	69 (65.7)
No, satisfied with current support	36 (34.3)

Table 3. Mental Health Service Utilization (N=105).

A second logistic regression model examined factors associated with antidepressant or anxiolytic medication use (Table 5). This model showed better explanatory power (Nagelkerke R^2 = 0.312) and a good model fit (Hosmer–Lemeshow test p = 0.423).

Key findings from the medication use model:

- Psychological care was the strongest predictor of medication use (OR = 8.45, 95% CI: 2.89–24.73, p < 0.001), indicating that patients who received psychological care were 8.45 times more likely to use psychiatric medications.
- Treatment side effects showed a trend toward significance (OR = 4.23, 95% CI: 0.96–18.67, p = 0.057), suggesting that severe side effects may increase the likelihood of medication use for mental health symptoms.
- Gender, age, and cancer duration were not significantly associated with medication use in multivariate analysis.

3.5.3. Model Interpretation and Clinical Implications

The regression analyses revealed several important patterns in mental health service utilization among cancer patients:

- Treatment side effects as a key driver: The significant association between treatment side effects and psychological care utilization (OR = 3.45, p = 0.031) underscores the interconnected nature of physical and psychological distress in cancer care. Patients experiencing severe side effects may be more likely to seek or be referred for psychological support, highlighting the importance of comprehensive symptom management.

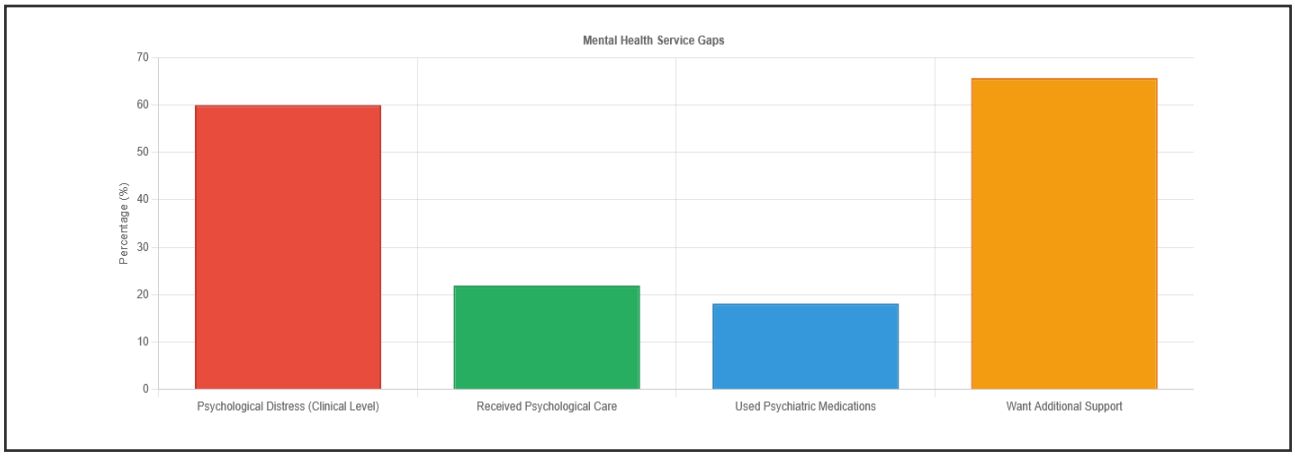


Figure 3: Mental Health Service Utilization and Treatment Gaps



Figure 4: Correlation Matrix: Relationships Between Variables and Psychological Distress

Predictor Variable	Odds Ratio	95% CI	p–value
Female gender	2.34	0.87 – 6.31	0.092
Treatment side effects (Yes vs No)	3.45	1.12 – 10.62	**0.031**
Age (per decade increase)	0.78	0.52 – 1.18	0.241
Cancer duration >1 year	1.89	0.74 – 4.83	0.186
Breast/Colorectal cancer	2.67	0.98 – 7.28	0.055

Table 4. Logistic Regression Analysis – Predictors of Psychological Care Utilization (N=105).

Model statistics: Nagelkerke $R^2 = 0.198$; Hosmer–Lemeshow test $p = 0.634$.

