Research Square

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Screening for Depression and Anxiety in Patients with Metastatic Cancer Receiving Outpatient Palliative Care at a Tertiary Cancer Center: A Cross-Sectional Study

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Research Article

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Abstract

Background

Anxiety and depression are common psychological symptoms in patients with advanced cancer and significantly affect quality of life. This study aimed to screen for depression and anxiety in patients with metastatic cancer receiving outpatient palliative care at a tertiary cancer centre in India.

Methods

A prospective observational study was conducted on 150 adult patients with metastatic disease and ECOG performance status 1–3 attending the palliative medicine outpatient department between August 2022 and October 2022. The Hospital Anxiety and Depression Scale (HADS), a validated 14-item instrument with two subscales (HADS-A and HADS-D), was used to screen for symptoms of anxiety and depression. Descriptive statistics, independent-samples t-test, and Pearson's correlation coefficient were used to analyse associations between anxiety/depression scores and gender, ECOG performance status, cancer diagnosis, and age. A p-value < 0.05 was considered statistically significant.

Results

A total of 150 patients (76 males, 74 females) were included, with a mean age of 49.19 ± 15.2 years. Anxiety (HADS-A ≥ 8) was observed in 33.9% and depression (HADS-D ≥ 8) in 42% of patients. Mean anxiety scores (8.75 vs 7.22, p = 0.009) and mean depression scores (9.48 vs 8.03, p = 0.015) were significantly higher in females than males. Anxiety and depression scores worsened with declining ECOG performance status. Patients with gastrointestinal malignancies had the highest mean anxiety scores, while those with primary brain tumours had the highest mean depression scores. A strong positive correlation between anxiety and depression scores was found across all parameters (r = 0.88–0.96).

Conclusions

Anxiety and depression symptoms are highly prevalent among metastatic cancer patients receiving outpatient palliative care. These findings highlight the need for a proactive approach to routine psychological screening and early intervention in palliative care settings to improve quality of life and overall patient care.

Clinical trial number:

Not applicable

Background

The global burden of cancer continues to rise, with terminal illnesses posing significant challenges not only to physical health but also to the psychological well-being of patients. A landmark Lancet Oncology Commission by Kaasa et al. emphasised the critical importance of integrating oncology and palliative care, highlighting that randomised clinical trials on such integration point to significant health gains including improved survival, better symptom control, less anxiety and depression, reduced use of futile chemotherapy at the end of life, and improved quality of life for patients and families [1]. Psychological distress, encompassing anxiety and depression, has emerged as one of the most common contributors to suffering in patients with advanced malignancies. According to a systematic scoping review by Hart et al. examining unmet supportive care needs in people with advanced cancer, distress, depression, and anxiety were consistently associated with higher unmet needs across all domains including psychological, physical, and daily living concerns [2].

The prevalence of psychological symptoms in cancer populations varies considerably across different settings and regions. A systematic review by Ostovar et al. examining psychological distress among cancer patients in Southeast Asian countries reported that the prevalence of anxiety ranged from 7% to 88% and depression from 3% to 65.5%, with the Hospital Anxiety and Depression Scale being the most frequently employed screening instrument [3]. The PALINT trial, a longitudinal assessment of distress, anxiety, and depression in patients treated with palliative systemic therapy for advanced cancer, reported baseline prevalence rates of 32.6% for significant distress, 35.9% for anxiety, and 56.5% for depression, with both anxiety and depression correlating negatively with overall quality of life [4]. A recent cross-sectional study by Bakhsh et al. conducted in Saudi Arabia found that among advanced cancer patients receiving palliative care, the prevalence of distress, anxiety, and depression was 40.6%, 46.1%, and 52.2% respectively, underscoring the substantial psychological burden in this population [5].

