

ORIGINAL ARTICLE

Relationship of Psychiatric Morbidity, Symptom Severity, Performance Status and Social Support with Sleep Quality Among Adult Cancer Patients in Jammu, India: An Institution Based Cross Sectional Study

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Abstract

Background: Cancer Patients usually have poor sleep quality, which has detrimental physical and psychological consequences. The present study aimed to assess the relationship between psychiatric morbidity, symptom severity, performance status, and social support with sleep quality among cancer patients in Jammu City, India. **Methods:** An institution-based cross-sectional study was conducted among cancer patients using face-to-face structured interview questionnaires from August 2023 to July 2024. The study used several questionnaires, including the Pittsburgh Sleep Quality Index (PSQI) for sleep quality, the Hospital Anxiety and Depression Scale (HADS) for psychiatric symptoms, the MD Anderson Symptom Inventory for symptom severity, the ECOG Performance Status Scale for daily functioning, and the Oslo Social Support Scale (OSS-3) for social support. Chi-square was a test of significance, with a p-value < 0.05 considered significant. **Results:** Among 350 respondents in the present study, the results revealed that besides anxiety and depression, pain, nausea, psychological distress, poor performance, and poor social support significantly affected the sleep quality ($p < 0.05$). **Conclusion:** Psychiatric morbidity (anxiety and depression), poor performance, and poor social support were all significantly associated with poor sleep quality. Screening and management in earlier stages is key in these patients to improve sleep quality.

Key Words

Sleep quality, cancer patients, social support, psychiatric morbidity.

Introduction

Cancer, a multifaceted illness characterized by the unchecked growth and spread of irregular cells, places significant physical, emotional, and mental strain on individuals affected by it.^[1] A frequent yet often underestimated issue, sleep problems can further erode their quality of life by intensifying symptoms, increasing psychological distress, and fostering social detachment.^[2, 3]

Sleep disruptions linked to cancer, such as difficulty falling or staying asleep, fragmented sleep patterns, and the feeling of not being rested, arise from a combination of factors.^[4] These include pain, the adverse effects of treatments like chemotherapy and radiation, and co-occurring psychological conditions like anxiety and depression.^[5]

Grasping the connection between sleep quality and these factors that can be changed is essential for

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enhancing patient-focused care. This study was conducted to assess symptom severity, the presence of depression and anxiety, performance status, and social support, and their association with sleep quality among cancer patients receiving care at a tertiary care hospital in Jammu, India.

Materials and Method

This hospital-based cross-sectional study was conducted from August 2023 to July 2024 in a tertiary care teaching hospital in Jammu. The patients who were diagnosed as confirmed cases during this period comprised the study population.

Inclusion Criteria:

1. Those who were willing to participate and provided informed written consent.
2. Those aged 18 years and above.
3. Those having a pathologically confirmed cancer diagnosis and receiving any type of cancer treatment.

Exclusion Criteria:

1. Those who were not willing to participate and did not provide informed written consent.
2. Those with some serious medical condition such that they were unable to respond to questions.
3. Those who were on treatment for some psychiatric illness.

Sampling method and sample size:

Consecutive sampling was used to enroll patients, so the sample size estimation was based on feasibility. Each interview lasted for 30 to 40 minutes, and therefore 3 to 4 patients who attended the OPD in the Radiotherapy/Radiation Oncology department of Government Medical College, Jammu, and State Cancer Institute, Jammu, could be interviewed in one day. It was ensured that approximately 30 patients were enrolled monthly, totalling around 350 patients in one year. Informed written consent was obtained from all participants.

Data collection tools used in the study were:

1. The Pittsburgh Sleep Quality Index (PSQI)

Scale: This scale is widely used to evaluate an individual's sleep quality over an interval of 1 month. It has 19 questions. Each component is scored from 0 (no difficulty) to 3 (severe difficulty). These scores are summed to obtain a global PSQI score, which ranges from 0 to 21. Higher total scores indicate poorer sleep quality, while lower scores suggest good sleep quality. In our study, a global PSQI score greater than 5 signified poor sleep quality, whereas a score of 5 or less indicated good sleep quality.

2. The Hospital Anxiety and Depression Scale (HADS):

This scale is commonly used by doctors to determine the level of anxiety and depression. This fourteen-item scale includes seven items related to anxiety and seven related to depression. Each item has a score ranging from 0 to 3. The total score for each scale ranges from 0 to 21. If a patient has a score greater than 10 on a scale, it indicates the presence of anxiety or depression.