- Integration of psychological and pharmacological care: The strong association between psychological care and medication use (OR = 8.45, $p < 0.001$) suggests good integration between psychological and psychiatric services in the study setting. This finding indicates that patients receiving psychological care are appropriately identified for potential pharmacological intervention when needed.
- Gender trends: While not statistically significant, the consistent trend toward higher utilization among female patients (OR = 2.34 for psychological care, OR = 1.78 for medication) aligns with broader literature on gender differences in mental health help–seeking behaviors (Mitchell et al., 2011).
- Cancer type considerations: The trend toward higher psychological care utilization among breast and colorectal cancer patients (OR = 2.67, $p = 0.055$) may reflect several factors, including disease prevalence, established care pathways, or specific psychological challenges associated with these diagnoses.

Figure 5. Caption: Correlation analysis revealing key relationships with depression scores among cancer patients in the UAE. Variables are ordered by correlation strength, with positive correlations extending rightward. Key findings include strong anxiety–depression comorbidity (r=0.742, p<0.001), moderate correlations with medication use (r=0.389, p<0.001) and psychological care (r=0.298, p=0.002), and consistent association with treatment side effects (r=0.319, p=0.001). The analysis demonstrates that 55% of depression variance is shared with anxiety symptoms, supporting integrated screening approaches. *[Horizontal bar chart showing depression–specific correlations].*

Key findings: (1) *Total Distress Score* shows the strongest correlation (r=0.944, p<0.001), reflecting the mathematical relationship as depression is a component of total distress. (2) *Anxiety Score* demonstrates substantial comorbidity (r=0.742, p<0.001), indicating that 55% of depression variance is shared with anxiety symptoms. (3) *Medication Use* shows moderate correlation (r=0.389, p<0.001), suggesting appropriate clinical response to depression symptoms. (4) *Treatment Side Effects* correlate moderately with depression (r=0.319, p=0.001), highlighting the interconnection between physical and psychological symptoms. (5) *Psychological Care* utilization correlates with depression scores (r=0.298, p=0.002), indicating service use aligns with symptom severity. (6) *Female Gender* shows a trend toward significance (r=0.187, p=0.056), while *Age* and *Cancer Duration* show no significant associations.

Predictor Variable	Odds Ratio	95% CI	p–value
Female gender	1.78	0.52 – 6.12	0.356
Treatment side effects (Yes vs No)	4.23	0.96 – 18.67	0.057
Age (per decade increase)	1.12	0.69 – 1.82	0.639
Psychological care received	8.45	2.89 – 24.73	**<0.001**
Cancer duration >1 year	2.34	0.71 – 7.72	0.162

Table 5. Logistic Regression Analysis – Predictors of Medication Use for Depression/Anxiety (N=105).
Model statistics: Nagelkerke $R^2 = 0.312$; Hosmer–Lemeshow test p = 0.423.