The negative impact of psychological symptoms on quality of life and overall outcomes in cancer patients is well documented. Bellali et al. demonstrated that among hematological cancer patients undergoing chemotherapy, clinically significant anxiety and depression were observed in 69.7% and 53.9% of patients respectively, with increased depression associated with decreased quality of life, lower cognitive functioning, and increased fatigue [6]. A Cochrane systematic review by Bajwah et al. evaluating hospital-based specialist palliative care found that such interventions improved patient health-related quality of life and reduced symptom burden, emphasising the importance of early identification and management of psychological distress [7]. Given the high prevalence and significant impact of anxiety and depression in cancer patients, routine screening using validated tools such as the Hospital Anxiety and Depression Scale has become essential in palliative care settings. This study aimed to screen for depression and anxiety using the HADS in patients with metastatic cancer receiving outpatient palliative care at a tertiary cancer centre and to correlate the prevalence of these symptoms with cancer type, performance status, gender, and age.

Methods

Study design and setting

This was a prospective, observational, cross-sectional study conducted at the palliative medicine outpatient department of Dr. B.R.A. Institute Rotary Cancer Hospital (Dr. BRA-IRCH), All India Institute of Medical Sciences (AIIMS), New Delhi, India — a tertiary care cancer centre — from August 2022 to October 2022. The study was conducted in accordance with the principles of the Declaration of Helsinki and was approved by the Institutional Ethics Committee prior to enrolment of participants.

Participants

A total of 150 adult patients with histopathologically confirmed metastatic cancer and Eastern Cooperative Oncology Group (ECOG) performance status (PS) 1, 2, or 3, attending the palliative medicine outpatient department during the study period were included. Patients with ECOG PS 4 and those who were unable to comprehend the questionnaire were excluded from the study, as their inclusion could skew the results. A printed questionnaire in Hindi was administered to patients who could comprehend it. In cases where the patient's clinical condition made self-completion difficult, the questionnaire was completed with assistance from a family caregiver/attendant. Written informed consent was obtained from all participants prior to enrolment.

Instrument and data collection

Data were collected using the Hospital Anxiety and Depression Scale (HADS), a 14-item self-assessment instrument designed to screen for depression and anxiety in medically ill patients. The HADS comprises two seven-item subscales: HADS-Anxiety (HADS-A) and HADS-Depression (HADS-D). The HADS-A subscale includes items assessing tension, worrying thoughts, and restlessness, while the HADS-D subscale evaluates enjoyment of activities, feeling slowed down, and loss of interest. Each item is scored on a 4-point Likert scale from 0 to 3, based on the patient's experiences during the preceding week. The total score for each subscale ranges from 0 to 21, with higher scores indicating more severe symptoms. Scores of 0–7 indicate normal, 8–10 borderline abnormal, and 11–21 abnormal (definite presence of anxiety or depression). The HADS is a well-validated and reliable tool for detecting mood disorders in patients with cancer.

Statistical analysis

Data were analysed using IBM SPSS Statistics version 29.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarise sociodemographic and illness characteristics. Independent-samples t-test was used to compare mean anxiety and depression scores between genders. Pearson's correlation coefficient was used to assess the correlation between anxiety and depression scores across various categories. A p-value < 0.05 was considered statistically significant. Graphs were also generated using SPSS. The study methodology flow is summarised in Fig. 1.

[Figure 1 here: Study Methodology Flowchart]

Results

Sociodemographic and clinical characteristics

Of 340 patients screened, 150 met the inclusion criteria and were enrolled (Fig. 1). The mean age of the study population was 49.19 ± 15.2 years (range 18–89 years). There was nearly equal gender distribution (76 males [50.33%]; 74 females [49.33%]). Most patients were from Delhi (33.33%), followed by Uttar Pradesh (26%) and Haryana (19.33%). Carcinoma of the lung (20.67%) and head and neck malignancy (20%) were the most common diagnoses, followed by carcinoma of the breast (12%). Most patients had ECOG PS 2 (54%), followed by PS 3 (31.34%) and PS 1 (14.67%). The majority were in the 41–60 year age group (50%). Full sociodemographic and illness characteristics are presented in Table 1.

Table 1
Sociodemographic and illness characteristics of the study population (n = 150).

