Original Article

Quality of Sleep in Patients with Cancer: A Cross-sectional Observational Study

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Abstract

Background: Insomnia and poor sleep quality are common problems in patients with cancer. It interferes with the coping ability, symptoms, and treatment outcomes. The Pittsburgh Sleep Quality Index (PSQI) is a reliable, valid instrument to assess the quality of sleep in patients with cancer. **Patients and Methods:** The study was conducted at the department of medical oncology of a tertiary cancer care center. Consecutive eligible participants were recruited and evaluated for sleep quality using PSQI questionnaire. The questionnaire was administered only once with the questions evaluating to the quality of sleep over the last 1 month. A PSQI total score of ≤5 was suggestive of good quality of sleep and a score of >5 was indicative of poor quality of sleep. **Results:** Ninety-two consecutive consenting cancer patients admitted for chemotherapy participated in the study. Thirty-one (33.7%) patients had early cancer and 35 (38%) patients had Stage IV metastatic disease. Thirty-six (39.1%) patients reported sleep of <6 h and 30 (32.6%) patients had impaired functioning during day due to sleepiness. Fifty-three (57.6%) patients had poor total PSQI score, of which 39 (73.5%) were female and 14 (26.5%) were male. The study showed no correlation of the PSQI scores with the stage of the disease, and the prior treatment received. **Conclusions:** The study showed that Indian cancer patients have short sleep duration and poor quality of sleep. A higher prevalence of sleep disturbances was seen among female cancer patients. PSQI questionnaire can be a cost-effective way of screening cancer patients for poor quality of sleep.

Keywords: Cancer, Pittsburgh Sleep Quality Index, sleep

Introduction

The management of cancer is usually associated with high levels of emotional and psychological distress among patients and their relatives.[1] Sleep disturbance is one of the most common complaints in cancer patients.[1] Insomnia is defined as difficulty in initiating or maintaining sleep for a duration of at least 1 month and hence resulting in clinically significant distress and/or social and occupational impairment.[1] Insomnia and sleep disturbances can present before and after the diagnosis of cancer and may persist during and/or after the completion of treatment.[2] Many times, insomnia in cancer patients is aggravated by the treatments and their side effects and hence should be identified at the earliest and managed proactively.[3] Insomnia is multifaceted and affects several dimensions of quality of life of a patient. Patients with insomnia are prone to emotional disturbances, chronic fatigue, poor professional performance, and dependence on sedatives.[4] There is evidence to suggest a strong correlation of poor quality of sleep with profound negative outcomes, including decreased physical and psychological functioning, and a worse quality of life.[5-7] Furthermore, sleep disturbances can result in unplanned interruptions, poorer compliance and tolerance for treatment, or many a time a change in the treatment plan and may even be linked to more adverse events and a worse prognosis.[8] Based on the Pittsburgh Sleep Quality Index (PSQI) measures, it has been found that insomnia in cancer patients at the initiation of treatment is higher than that in the general population and ranged between 26% and 57%.[5,9,10] This study of insomnia focuses on an important, underrecognized aspect among cancer patients.

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Patients and Methods

Study design and patients

A cross-sectional observational study was conducted at the department of medical oncology of a tertiary cancer care center between January 2017 and June 2017. The consecutive eligible participants were recruited after obtaining written informed consent. The inclusion criteria were adult patients diagnosed to have cancer and admitted for first course of chemotherapy. The exclusion criteria consisted of patients with previously diagnosed psychiatric illness or patients admitted for diagnosis of malignancy and patients with concurrent use of medications known to affect sleep. PSQI questionnaire was administered and compiled by a nurse. The questionnaire consisted of seven domains (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction) with a possible score of 0–3 each, making the possible total range of score from 0 to 21. A PSQI total score of ≤5 was suggestive of good quality of sleep and a score of >5 was indicative of poor quality of sleep. The study questionnaire evaluated the quality of sleep over the last 1 month. The data were collected on predesigned Microsoft Excel spread sheets, and the entries were double checked for any data entry errors. Continuous data were presented as mean and standard deviation (SD); categorical variables were presented as counts with percentages. The relationship between parameters was assessed with the Spearman's correlation test. All the statistical analyses were performed with SPSS version 20.0 (IBM Corp., Armonk, NY, USA). $P < 0.01$ was considered statistically significant.