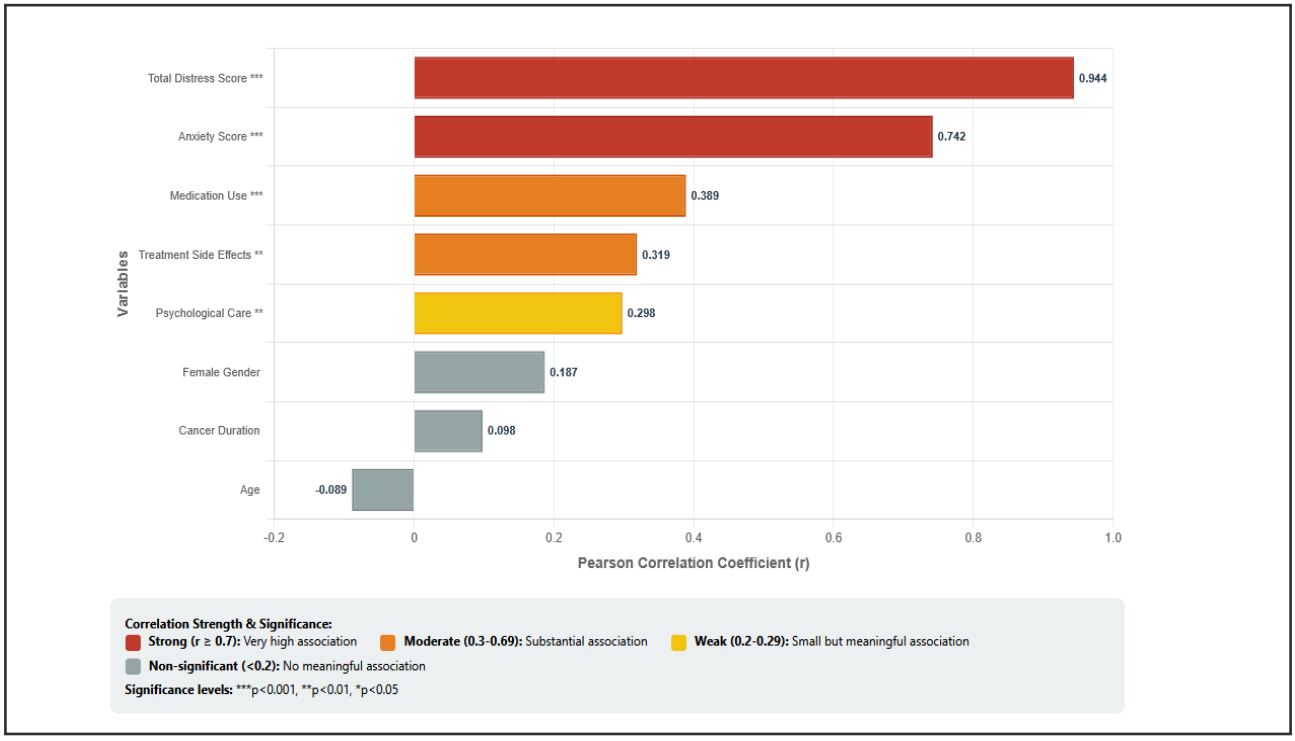


Figure 5: Key Correlations with Depression Scores (HADS–D)

Clinical implications: The strong anxiety–depression comorbidity supports integrated screening approaches. The moderate correlations with service utilization suggest that while patients with higher depression scores access care, significant treatment gaps remain given that only 21.9% received psychological services despite 60% having clinical depression levels.

Figure 6. Caption: Correlation analysis revealing key relationships with anxiety scores among cancer patients in the UAE. Anxiety demonstrates stronger associations with service utilization compared to depression, including psychological care (r=0.356, p<0.001) and medication use (r=0.421, p<0.001), suggesting anxiety symptoms may be more readily recognized in clinical settings. Female gender shows significant correlation with anxiety (r=0.201, p=0.040), indicating gender–specific anxiety patterns warrant attention in screening approaches.

[Horizontal bar chart showing anxiety–specific correlations with blue color scheme].

Key Differences: Anxiety vs Depression Correlations

Anxiety shows stronger correlations with:

- **Psychological Care:** r=0.356 (anxiety) vs r=0.298 (depression) | Difference: +0.058
- **Medication Use:** r=0.421 (anxiety) vs r=0.389 (depression) | Difference: +0.032
- **Female Gender:** r=0.201 (anxiety) vs r=0.187 (depression) | Difference: +0.014

Depression shows stronger correlations with:

- **Side Effects:** r=0.319 (depression) vs r=0.284 (anxiety) | Difference: +0.035