Characteristic	n (%)	Diagnosis	n (%)
Gender		Ca Lung	31 (20.67)
Female	74 (49.33)	Ca Gall Bladder	11 (7.34)
Male	76 (50.33)	Head & Neck Malignancy	30 (20.00)
Place		Ca Colon	5 (3.34)
Delhi	50 (33.33)	Ca Pancreas	3 (2.00)
Uttar Pradesh	39 (26.00)	Ca Stomach	5 (3.34)
Haryana	29 (19.33)	Ca Breast	18 (12.00)
Rajasthan	12 (8.00)	Ca Anal Canal	2 (1.34)
Bihar	8 (5.34)	Ca Cervix	7 (4.67)
Uttarakhand	6 (4.00)	Haematological Malignancy	6 (4.00)
Other states*	6 (4.00)	Primary Brain Tumour	2 (1.34)
		Ca Ovary	6 (4.00)
ECOG PS		Cholangiocarcinoma	3 (2.00)
PS-1	22 (14.67)	Ca Prostate	3 (2.00)
PS-2	81 (54.00)	Ca Rectum	6 (4.00)
PS-3	47 (31.34)	Ca Unknown Primary	2 (1.34)
		Mesenchymal Tumour	10 (6.67)
Age group (years)			
< 20	4 (2.67)		
20–40	38 (25.30)		
41–60	75 (50.00)		
61–80	31 (20.67)		
> 80	2 (1.34)		

** Includes Chhattisgarh, Gujarat, Jharkhand, Manipur, West Bengal, and Ladakh (1 patient [0.67%] each).*

Prevalence of anxiety and depression

Anxiety (HADS-A ≥ 8) was observed in 58 (33.9%) patients, with borderline anxiety (HADS-A 8–10) in 31 (20.6%). The mean anxiety score for the entire group was 7.96 (SD 4.01; median 7; range 0–21). Depression (HADS-D ≥ 8) was observed in 63 (42%) patients, with borderline depression in 17 (11.3%). The mean depression score for the entire group was 8.74 (SD 4.1; median 7; range 0–21).

Mean scores across subgroups

Mean anxiety and depression scores stratified by gender, ECOG performance status, cancer diagnosis, and age group are presented in Table 2. Females had statistically significantly higher mean anxiety scores compared to males (8.75 vs 7.22, p = 0.009), and similarly higher mean depression scores (9.48 vs 8.03, p = 0.015). Patients with ECOG PS 1 had the lowest mean scores for both anxiety and depression, while PS 2 and PS 3 patients showed higher scores, indicating worsening symptoms with declining performance status. Among cancer diagnoses, gastrointestinal malignancies were associated with the highest mean anxiety scores, while primary brain tumours were associated with the highest mean depression scores. Patients with carcinoma of the prostate had the lowest scores for both anxiety and depression. By age, patients younger than 20 years had the lowest mean scores, and those older than 80 years the highest (Fig. 2).

[Figure 2 here: Mean HADS Anxiety and Depression Scores Across Categories]

Table 2
Mean anxiety and depression scores across categories.

Category	Subgroup	Mean Anxiety (SD)	Mean Depression (SD)	P value
Gender	Male	7.22 (3.92)	8.03 (3.89)	
	Female	8.75 (3.92)	9.48 (4.15)	0.009 (A); 0.015 (D)
ECOG PS	1	5.25 (2.37)	6.40 (3.26)	
	2	8.50 (4.10)	8.80 (4.10)	
	3	8.40 (4.00)	9.50 (4.00)	
Cancer diagnosis	Head & Neck	8.23 (3.68)	8.43 (3.48)	
	Haematological	7.00 (2.07)	7.50 (3.19)	
	Gastrointestinal	9.34 (4.30)	9.86 (4.12)	
	Brain tumours	7.00 (0)	12.50 (0.50)	
	Unknown primary	7.00 (0)	8.50 (1.67)	
	Mesenchymal	7.30 (4.42)	7.90 (3.96)	
	Prostate	5.67 (4.18)	5.34 (1.67)	
	Breast	5.89 (2.53)	7.67 (3.05)	
	Lung	7.80 (4.28)	8.87 (4.69)	
	Gynaecological	8.83 (3.86)	9.16 (4.87)	
Age group (years)	< 20	5.75 (4.82)	7.50 (4.39)	
	20–40	8.66 (3.61)	9.37 (4.21)	
	41–60	7.52 (3.81)	8.35 (3.82)	
	61–80	8.29 (4.50)	9.06 (4.43)	
	> 80	12.00 (2.00)	10.00 (3.00)	

A, Anxiety; D, Depression; SD, standard deviation.