3. MD Anderson Symptom Inventory Scale:

This scale measures the severity of thirteen symptoms (including pain, fatigue, numbness, dyspnea, nausea, vomiting, anorexia, sadness, drowsiness, psychological distress, dryness of mouth, sleep disturbance, and problems in remembering) experienced by patients with cancer and the interference with daily living (including walking, activity, household work, relations with other people, enjoyment of life, and mood) caused by these symptoms. If a patient has a severity scale score of 0, it indicates no symptom; a score of 1–4 indicates mild symptoms; and a score of 5 indicates moderate-to-severe symptoms.

4. Eastern Cooperative Oncology Group (ECOG) Scale:

This scale is used to assess general well-being and activities of daily life of cancer patients. It ranges from grade 0 to 5. A grade of 0–1 indicates good performance status, and a grade of 2–4 indicates poor performance status.

5. Oslo Social Support Scale (OSSS-3):

This scale is used to measure the level of social support. It consists of three items (i.e., how many people are close to you, the sense of concern from other people, and how easy it is to get help from neighbors). The total score of the scale ranges from 3 to 14. A score of 3–8 represents “poor support,” a score of 9–11 represents “moderate support,” and a score of 12–14 represents “strong support”.

Data Analysis

Data were collected and subsequently entered into Microsoft Excel version 2007. Qualitative data were presented using frequencies and proportions, while quantitative data were expressed as means and standard deviations. The association between sleep quality and various factors, including symptom severity, the presence of depression and anxiety, performance status, and social support, was determined using the chi-square test. A *p*-value of less than 0.05 was considered statistically significant.

Results

This study showed that the most common symptoms reported were pain (5.63 ± 2.61), fatigue (4.63 ± 2.30), and psychological distress (3.22 ± 3.43). Pain was found to be significantly associated with sleep quality ($p = 0.000$), and 82.4% of patients experiencing moderate-to-

severe pain reported poor sleep. Nausea also showed a strong statistical association with poor sleep quality ($p = 0.001$). Psychological stress also showed a strong statistical association with sleep quality, and 94.1% of patients in the moderate-to-severe stress group reported poor sleep ($p = 0.020$). In contrast, other symptoms such

Table 1: Association between Symptom Severity and Sleep Quality (n=350).

Symptom	Mean $\pm$ SD	Severity	Good Sleep Quality (n, %)	Poor Sleep Quality (n, %)	Total (n, %)	P value
Pain	5.63 $\pm$ 2.61	No symptom	5 (55.6%)	4 (44.4%)	9 (100%)	0.000
		Mild symptom	17 (15%)	96 (85%)	113 (100%)	
		Moderate-severe	15 (17.6%)	213 (82.4%)	228 (100%)	
Disturbed sleep	2.96 $\pm$ 2.93	No symptom	18 (18.4%)	80 (81.6%)	98 (100%)	0.01
		Mild symptom	10 (6.3%)	148 (93.7%)	158 (100%)	
		Moderate-severe	10 (10.6%)	84 (89.4%)	94 (100%)	
Fatigue	4.63 $\pm$ 2.30	No symptom	5 (13.9%)	31 (86.1%)	36 (100%)	0.82
		Mild symptom	17 (10.7%)	142 (89.3%)	159 (100%)	
		Moderate-severe	16 (10.3%)	139 (89.7%)	155 (100%)	
Nausea	2.82 $\pm$ 2.35	No symptom	11 (14.1%)	67 (85.9%)	78 (100%)	0.001
		Mild symptom	26 (13.9%)	161 (86.1%)	187 (100%)	
		Moderate-severe	0 (0%)	85 (100%)	85 (100%)	
Difficulty in remembering	1.04 $\pm$ 2.15	No symptom	28 (11%)	227 (89%)	255 (100%)	0.914
		Mild symptom	6 (9.2%)	59 (90.8%)	65 (100%)	
		Moderate-severe	3 (10%)	27 (90%)	30 (100%)	
Shortness of breath	1.36 $\pm$ 2.33	No symptom	18 (8.5%)	194 (91.5%)	212 (100%)	0.072
		Mild symptom	16 (16.7%)	80 (83.3%)	96 (100%)	
		Moderate-severe	3 (0%)	39 (92.9%)	42 (100%)	
Drowsiness	1.84 $\pm$ 2.96	No symptom	23 (10.4%)	199 (89.6%)	222 (100%)	0.510
		Mild symptom	5 (8.5%)	54 (91.5%)	59 (100%)	
		Moderate-severe	10 (14.5%)	59 (85.5%)	69 (100%)	
Dry mouth	1.28 $\pm$ 2.41	No symptom	30 (12.3%)	214 (87.7%)	244 (100%)	0.534
		Mild symptom	5 (7.4%)	63 (92.6%)	68 (100%)	
		Moderate-severe	3 (9.4%)	29 (90.6%)	32 (100%)	
Psychological Stress	3.22 $\pm$ 3.43	No symptom	20 (16.5%)	101 (83.5%)	121 (100%)	0.02
		Mild symptom	9 (9.7%)	84 (90.3%)	93 (100%)	
		Moderate-severe	8 (5.9%)	128 (94.1%)	136 (100%)	
Loss of appetite	1.32 $\pm$ 2.40	No symptom	26 (11%)	210 (89%)	236 (100%)	0.743
		Mild symptom	8 (11.1%)	64 (88.9%)	72 (100%)	
		Moderate-severe	3 (7.1%)	39 (92.9%)	42 (100%)	
Sadness	0.42 $\pm$ 1.42	No symptom	35 (11.1%)	279 (88.9%)	314 (100%)	0.569
		Mild symptom	1 (4.5%)	21 (95.5%)	22 (100%)	
		Moderate-severe	1 (7.1%)	13 (92.9%)	14 (100%)	
Vomiting	1.08 $\pm$ 2.19	No symptom	27 (10.7%)	226 (89.3%)	253 (100%)	0.846
		Mild symptom	6 (9.1%)	60 (90.9%)	66 (100%)	
		Moderate-severe	4 (12.9%)	27 (87.1%)	31 (100%)	
Numbness	0.70 $\pm$ 1.84	No symptom	32 (10.6%)	253 (89.4%)	285 (100%)	0.604
		Mild symptom	3 (6.4%)	44 (93.6%)	47 (100%)	
		Moderate-severe	2 (11.1%)	16 (88.9%)	18 (100%)	