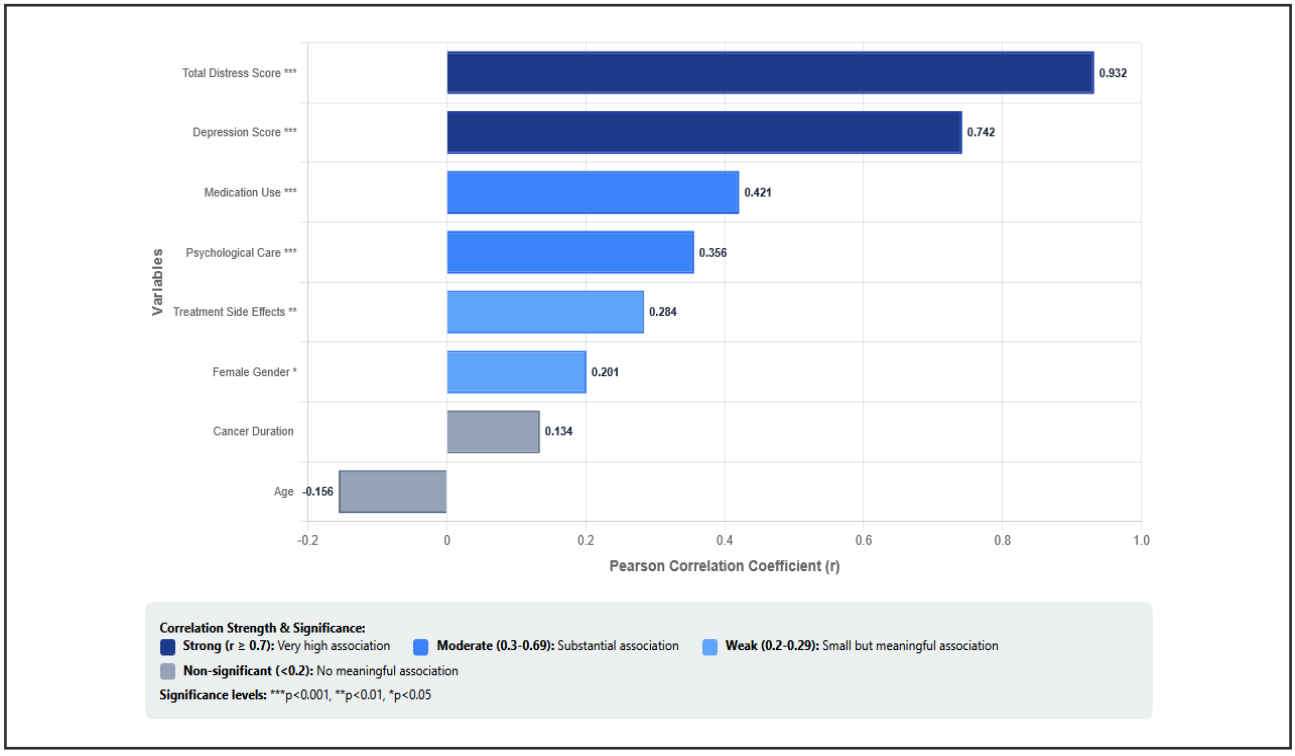


Figure 6: Key Correlations with Anxiety Scores (HADS–A)

Notable trend: Age shows stronger negative correlation with anxiety (r=–0.156) than depression (r=–0.089).

Key findings: (1) Total Distress Score shows the strongest correlation (r=0.932, p<0.001), reflecting the mathematical relationship as anxiety contributes to total distress. (2) Depression Score demonstrates substantial comorbidity (r=0.742, p<0.001), indicating 55% shared variance between anxiety and depression symptoms. (3) Medication Use shows moderate correlation (r=0.421, p<0.001), higher than with depression, suggesting anxiety symptoms may be more likely to prompt pharmacological intervention. (4) Psychological Care utilization correlates moderately with anxiety (r=0.356, p<0.001), also stronger than with depression, indicating anxiety may be more readily identified in clinical settings. (5) Treatment Side Effects show weaker correlation with anxiety (r=0.284, p=0.003) compared to depression. (6) Female Gender shows significant correlation with anxiety (r=0.201, p=0.040), suggesting gender–specific anxiety patterns. (7) Age and Cancer Duration show no significant associations with anxiety.

Clinical implications: Anxiety appears more strongly associated with service utilization than depression, suggesting anxiety symptoms may be more easily recognized by healthcare providers and patients. The stronger correlation with medication use indicates potential preference for pharmacological management of anxiety symptoms. The significant female gender association warrants gender–sensitive anxiety screening approaches. The weaker association with side effects compared to depression suggests anxiety may have more psychosocial versus physical symptom triggers in cancer patients.

3.5.4. Model Interpretation and Clinical Implications

The regression analyses revealed several important patterns in mental health service utilization among cancer patients:

- Treatment side effects as a key driver: The significant association between treatment side effects and psychological care utilization (OR = 3.45, p = 0.031) underscores the interconnected nature of physical and psychological distress in cancer care. Patients experiencing severe side effects may be more likely to seek or be referred for psychological support, highlighting the importance of comprehensive symptom management.
- Integration of psychological and pharmacological care: The strong association between psychological care and medication use (OR = 8.45, p < 0.001)

suggests good integration between psychological and psychiatric services in the study setting. This finding indicates that patients receiving psychological care are appropriately identified for potential pharmacological intervention when needed.