Correlation between anxiety and depression

Pearson's correlation between mean anxiety and depression scores across each parameter is presented in Table 3. A strong positive correlation was observed across gender (r = 0.96), ECOG performance

status (r = 0.96), age group (r = 0.95), and malignancy type (r = 0.88) (Fig. 3). These results consistently demonstrate a significant co-occurrence of anxiety and depression in metastatic cancer patients receiving palliative care.

[Figure 3 here: Correlation Between HADS Anxiety and Depression Scores]

Table 3
Correlation between anxiety and depression scores across categories.

Category	Correlation coefficient (r)	R^2	Interpretation
Gender	0.96	0.941	Strong positive correlation
ECOG performance status	0.96	0.944	Strong positive correlation
Cancer diagnosis	0.88	0.800	Strong positive correlation
Age group	0.95	0.928	Strong positive correlation

Discussion

The present study demonstrated a high prevalence of anxiety and depression among metastatic cancer patients receiving outpatient palliative care, with 33.9% experiencing anxiety and 42% experiencing depression. These findings are consistent with a longitudinal study by Sewtz et al., which reported that nearly 80% of palliative care cancer patients had clinically meaningful symptom burden with HADS scores of 8 or above at least at one time point, with mean anxiety and depression scores of 7.1 and 8.9 respectively at admission [8]. Similarly, a cross-sectional study conducted in Brazil by Garcia et al. found a prevalence of depression of 44.3% and anxiety of 25.7% among advanced cancer patients receiving palliative care, with 52.9% experiencing both symptoms [9]. A systematic review and meta-analysis by Zamani and Alizadeh-Tabari examining digestive cancers reported pooled prevalence rates of 20.4% for anxiety and 30.2% for depression symptoms, indicating that psychological distress is a substantial concern across cancer populations [10].

Our study found statistically significant gender differences, with females demonstrating higher mean anxiety and depression scores compared to males. This observation aligns with a large German study by Hinz et al. involving 3,785 cancer patients, which confirmed that cancer patients were more anxious than the general population and that gender differences in anxiety and depression could be generalised across cancer sites and clinical subgroups [11]. However, a recent systematic review and meta-analysis by Vitale et al. examining sex differences in anxiety and depression among cancer patients reported somewhat controversial findings, with males exhibiting significantly higher levels of anxiety than females in some contexts, suggesting that theoretical approaches to gender expression of psychological symptoms may influence these variations [12]. A study specifically examining metastatic breast cancer patients in Bangladesh by Islam et al. also found high rates of anxiety (44.2%) and depression (36.9%),

while better ECOG performance status was significantly associated with lower psychological distress [13].

The relationship between ECOG performance status and psychological symptoms observed in our study, where patients with better performance status had lower anxiety and depression scores, is strongly supported by existing literature. A study by Rahnea-Nita et al. examining advanced and metastatic lung cancer patients found that ECOG 3–4 performance status was significantly associated with abnormal anxiety and depression levels, and that patients receiving palliative care had higher rates of both borderline and abnormal psychological symptoms [14]. Van den Brekel et al. in their analysis of 2,144 hospitalised cancer patients reported that 22% experienced clinically relevant anxiety, with the highest prevalence (36%) among patients receiving symptom-directed palliation only, and identified female gender, younger age, depressed mood, and dyspnoea as significant predictors of anxiety [15]. Furthermore, a nomogram study by Hu et al. examining colorectal cancer patients identified ECOG score as a significant indicator for postoperative anxiety and depression alongside gender, personal status, income, and comorbidities [16].