Results

Patient characteristics

Ninety-two consecutive consenting cancer patients admitted for chemotherapy in the medical oncology ward were administered the study questionnaire.

Sociodemographics

Sixty-seven (72.8%) patients were female and 25 (27.2%) were male. Thirty-one (33.7%) patients had early stage of cancer (Stage I and II) and 61 (66.3%) patients were diagnosed as advanced cancer (Stage III and IV), of which 35 (38%) patients had stage IV metastatic disease. The overall median age was 53 years with a range from 17 to 79 years. The median age was 53 years in females and 57 years in males. Ninety patients were married. Fifty patients were manual laborers and 35 patients were homemakers. Fifty-eight patients had undergone surgery and twenty patients had also received radiation before chemotherapy [Table 1].

Sleep scores

The average global PSQI score was 6.57 (SD = 3.52). The range of scores was 1–17. The mean scores of PSQI were 6.89 (SD 3.64) in females and 5.72 (SD 3.04) in males. There were 53 (57.60%) patients who had poor total PSQI score (>5), of which 39 (73.5%) were female and 14 (26.5%) were male [Figure 1].

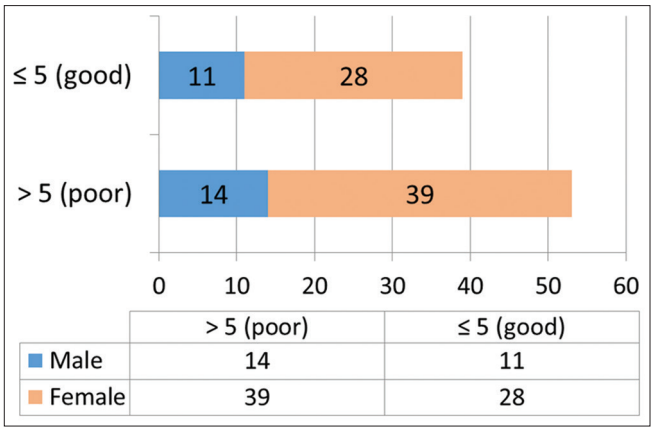

Figure 1: Pittsburgh Sleep Quality Index scores in males and females.

Table 1: Patient characteristics

Variable	*n* (%)
Sex	
Male	25 (27.2)
Female	67 (72.8)
Education	
Illiterate	39 (42.4)
Primary	30 (32.7)
Secondary	10 (10.9)
Graduate	2 (2.1)
Postgraduate	11 (11.9)
Marital status	
Married	90 (97.8)
Single/divorced	2 (2.2)
Occupation	
Homemaker	35 (38)
Cooly	50 (54.4)
Student	2 (2.1)
Others	5 (5.5)
Site	
Breast	31 (33.7)
Upper GIT	18 (19.7)
Ovary	14 (15.2)
Cervix/endometrium	7 (7.6)
Colorectal	10 (10.9)
Lung	8 (8.6)
Others	4 (4.3)
Stage	
I	9 (9.6)
II	18 (19.7)
III	30 (32.7)
IV	35 (38)
Disease extent	
Early	31 (33.7)
Advanced	61 (66.3)
Surgery	
Yes	58 (63)
No	34 (37)
Radiation therapy	
Yes	20 (21.7)
No	72 (78.3)

GIT: Gastrointestinal tract

Thirty-six (39.1%) patients complained of sleep of <6 h duration, of which 26 were female [Figure 2]. Thirty-six (39.1%) patients complained of significant sleep disturbance [Figure 3] and 30 (32.6%) patients had daytime dysfunction due to sleepiness [Figure 4]. Thirty-four (36.9%) patients had poor sleep efficiency [Figure 5].