- Gender trends: While not statistically significant, the consistent trend toward higher utilization among female patients (OR = 2.34 for psychological care, OR = 1.78 for medication) aligns with broader literature on gender differences in mental health help–seeking behaviors (Mitchell et al., 2011).
- Cancer type considerations: The trend toward higher psychological care utilization among breast and colorectal cancer patients (OR = 2.67, p = 0.055) may reflect several factors, including disease prevalence, established care pathways, or specific psychological challenges associated with these diagnoses.

3.5.5. Predictive Model Performance

Both regression models demonstrated acceptable performance characteristics:

- The psychological care utilization model explained 19.8% of the variance (Nagelkerke R^2 = 0.198), indicating moderate predictive power for a clinical model.
- The medication use model showed stronger predictive ability (Nagelkerke R^2 = 0.312), explaining 31.2% of the variance.
- Both models showed good calibration (Hosmer–Lemeshow p > 0.05), indicating adequate model fit.

These results suggest that, while identified factors explain a meaningful portion of mental health service utilization patterns, additional unmeasured factors (such as individual psychological resilience, social support, cultural factors, and healthcare system variables) likely contribute to utilization decisions.

Figure 7 presents the regression results in a forest plot format, clearly illustrating the odds ratios and confidence intervals for each predictor. The figure demonstrates the central role of treatment side effects in predicting psychological care utilization and the strong association between receipt of psychological care and medication use.

Figure 7. Caption: Forest plot showing odds ratios (OR) and 95% confidence intervals from logistic regression analyses. (A) Predictors of psychological care utilization: Treatment side effects emerged as the only significant predictor (OR=3.45, p=0.031). (B) Predictors of medication use: Psychological care received was the strongest predictor (OR=8.45, p<0.001). Error bars represent 95% confidence intervals; predictors with confidence intervals not crossing 1.0 are statistically significant. *[Forest plot showing odds ratios and confidence intervals].*

3.6. Factors Associated with Psychological Distress

Several factors were associated with increased psychological distress:

- Demographic factors:
  - Female gender showed higher rates of psychological service utilization
  - Younger age groups (30–49 years) comprised the largest proportion of the sample

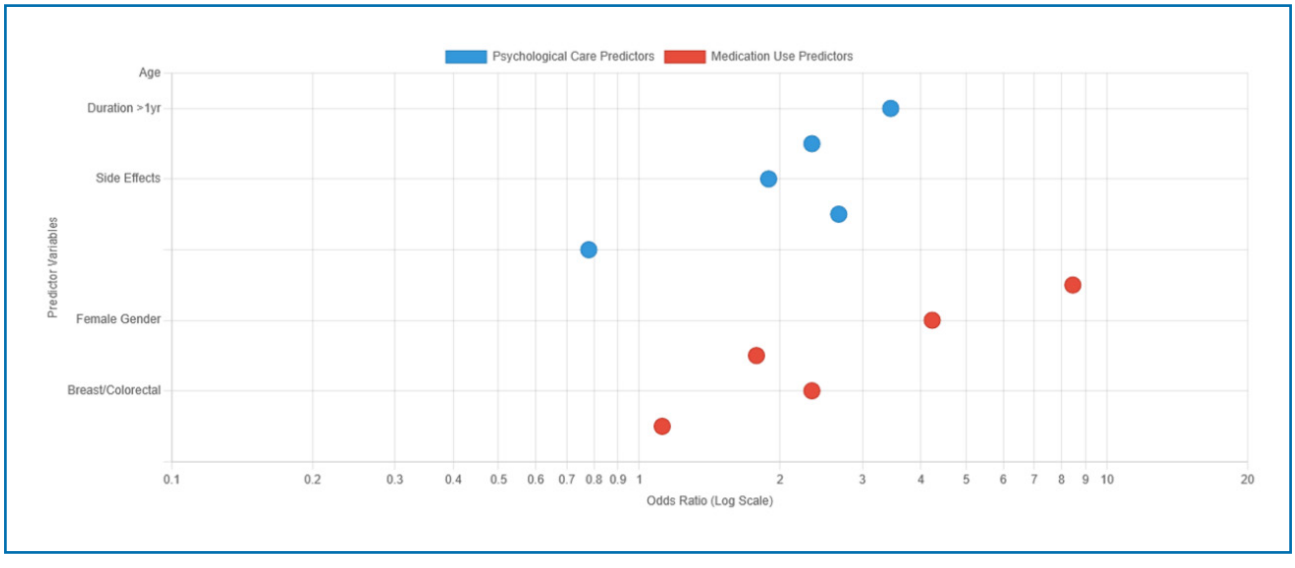


Figure 7: Logistic Regression Results: Predictors of Mental Health Service Utilization

