ISSN: 0975-3583,0976-2833 VOL15, ISSUE 06, 2024

ASSESSMENT OF SLEEP QUALITY IN PATIENTS WITH CANCER VISITING ONCOLOGY OUTPATIENT SERVICE

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ABSTRACT:

Background: The goal of our study was to identify the prevalence and risk factors for poor sleep in people with cancer. This could help in raising awareness of this problem and need for better options for treatment

Methods: Data was collected from cancer patients attending Department of oncology OPD of Sree Mookambika Institute of Medical Sciences,Kanyakumari, TamilNadu from March to September 2023 .After approval of the study protocol by our institutional research & human ethical committee, study was conducted in oncology department.

Results: The global PSQI was calculated after adding up all the 7 component scores. The scores ranged from 1-18, with the mean score being 7.6 (+/- standard deviation 4.8). Scores more than 5 were categorised as 'poor sleepers' and those less than 5 were 'good sleepers'. Majority of the patients, ie 70.5% (129) were poor sleepers while 29.5% (54) had good sleep quality.

Conclusion: Based on this study, the prevalence of poor sleep quality in this study was 70.5%. Hence protocols to identify and treat sleep related disorder among people with cancer.

Keywords. *Pittsburgh Sleep Quality Index,Outpatient department.*

INTRODUCTION

Sleep is vital for human life that helps in restoration of physical and mental health.Regular ,sufficient time adequate sleep are essential but it may be impacted by a variety of medical disorders,cancer being one of them.Patients with cancer may experience various symptoms .It may be associated to disease or treatment .One among them is poor sleep quality

Sleep quality is defined as an individuals self satisfaction with all aspects of sleep experience .it has four attributes sleep efficiency,sleep latency,wakefulness and sleep waking 1,2

In cancer patients, disturbed sleep is rated the second most bothersome symptom. 3 According to the Anandpaul et el,The study of the quality of sleep in cancer patients had 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.4

Poor sleep is caused by a variety of factors in cancer patients. It is influenced by the socio-demographic features of the patients, such as age, gender, and level of education.5-7 Additionally, factors that affect sleep quality include treatments for cancer, symptoms, and psychological and

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behavioral stressors linked to the disease.8-10 The primary location of the disease, the site of the metastasis, the stage of the cancer, the type of treatment given to patients,11-13 and the duration of time since diagnosis are all connected to poor sleep. Poor sleep quality is also significantly correlated with higher body mass index, poor social support, and lower functional performance status as well.3,14

Recognizing the frequency and characteristics of cancer-related poor sleep quality may act as a basis for novel approaches for supportive care throughout the course of cancer therapy. The goal of our study was to identify the prevalence and risk factors for poor sleep in people with cancer. This could help in raising awareness of this grave problem and need for better options for treatment.

MATERIAL AND METHODOLOGY.

Data was collected from cancer patients attending Department of oncology OPD of Sree Mookambika Institute of Medical Sciences,Kanyakumari, TamilNadu from march to September 2023 .After approval of the study protocol by our institutional research & human ethical committee, study was conducted in oncology department.All the patients were explained in detail about the procedure and informed consent was obtained.

The inclusion criteria were adult patients in the age group between 18 to 60 diagnosed to have cancer visting oncology opd .The exclusion criteria consisted of previously diagnosed psychiatric illness or psychiatric medications, Recent Cerebrovascular accident, Spinal cord injury, CNS malignancy , CNS metastasis and Alcoholic .

The data were collected by the questionnaire. The study questionnaire evaluated the quality of sleep over the last 1 month. In this study Pittsburgh Sleep Quality Index (PSQI) is used to measure the quality and patterns of sleep in adults. It differentiates "poor" from "good" sleep quality by measuring seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction over the last month. The possible score of 0–3 each, making the possible total range of score from 0 to 21. 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 collected data will be analysed using SPSS 20.0 trial version. Study parameter entered in the Microsoft office EXCEL 2019.

RESULTS:

Basic characteristics:

In this study, 183 patients diagnosed with cancer were interviewed of which 38.8% (71) were males and 61.2% (112) were females. The age and sex distribution of the study participants is as given below in Table 1. The ages of the study participants range from 19 to 75 years with the mean age being 53.9 +/- 12.8 years.

Table 1: Basic demographic and clinical features of the patients

Features	Frequency	Percent
Age group		

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19-40 years	24	13.1
41-60 years	99	54.1
Above 60 years	60	32.8
Education		
Illiterate	1	0.56
Upto Primary school	30	16.4
Upto higher secondary school	116	63.4
Degree	31	16.9
Post graduate/ Professional	5	2.74
Body mass Index (BMI)		
Underweight	14	7.7
Normal	71	38.8
Pre-obese	65	35.5
Obese class I	28	15.3
Obese class II	5	2.7

Clinical profile of cancer patients:

Almost half of the patients i.e. 46.4% (85) patients, did not have any other associated medical conditions other than malignancy. About 39.9% (73) patients had diabetes as a comorbidity, 29% (53) had associated hypertension, 1.1% (2) had COPD and 4.9% (9) each had Coronary artery disease (CAD) and CKD.