Table 2: Association of Daily Living Interference caused by symptom severity with Sleep Quality (n=350).

Interference with daily living	Mean $\pm$ SD	Severity	Good Sleep Quality (n, %)	Poor Sleep Quality (n, %)	Total (n, %)	P value
General activity affected	3.91 $\pm$ 2.25	No symptom	7 (19.4%)	29 (80.6%)	36 (100%)	0.178
		Mild symptom	17 (9.1%)	170 (90.9%)	187 (100%)	
		Moderate-severe	13 (10.2%)	114 (89.8%)	127 (100%)	
Mood	1.89 $\pm$ 2.58	No symptom	23 (11.4%)	179 (88.6%)	202 (100%)	0.698
		Mild symptom	9 (10.8%)	74 (89.2%)	83 (100%)	
		Moderate-severe	5 (7.7%)	60 (92.3%)	65 (100%)	
Work	3.23 $\pm$ 2.51	No symptom	10 (13%)	67 (87%)	77 (100%)	0.471
		Mild symptom	15 (8.6%)	160 (91.4%)	175 (100%)	
		Moderate-severe	12 (12.2%)	86 (87.8%)	98 (100%)	
Enjoyment	3.37 $\pm$ 2.18	No symptom	7 (21.2%)	26 (78.8%)	33 (100%)	0.062
		Mild symptom	19 (8.3%)	210 (91.7%)	229 (100%)	
		Moderate-severe	11 (12.5%)	77 (87.5%)	88 (100%)	
Walking	3.08 $\pm$ 2.52	No symptom	10 (12.5%)	70 (87.5%)	80 (100%)	0.155
		Mild symptom	14 (7.7%)	169 (92.3%)	183 (100%)	
		Moderate-severe	13 (14.9%)	74 (85.1%)	87 (100%)	
Relation with others	0.56 $\pm$ 1.62	No symptom	33 (11.4%)	256 (88.6%)	289 (100%)	0.329
		Mild symptom	2 (4.3%)	44 (95.7%)	46 (100%)	
		Moderate-severe	2 (13.3%)	13 (86.7%)	15 (100%)	

Table 3: Mean score of OSLO score , HADS score and ECOG score (n=350).

Scores	Mean	Standard deviation
Mean score of support (OSLO)	7.35	2.34
Mean score of depression (HADS)	10.25	2.51
Mean score of anxiety (HADS)	10.16	2.75
Mean score of Performance(ECOG)	2.38	0.60

as fatigue, drowsiness, and numbness did not demonstrate statistically significant associations with sleep quality ($p > 0.05$). These findings revealed that the severity of symptoms (such as pain, nausea, psychological distress, etc.) had a significant impact on sleep quality (Table No. 1).

This study exhibited that interference with daily activities caused by cancer symptom severity affects sleep quality. Most of the daily activities (such as general activity, mood, work, walking, social relationships, and enjoyment) did not show any significant associations with sleep quality (Table No. 2).

This study found that social support, measured by the

OSLO scale, was low among participants, with an average score of 7.35 ± 2.34 . The average scores for anxiety (HADS) and depression (HADS) were 10.16 ± 2.75 and 10.25 ± 2.51 , respectively. The average ECOG performance status score was 2.38 ± 0.60 , showing moderate difficulty with daily activities among patients. These results explain that cancer patients had high levels of psychological distress and low social support, which is linked to poor sleep quality (Table No. 3).