Our finding that patients with gastrointestinal malignancies had the highest mean anxiety scores while primary brain tumour patients had the highest mean depression scores adds to the growing body of evidence on cancer type-specific psychological burden. Li and Ma conducted a three-year follow-up study of postoperative gastrointestinal cancer patients and found that the prevalence of anxiety and depression at baseline was 39.7% and 33.4%, respectively, with both rates gradually increasing during follow-up to 49.2% and 42.6% at 36 months, indicating that psychological distress worsens over time in this population [17]. A systematic review and meta-analysis by Cheng et al. focusing specifically on colorectal cancer found a significant association between colorectal cancer and depression with a pooled hazard ratio of 1.78, while the association with anxiety was not statistically significant but showed a trend toward increased risk [18]. The elevated depression scores in brain tumour patients observed in our study may be attributed to both the direct neurological effects of the tumour and associated functional impairment, a phenomenon that warrants further investigation.

The age-related differences observed in our study, with higher anxiety and depression scores in elderly patients compared with younger patients, contrast somewhat with the findings of Hinz et al., who reported that young patients with cancer were particularly affected by anxiety and deserved special attention from the healthcare system [11]. This discrepancy may be explained by the specific characteristics of our palliative care population, where older patients may face additional challenges related to comorbidities, reduced social support, and accumulated disease burden. A randomised clinical trial by El-Jawahri et al. examining integrated palliative and oncology care for acute myeloid leukaemia patients demonstrated that early palliative care intervention led to significant improvements in quality of life, with lower depression and anxiety scores sustained over 24 weeks, emphasising the importance of addressing psychological needs in cancer patients [19]. The strong positive correlation between anxiety and depression scores across all categories in our study, ranging from 0.88 to 0.96, underscores the co-occurrence of these mood disorders and supports the recommendation by Seiler et

al. that all palliative care patients should be routinely screened for psychological distress to identify those in need of further assessment and treatment [20].

Strengths and limitations

Strengths of this study include the use of a validated screening instrument (HADS), a moderately sized sample drawn from a tertiary cancer centre serving multiple states in India, and stratified analyses by gender, performance status, cancer diagnosis, and age. Limitations include the single-centre design, short data-collection window, exclusion of patients with ECOG PS 4 (who may carry the highest psychological burden), the use of HADS as a screening rather than a diagnostic tool, and the cross-sectional nature of the analysis, which precludes causal inference. Subgroup sample sizes for certain cancer types (e.g., brain tumours, prostate cancer) were small, limiting the precision of subgroup estimates.

Conclusions

This study revealed a significant prevalence of anxiety (33.9%) and depression (42%) among metastatic cancer patients receiving outpatient palliative care at a tertiary cancer centre in India. Females demonstrated significantly higher anxiety and depression scores than males. Patients with gastrointestinal malignancies exhibited the highest anxiety scores, while those with primary brain tumours had the highest depression scores. Prostate cancer patients showed the lowest scores for both conditions. Patients older than 80 years had the highest psychological symptom burden, whereas those younger than 20 years had the lowest. Anxiety and depression scores worsened with declining ECOG performance status, and a strong positive correlation between anxiety and depression was observed across all parameters, emphasising their co-occurrence in this population. These findings highlight the critical need for routine psychological screening and early intervention in palliative care settings to improve quality of life and overall patient outcomes.

Abbreviations

Ca
Carcinoma
ECOG
Eastern Cooperative Oncology Group
HADS
Hospital Anxiety and Depression Scale
HADS-A
HADS – Anxiety subscale
HADS-D
HADS – Depression subscale
PS

Performance status
SD
Standard deviation
SPSS
Statistical Package for the Social Sciences.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the principles of the Declaration of Helsinki and was approved prospectively by the Institute Ethics Committee, All India Institute of Medical Sciences (AIIMS), New Delhi (Reference No. IEC-316/01.04.2022, RP-46/2022; approved with effect from 23 April 2022). The Ethics Committee of AIIMS is composed of and functions in accordance with ICH-GCP, ICMR, and the New Drugs and Clinical Trials Rules 2019. Written informed consent was obtained from all participants prior to enrolment.

Consent for publication

Not applicable. The manuscript does not contain any individual person's identifying data, images, or videos.