The correlation between the sleep score with the stage of the disease and the prior treatment was analyzed using the Spearman's correlation test. There was no correlation of the PSQI scores with the stage and the prior treatment received [Table 2].

Discussion

Sleep disorders are often not or underdiagnosed in cancer patients, and a higher prevalence has been seen among female cancer patients.[1] Usually, the sleep disturbances in patients with cancer on chemotherapy are multifactorial. The significant psychological impact of the disease, the chemotherapy, and medications such as corticosteroids have all been reported as potential contributors.[11] A systematic review of sleep disorders in cancer patients found that it is difficult to assess the prevalence of particular types of sleep disorders in cancer due to the focus on studying symptoms of poor sleep and not characterizing the underlying sleep disorders.[12] Thus, it is crucial to identify the causative factors behind the sleep disturbances to treat insomnia. Psychological interventions such as cognitive behavioral therapy have demonstrated

Table 2: Correlation between Pittsburgh Sleep Quality Index score with stage and prior treatment received

Spearman's rho	Stage	Radiation therapy	Surgery	PSQI score
Stage				
Correlation coefficient	1.000	0.328**	−0.479**	−0.180*
Significant (two-tailed)		0.000	0.000	0.031
n	92	92	92	92
Radiation therapy				
Correlation coefficient	0.328**	1.000	−0.232**	−0.113
Significant (two-tailed)	0.000		0.006	0.182
n	92	92	92	92
Surgery				
Correlation coefficient	−0.479**	−0.232**	1.000	0.076
Significant (two-tailed)	0.000	0.006		0.365
n	92	92	92	92
PSQI score				
Correlation coefficient	−0.180*	−0.113	0.076	1.000
Significant (two-tailed)	0.031	0.182	0.365	
n	92	92	92	92

PSQI: Pittsburgh Sleep Quality Index. *P<0.05, **P<0.01

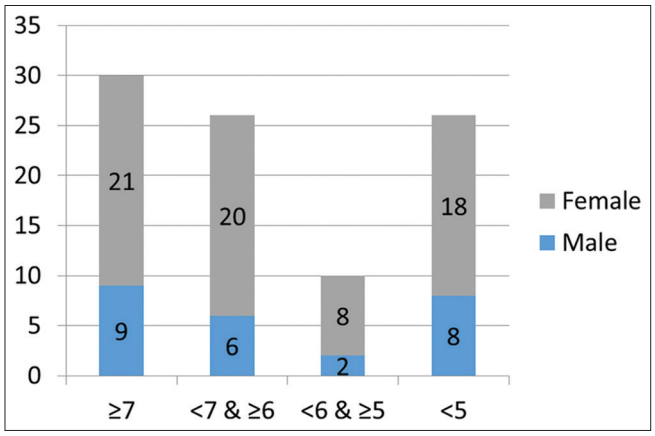

Figure 2: Number of hours of sleep in males and females.

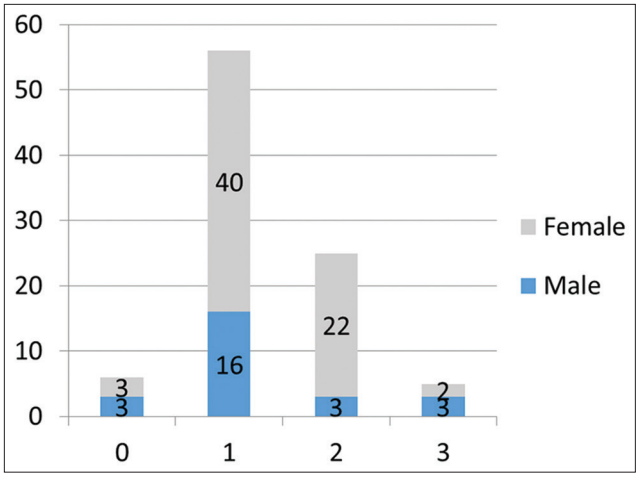

Figure 4: Daytime dysfunction scores in males and females.