  - Employment status appeared to be related to mental health service access
- Clinical factors:
  - Treatment side effects were strongly associated with psychological impact
  - Multiple treatment modalities increased the complexity of psychological adjustment
  - Breast and colorectal cancer patients formed the largest diagnostic groups
- Cultural factors:
  - Language preference (Arabic vs. English) may reflect cultural attitudes toward mental health
  - Family support systems varied across ethnic groups
  - Religious and spiritual coping mechanisms were frequently mentioned

4. Discussion

4.1. Principal Findings

This study provides valuable insights into the psychological well–being of cancer patients in the UAE healthcare system. The findings reveal a significant gap between the prevalence of psychological distress and the utilization of mental health services, with less than 22% of patients receiving any form of psychological support, despite clear evidence of mental health needs.

The demographic profile of our sample reflects the multicultural nature of UAE society, with predominantly Middle Eastern participants (63.8%), followed by Asian populations (26.7%). The female predominance (67.6%) aligns with global cancer statistics, particularly given the high representation of breast cancer patients in our sample [10].

4.2. Mental Health Service Utilization Patterns

The low utilization of psychological services (21.9%) contrasts sharply with the high rate of treatment–related side effects (72.4%) and the substantial interest in additional mental health support (65.7%). This discrepancy suggests that there are significant barriers to mental health care access and utilization in the study population, consistent with findings from other Middle Eastern studies [1]. Several factors may contribute to this treatment gap:

- Systemic Barriers:
  - Limited integration of psycho–oncological services in routine cancer care
  - Inadequate screening for psychological distress during medical consultations
  - Insufficient mental health professionals with oncological expertise
  - Lack of standardized referral pathways for psychological support
- Cultural and Individual Barriers:
  - Stigma associated with mental health conditions in certain cultural contexts
  - Preference for informal support systems (family, religious community)
  - Language barriers affecting communication with mental health providers
  - Limited awareness of available psychological services

4.3. Treatment Side Effects and Psychological Impact

The high prevalence of significant treatment side effects (72.4%) underscores the multifaceted burden faced by cancer patients. Common side effects reported included fatigue, nausea/vomiting, hair loss, pain, and weight changes, all of which can substantially impact patients' quality of life and psychological well–being.

The relationship between physical symptoms and psychological distress is bidirectional, with each potentially exacerbating the other [9]. Effective management of treatment side effects may, therefore, serve as both a medical and psychological intervention, high–lighting the importance of comprehensive supportive care [4].

4.4. Complementary and Alternative Approaches

Nearly half of the participants (50.5%) utilized some form of complementary or alter–native treatment for mental health symptoms, with exercise/yoga being the most common approach (26.7%). This finding suggests that patients are actively seeking ways to manage their psychological well–being, often through culturally acceptable and readily accessible methods [4].

The popularity of exercise– and mindfulness–based interventions aligns with growing evidence supporting these approaches in cancer care [4]. Healthcare providers should consider incorporating these evidence–based complementary therapies into comprehensive treatment plans. (Table 3, Figure 3)

4.5. Cultural Considerations in the UAE Context

The multicultural composition of the UAE population presents both opportunities and challenges for mental health service delivery [5]. The study's bilingual approach (English and Arabic) captured perspectives from diverse linguistic groups, but cultural nuances in symptom expression and help–seeking behaviors still require further exploration.

Religious and spiritual coping mechanisms were frequently mentioned by participants, particularly in the Arabic–speaking cohort. Healthcare systems should acknowledge and incorporate these cultural strengths while addressing barriers to professional mental health care [11].