The site of malignancy for the cancer patients are as described below in Table 2.

Table 2: Clinical profile of cancer patients in the study

Clinical profile	**Frequency**	**Percent**
Site of cancer		
Brain	4	2.2
Buccal mucosa	1	0.5
Tongue	20	11
Lower lip	2	1.1
Pyriform fossa	6	3.3
Thyroid	3	1.7
Breast	62	34
Oesophagus	2	1.1
Lung	8	4.5
Stomach	8	4.5
Colon	4	2.2
Gall bladder	3	1.7
Recto sigmoid junction	3	1.7
Rectum	15	8.2

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Iliac fossa	2	1.1
Uterine endometrium	8	4.5
Uterine cervix	9	5
Abdominal mass	3	1.7
Mediastinal mass	3	1.7
Bone marrow	2	1.1
Hodgkins lymphoma	3	1.7
Non-Hodgkins lymphoma	6	3.3
Retroperitoneal mass	3	1.7
Testis	1	0.5
Stage of cancer		
I	27	14.8
II	47	25.7
III	69	37.7
IV	40	21.9
Pain		
Present	38	20.8
Absent	145	79.2

Among the treatment regimes undergone by the cancer patients, chemotherapy alone was done in 9.8% (18) patients, followed by surgery alone in 13.1% (24) and radiotherapy alone in 2.2% (4) patients. Among the combination therapy regimes, surgery followed by chemotherapy and radiotherapy was the most common in 25.1% (46) patients. Combination therapy of surgery with chemotherapy was done in 27.3% (50) patients and surgery with radiotherapy was done in 12.6% (23) patients. Combination therapy of chemotherapy with radiotherapy was done in 4.4% (8) patients.

Sleep Quality among cancer patients:

PSQI has 7 components- subjective sleep quality, sleep latency, sleep duration, use of sleep medicines, habitual sleep efficiency, sleep disturbances, and daytime dysfunction. The distribution of patients across the first five components of PSQI listed is as given below in Table 2. Difficulty in daily functioning due to poor sleep was reported once or twice a week by 20.2% (37) patients, 2- 3 times a week by 12% (22) and 3 or more times a week by 1.1% (2) patients. Majority of the patients, 66.7% (122), reported that they did not have any daytime dysfunction within past one month. Poor sleep affecting the enthusiasm was reported to be only a slight problem by almost a quarter of patients, 33.9% (62), somewhat of a problem by 9.8% (18) and a very big problem by 1.1% (2) patients. More than half of the patients, ie 55.2% (101), did not have an issue with keeping up enthusiasm at all.

Table 3: Distribution of patients across various components of PSQI

PSQI Component	Frequency	Percent

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Subjective Sleep quality		
Very good	45	24.6
Fairly good	41	22.4
Fairly bad	70	38.3
Very bad	27	14.8
Sleep Latency		
>60 minutes	75	41
30- 60 minutes	1	0.5
15- 30 minutes	63	34.5
<15 minutes	44	24
Sleep duration		
>7 hours	63	34.4
6-7 hours	47	25.7
5-6 hours	26	14.2
<5 hours	47	34.4
Use of sleep medicines		
3 or more times a week	8	4.4
Once /twice a week	62	33.9
Less than once a week	44	24
Not during past month	69	37.7
Habitual Sleep Efficiency		
>85%	131	71.6
75 – 84%	15	8.2
65 – 74%	11	6
<65%	26	14.2

The global PSQI was calculated after adding up all the 7 component scores. The scores ranged from 1-18, with the mean score being 7.6 (+/- standard deviation 4.8). Scores more than 5 were categorised as 'poor sleepers' and those less than 5 were 'good sleepers'. Majority of the patients, ie 70.5% (129) were poor sleepers while 29.5% (54) had good sleep quality.

Factors affecting sleep quality:

The overall global PSQI score was higher in male patients than in females, but this was not statistically significant ($p < 0.05$; independent t test). The gender differences in PSQI component scores are as described in Table 4 below.

Table 4: Gender differences in the score across PSQI components

Components	Males Mean (±SD#) (n=71)	Females Mean (±SD) (n=112)	P value
Subjective sleep quality	1.5 (1.1)	1.4 (0.9)	0.529

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Sleep latency	1.5 (1.4)	1.4 (1.4)	0.650
Sleep duration	1.3 (1.2)	1.3 (1.2)	0.988
Habitual sleep efficiency	0.7 (1.2)	0.6 (1.1)	0.460
Sleep disturbances	1.1 (0.4)	1.0 (0.4)	0.237
Use of sleep medicines	1.2 (1.0)	0.9 (0.9)	0.185
Daytime dysfunction	0.6 (0.7)	0.7 (0.7)	0.247
Overall global score	7.9 (4.9)	7.4 (4.7)	0.539