The study also revealed a strong statistical association between anxiety and poor sleep quality, with 95.8% of anxious participants reporting impaired sleep ($p < 0.001$). Similarly, depression showed a significant statistical

Table 4: Association of sleep quality with anxiety, depression, social support, and performance status among cancer patients (n=350).

Variables	Frequency (n)	Percentage (%)	Category	Good Sleep Quality	Poor Sleep Quality	Total (n)	P-value
Anxiety (HADS)	135	38.5%	No Anxiety	28 (20.7%)	107 (79.3%)	135	0.000
	215	61.4%	Anxiety	9 (4.2%)	206 (95.8%)	215	
Depression (HADS)	112	32.0%	No Depression	18 (16.0%)	94 (83.9%)	112	0.020
	238	68.0%	Depression	19 (8.0%)	219 (92.0%)	238	
Social Support (OSSS-3)	298	85.1%	Poor Support	28 (9.4%)	270 (90.6%)	298	0.018
	26	7.42%	Moderate Support	7 (26.9%)	19 (73.1%)	26	
	26	7.42%	Strong Support	2 (17.6%)	24 (82.4%)	26	
Performance Status (ECOG)	142	41.0%	Good Performance	20 (14.0%)	122 (85.9%)	142	0.000
	208	59.4%	Poor Performance	17 (8.2%)	191 (91.8%)	208	

association with poor sleep quality, affecting 92% of depressed patients ($p = 0.02$). Additionally, 90.6% of patients with poor social support experienced impaired sleep ($p = 0.018$), showing a statistically significant association. About 91.8% of patients with poor performance status ($\text{ECOG} \geq 2$) reported sleep difficulties ($p < 0.001$) (Table No. 4).

Discussion

The present study elicited the relationship between psychiatric morbidity, symptom severity, performance status, and social support with sleep quality among adult cancer patients. The mean score of depression and anxiety in the present study was 10.25 ± 2.51 and 10.16 ± 2.75 , respectively, which was in agreement with that reported by Kherchi *et al.*^[6] Both anxiety and depression were significantly associated with poor sleep quality in the present study, which was consistent with the results underlined from Ethiopia^[7], Turkey^[8], and Brazil^[9]. Depression usually leads to low levels of serotonin, noradrenaline, etc., which result in daytime sleepiness with decreased sleeping hours during the night. Cancer patients undergoing chemotherapy had a high prevalence of depression.^[10]

The MD Anderson Symptom Inventory scale elucidated that pain, nausea, and psychological distress were significantly associated with poor sleep quality. These findings were in consonance with those reported by Endeshaw *et al.*^[7], Yennurajalingam *et al.*^[11], and Papadopoulos *et al.*^[12]. Pain is a common symptom in cancer patients that impairs both falling and staying asleep.

It is pertinent to mention that authors have reported that cancer and its treatment cause symptoms like dyspnea, nausea, vomiting, fatigue, numbness, etc., which have a bearing on the sleep quality of these patients.^[13, 14, 15]

The mean performance score (ECOG) was 2.38 ± 0.60 , and 91.8% of the respondents in the poor performance category had poor quality of sleep. These results are consistent with those reported by George *et al.*^[16] In contrast, Endeshaw *et al.*^[7] noted that only 46.1% of the respondents with poor performance status had poor quality sleep. The results of the present study revealed that poor social support was significantly associated with poor quality of sleep, and these results were well supported by studies conducted elsewhere.^[17, 18] Endeshaw *et al.*^[7] reported that about two-thirds of the respondents who had poor social support had poor quality of sleep, thus underlining the role of family and friends as pillars of strength for cancer patients. The varied results could be due to sample characteristics between studies, such as different types of cancer and different cancer regimens prescribed to these patients. Authors recommend that complete information be provided to these patients by health personnel, which might help them develop a coping mechanism.

Limitations

The cross-sectional nature of the study limits causal inference, and thus results cannot be generalized. Therefore, authors recommend prospective studies in multiple centers to generate robust data. Recall bias is another limitation in self-reported questionnaires regarding

sleep quality measures.

Conclusions

The present study found that both anxiety and depression affected sleep quality, while pain, nausea, and psychological distress were significantly associated with poor sleep quality. Both poor performance and poor social support were also significantly associated with poor sleep quality. Policymakers need to plan innovative approaches to manage sleep quality in cancer patients, which should be incorporated into palliative care programs.

Ethics Approval and Consent: Ethical approval was obtained from the Institutional Ethics Committee of GMC, Jammu (IEC/GMC/2023/1373; 17/07/2023). Informed written consent was obtained from all participants, ensuring voluntary participation, confidentiality, and the right to withdraw anytime without consequences. The study adhered to ethical guidelines.

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Conflict of Interest: Nil

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