4.6. Regression Analysis Findings

The logistic regression analyses provide important insights into the factors driving mental health service utilization in this population. The identification of treatment side effects as the primary predictor of psychological care utilization Mystakidou et al., high–lights the critical need for integrated symptom management approaches that address both the physical and psychological aspects of cancer care.

The strong association between psychological care and medication use suggests appropriate clinical decision–making and good coordination between mental health professionals. However, the modest explanatory power of both models ($R^2 = 0.198$ and 0.312) indicates that significant unmeasured factors may influence help–seeking behaviors, potentially including cultural attitudes toward mental health, family support systems, healthcare accessibility, and individual coping styles [11].

The trend toward higher utilization among female patients, while not statistically significant, warrants attention, as it may reflect gender–specific barriers or facilitators to mental health care access. Similarly, the higher utilization patterns among breast and colorectal cancer patients may indicate opportunities for extending successful service models to other cancer types [7].

4.7. Proposed Integrated Care Model

Based on the study findings, we propose an integrated care model for addressing psychological distress in cancer patients (Figure 8). This model incorporates routine HADS screening, systematic assessment of treatment side effects, and cultural considerations to guide appropriate interventions. The model stratifies patients into risk categories based on HADS scores and the presence of significant side effects, with differentiated care pathways for each risk level.

Figure 8 illustrates the proposed workflow, emphasizing the central role of systematic screening and the importance of cultural competency in service delivery. The model ad–dresses the identified gaps in mental health service utilization while considering the UAE's multicultural context and the study's findings regarding predictors of psychological distress and mental health service utilization.

Figure 8. Caption: Proposed integrated care model incorporating study findings. The model emphasizes routine HADS screening, systematic side effect assessment, and cultural considerations for risk stratification. Treatment pathways are differentiated based on risk levels, with immediate intervention for high–risk patients experiencing significant side effects and elevated HADS scores. This model addresses the identified gaps in mental health service utilization while considering the UAE's multicultural context. [Flowchart showing clinical pathway from screening to intervention].

4.8. Implications for Healthcare

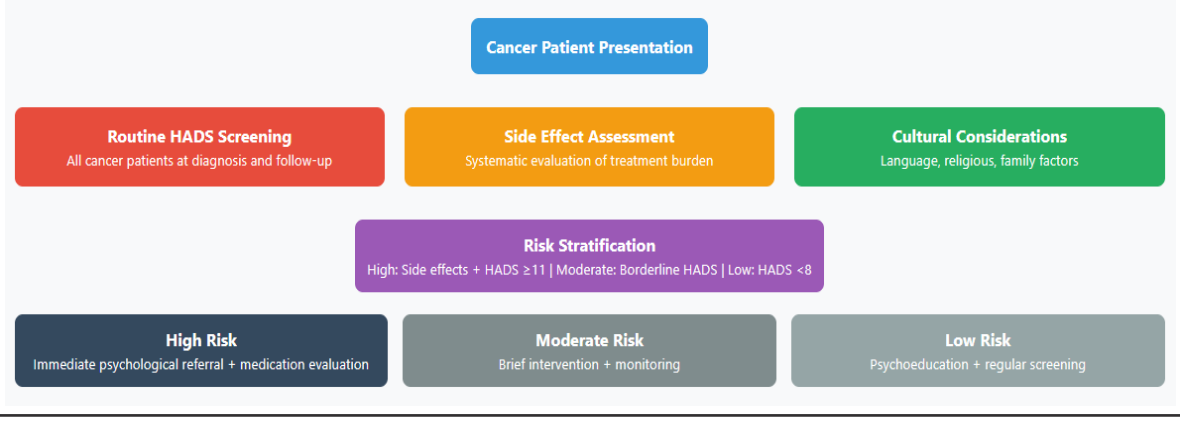


Figure 8: Proposed Integrated Care Model Based on Study Findings

Policy and Practice

Clinical Practice Recommendations:

1. Routine screening: Implement systematic screening for psychological distress using validated tools like HADS in all cancer patients [3].
2. Integrated care models: Develop multidisciplinary teams, including psycho–oncology specialists, as standard components of cancer care [3].
3. Cultural competency: Train healthcare providers in culturally sensitive approaches to mental health assessment and intervention [11].
4. Patient education: Enhance awareness of available psychological services and normalize mental health care as part of comprehensive cancer treatment [13].