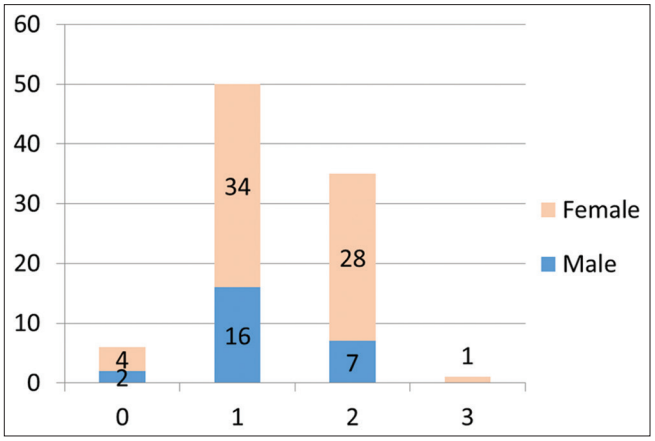

Figure 3: Sleep disturbance scores in males and females.

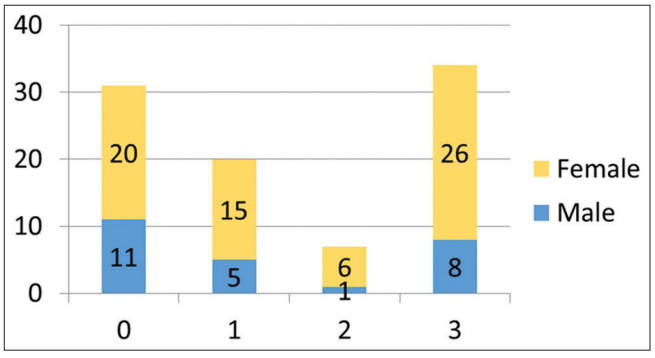

Figure 5: Sleep efficiency scores in males and females.

clinical benefit to insomnia patients in randomized clinical trials.[13] However, access to these psychological therapies is usually limited or not available in most of the centers treating cancer patients. Yoga has also shown to improve symptoms,[14] and acupuncture has also shown to effectively reduce cancer-related depression, improve sleep quality, and thus improve the quality of life of cancer patients.

Our study showed that clinically significant sleep disturbance occurred in high numbers of cancer patients on chemotherapy, reflecting a significant symptomatic burden that is poorly documented and managed in routine clinical practice. The median age of patients in our cohort was 53 years, consistent with the data from India.[10] Our results are consistent with the previous studies where higher levels of sleep disturbance have been observed in women undergoing chemotherapy.[7,15-19]

A longitudinal study conducted in North America found a higher prevalence of sleep disturbance among female patients undergoing adjuvant chemotherapy for breast cancer, in which 48.5%–65.8% of patients had PSQI scores ≥5.[20] Similarly, in a cross-sectional study of breast cancer survivors in Bahrain, significant sleep disturbances in 17.6% of women were documented, ranking second after fatigue as the most distressing symptom.[6] This prospective study using validated tools found that the sleep quality was poor in female cancer patients and the incidence of clinical insomnia was high in cancer patients. The limitations of this study include small sample size and lack of additional measures such as the health-related quality of life not being included in the study.

Conclusions

The study has shown that patients with cancer experience an increase in insomnia and sleep disturbances during the treatment which is largely overlooked in routine clinical practice. There is an unmet need to routinely screen patients for sleep disorders to minimize the disease burden and to improve the quality of life. More studies are required to develop strategies in routine practice to diagnose, prevent, and treat insomnia among cancer patients.

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Conflicts of interest

There are no conflicts of interest.

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