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to institutional data-sharing restrictions but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

VK conceived the study as Principal Investigator, contributed to study design, supervised data collection and analysis, and critically revised the manuscript. PP and HV contributed to the design of the study, data collection, data analysis, and drafting of the manuscript. NG contributed to the study design, supervision, interpretation of results, and critical revision of the manuscript. SB contributed to clinical oversight in the palliative medicine outpatient department, interpretation of results, and critical revision of the manuscript. All authors read and approved the final version of the manuscript.

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Clinical trial number

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Figures

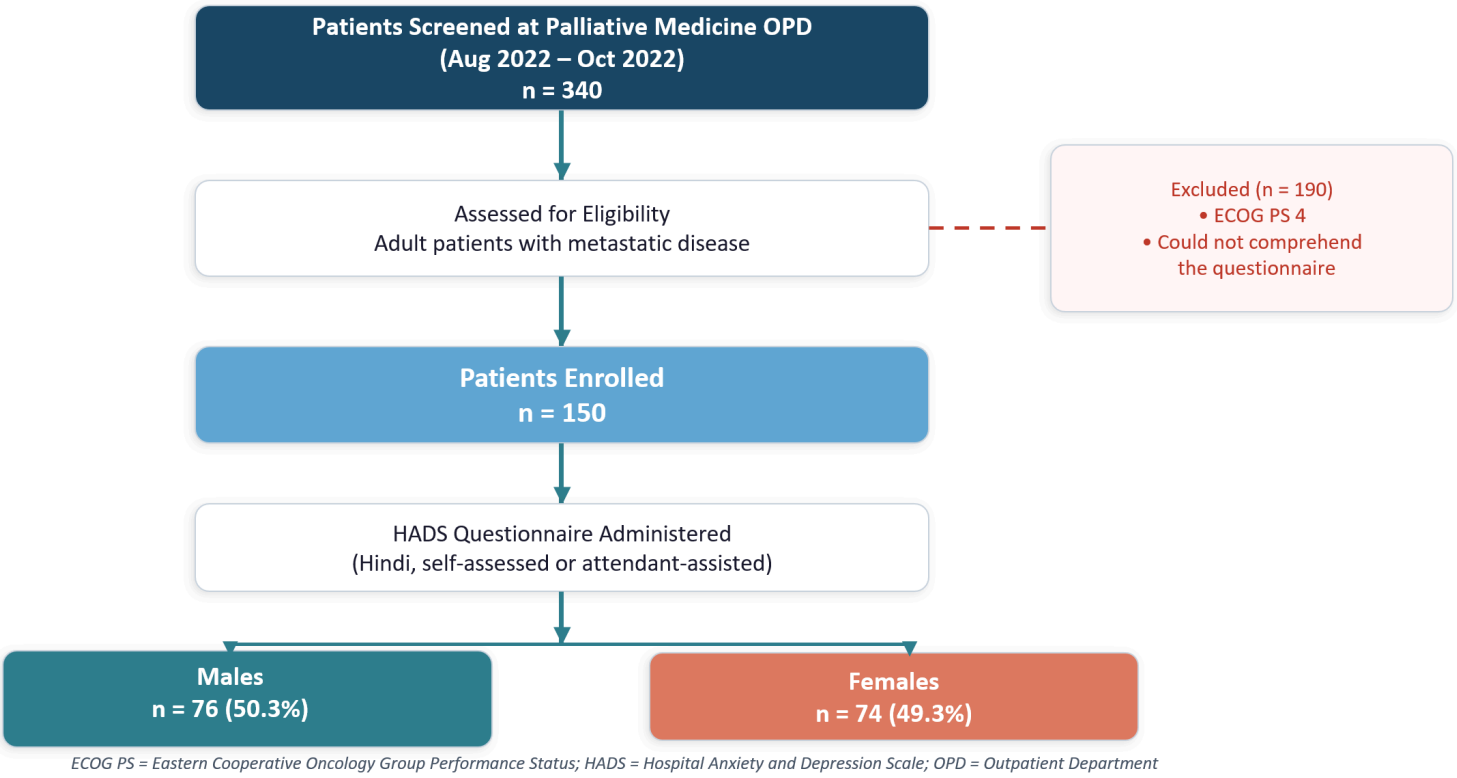


Figure 1

Study methodology flowchart. Of 340 patients screened, 150 met the inclusion criteria and were enrolled. Patients with ECOG PS 4 and those unable to comprehend the HADS questionnaire were excluded.