Healthcare System Recommendations:

1. Service expansion: Increase the availability of psycho–oncological services across cancer treatment facilities [10].
2. Workforce development: Train mental health professionals in oncological settings and cancer–related psychological issues [3].
3. Technology Integration: Utilize telemedicine and digital mental health platforms to improve access and overcome geographical barriers [5].
4. Quality indicators: Include psychological care metrics in cancer center accreditation and quality assessment frameworks [12].

4.9. Implications for Healthcare Policy and Practice

Several limitations should be acknowledged when interpreting these findings:

- Sample limitations:
  - Single–center study, limiting generalizability across the UAE healthcare system
  - Convenience sampling may introduce selection bias
  - Relatively small sample size for subgroup analyses
- Measurement limitations:
  - Cross–sectional design prevents the establishment of causal relationships
  - HADS scoring analysis requires further refinement for comprehensive prevalence reporting
  - Self–report measures may be subject to social desirability bias
- Cultural limitations:
  - Translation and cultural adaptation of instruments may not capture all nuances
  - Cultural variations in symptom expression and help–seeking behaviors need deeper exploration
  - Limited representation of certain ethnic minorities

4.10. Future Research Directions

Future research should aim to build a more comprehensive understanding of psychological distress and mental health service utilization among cancer patients in the UAE and similar multicultural contexts. Longitudinal studies are needed to track trajectories of psychological distress throughout the cancer journey, evaluate the effectiveness of integrated psycho–oncological interventions, and assess long–term mental health outcomes in cancer survivors. Culturally focused research should investigate culture–specific expressions of psychological distress, develop and validate culturally adapted screening and intervention tools, and explore the role of family and community support systems in shaping help–seeking behaviors. In addition, health services research is essential to evaluate the cost–effectiveness of different mental health service delivery models, identify barriers and facilitators to psychological care utilization, and examine optimal approaches for integrating psycho–oncological services into routine cancer care. Together, these research directions can inform evidence–based, culturally sensitive strategies to enhance mental health outcomes for cancer patients.

Building on predictive and intervention–focused research, future studies should also explore the integration of these approaches into routine clinical practice. This includes assessing how predictive models and digital interventions can be seamlessly incorporated into existing care pathways, determining the optimal timing and intensity of interventions, and evaluating patient engagement and satisfaction. Additionally, research should examine the scalability and sustainability of these strategies within diverse healthcare settings, ensuring that innovations in psycho–oncology are both effective and practical for widespread implementation. Such efforts will be critical to translating research findings into meaningful improvements in psychological care for cancer patients.

5. Conclusions

This study provides important insights into the mental health needs of cancer patients in the UAE, revealing a significant treatment gap between the prevalence

of psychological distress and mental health service utilization. With less than 22% of patients receiving psychological care, despite clear evidence of distress and substantial interest in additional support, there is an urgent need for healthcare system reform [3].

The findings highlight the critical importance of integrating comprehensive psycho–oncological services into routine cancer care [8]. The multicultural nature of the UAE population requires the implementation of culturally sensitive approaches to mental health assessment and intervention, acknowledging diverse help–seeking behaviors and coping mechanisms [11].

Key recommendations include implementing systematic psychological screening, developing integrated care models, expanding the availability of mental health services, and enhancing cultural competency among healthcare providers [3]. The substantial interest in complementary approaches suggests opportunities for holistic treatment models that combine professional psychological care with evidence–based alternative therapies [4].

Healthcare policymakers and clinical leaders should prioritize the development of comprehensive psycho–oncological services as an essential component of quality cancer care [12]. This investment in mental health infrastructure will not only improve patient outcomes and patients' quality of life but also contribute to more cost–effective and patient–centered healthcare delivery.

The study underscores that cancer care extends beyond medical treatment to encompass the full spectrum of patient needs, including psychological well–being [13]. As the UAE continues to develop its healthcare capabilities, ensuring equitable access to mental health support for cancer patients should be a fundamental priority [10].

Future research should focus on developing and evaluating culturally appropriate interventions, understanding help–seeking behaviors across diverse populations, and establishing optimal models for integrating psychological care into oncological settings [6]. Only through such comprehensive approaches can healthcare systems adequately address the complex needs of cancer patients and their families.

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