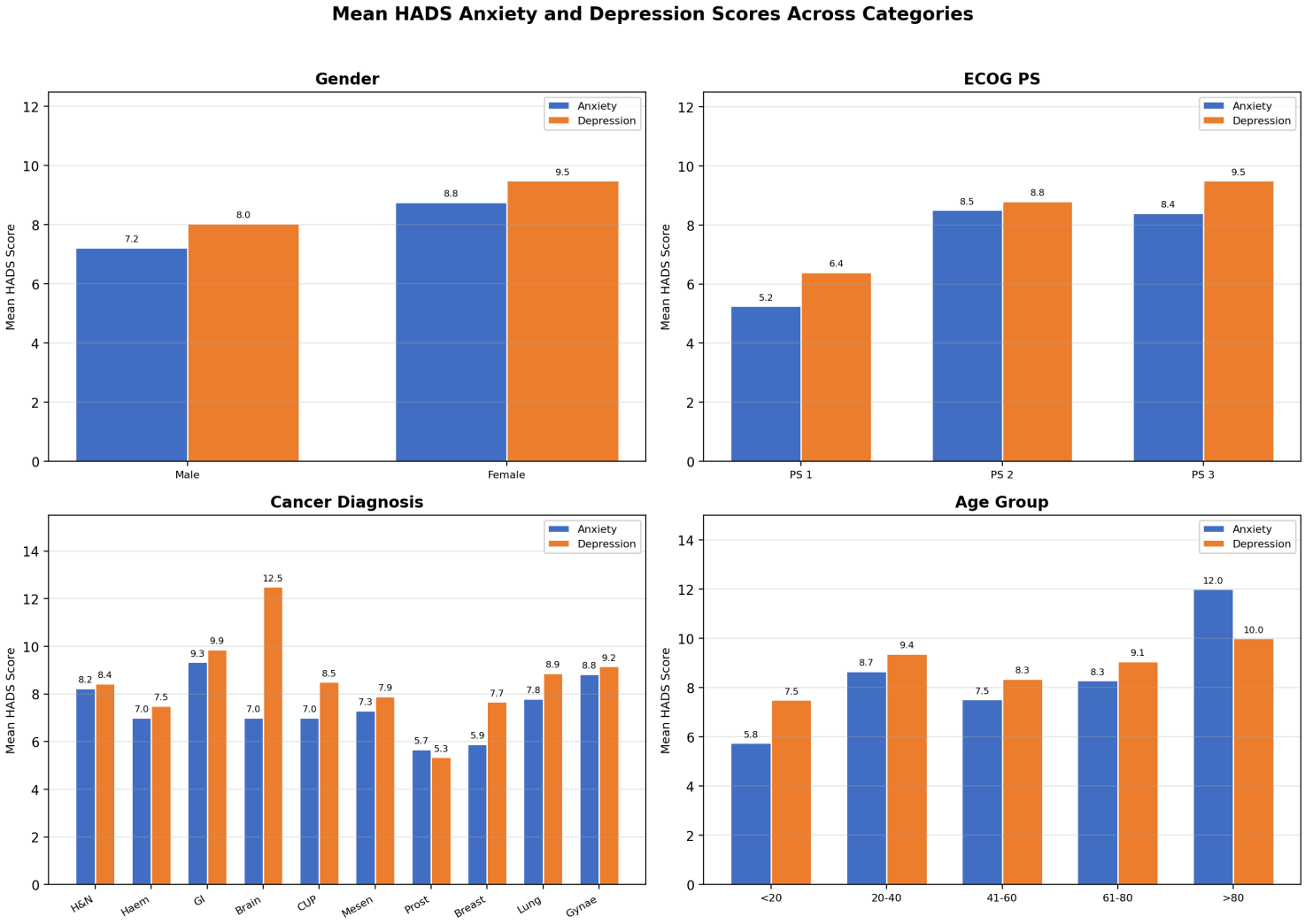


Figure 2

Mean HADS anxiety and depression scores across categories (gender, ECOG performance status, cancer diagnosis, and age group).

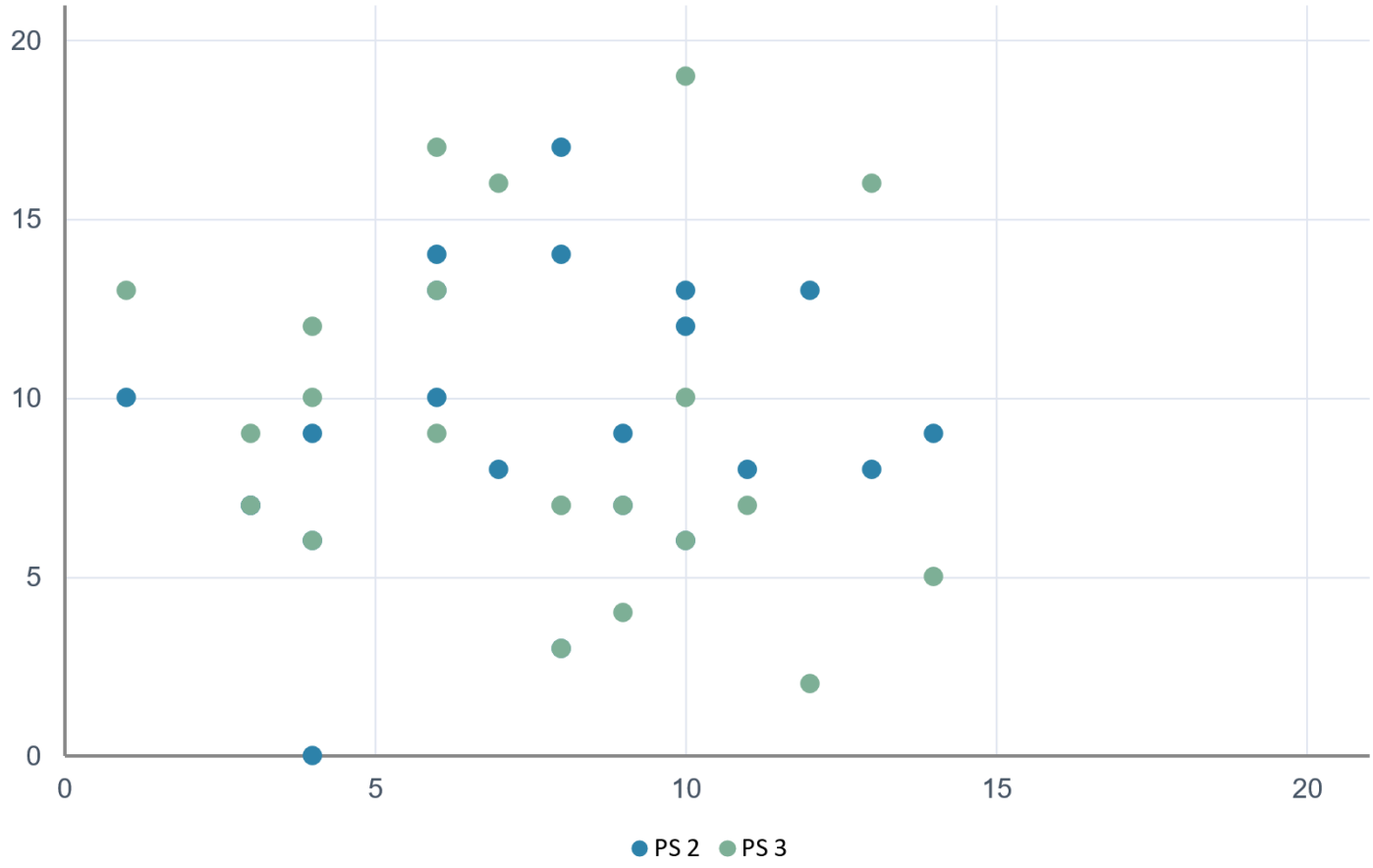


Figure 3

Correlation between HADS anxiety and depression scores across the studied categories. Pearson correlation coefficients ranged from 0.88 to 0.96 indicating strong positive correlations.