[#] standard deviation

Habitual sleep efficiency and sleep disturbances score was higher in males than females. But this difference was not statistically significant ($p > 0.05$) as per independent t test. Daytime dysfunction scores were higher in females than in males , but this was also not statistically significant ($p > 0.05$)

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Table 5: Factors affecting sleep quality on bivariate analysis

Factors		Poor sleep	Good sleep	χ^2 value	P value
Gender	Male	50 (70.4)	21 (29.6)	0.000	0.987
	Female	79 (70.5)	33 (29.5)		
History of CKD	Yes	9 (100)	0	3.962	0.047*
	No	120 (69)	54 (31)		
History of COPD	Yes	2 (100)	0	0.846	0.358
	No	127 (70.2)	54 (29.8)		
History of CAD	Yes	8 (88.9)	1 (11.1)	1.54	0.215
	No	121 (69.5)	53 (30.5)		
Presence of pain	Yes	68 (86.1)	11 (13.9)	16.23	<0.001*
	No	61 (58.7)	43 (41.3)		
Treatment regime	Chemotherapy	90 (73.8)	32 (26.2)	1.891	0.169
	Radiotherapy	64 (79)	17 (21)	5.072	0.024*
	Surgery	108 (75.5)	35 (24.5)	7.96	0.005*

The presence of physical pain, having undergone surgical treatments and radiotherapy for cancer were identified as statistically significant predictors of poor sleep quality in cancer patients, ($p<0.001$, chi square test), as shown in Table 5 above. Patients who had undergone surgery were 2.8 times more likely to suffer from poor sleep than those who did not have surgery. All patients with CKD also had poor sleep quality when compared to without CKD; with this being statistically significant (p 0.047; chi square test). Other medical conditions, older age, or chemotherapy treatment were also not statistically associated with poor sleep quality.

DISCUSSION:

Using a cross-sectional design, this study sought to assess the prevalence of poor sleep quality and its associated factors among cancer patients receiving treatment at Sree Mookambika Hospital's oncology units. Based on this objective, the prevalence of poor sleep quality in this study was

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70.5%. This result was in accordance with prior studies from Taiwan (72%) and Morocco (71.8%).15,16 However, it was lower than a multicenter research that was carried out in five European nations (78%) 17 The different study populations may account for this discrepancy. While patients with advanced disease were included in the European study, individuals with all stages of malignancy were included in the current study.

In comparison, the current study's prevalence of poor sleep quality was higher than that of studies carried out in Turkey (40.4%), Iran (51.4%), and the United States (64%).18,19,20,21 This disparity may result from differences in the quality of healthcare provided across the nation. Poor access to high-quality cancer treatment and palliative care is common in low-income nations like India, which may have a negative impact on patients' sleep quality.22,23

In the current study, 41% of patients took longer than 60 minutes on average to fall asleep after going to bed. Khorrami-Rad et al. additionally observed that women with cancer had difficulties falling asleep.24 Kuo et al. reported that difficulties in initiating sleep accounted for the majority of sleep disturbances in breast cancer patients, which reinforces this finding.25 Similar studies showed difficulty initiating sleep was more common in people with cancer than healthy people.26,27 It appears that cancer patients' inability to fall asleep is caused by their extended periods of relaxation and daytime naps

Given that most adults should sleep for seven to eight hours per night, this study's overnight sleep duration was inadequate—34.4% of participants slept for less than five hours. Khorrami-Rad et al. and Lee et al. found that suboptimal sleep duration was one of the major problems in cancer patients, supporting this finding.24,27 Hospital inactivity results in frequent naps throughout the day and less sleep at night. Moreover, cancer patients who take corticosteroids, like dexamethasone, also have sleep deprivation

The present research found a significant association between poor sleep quality and the presence of physical pain. Studies carried out in America, Iran, and many European nations corroborated this conclusion.17,20,28 Cancer patients frequently experience pain, which has a detrimental impact on their ability to fall and stay asleep. The brain's imbalance of the neurotransmitter dopamine could be the cause of the potential mechanism. Longer periods of sleep loss and more disruption of sleep continuity may result from changes or disruptions in dopamine signaling brought on by pain. But there's also a chance that little sleep could make pain more intense and sensitive. This explains how their reciprocal associations lead to a vicious cycle of pain exacerbation and disturbed sleep.29 This emphasizes the intricacy of the problem and the requirement for cancer sufferers to benefit from more efficient symptom management.

The type of cancer treatment has an immense impact on the quality of sleep as well. Chemotherapy, radiation, and surgery for cancer have all been associated with noticeably reduced quality of sleep because they increase the production of pro-inflammatory cytokines, which alter the central nervous system and negatively impact sleep by changing rest-activity cycles.20,30,31 In our study,

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we found that cancer radiation and surgery were statistically significant factors affecting sleep quality.

In the current study, a patient's age did not increase their likelihood of experiencing poor sleep quality. That parallels the outcomes of research that have been done in the Netherlands and Morocco.32,33 The results of the current study did not agree with research done in Denmark and Iran, which found that cancer patients' poor sleep quality is correlated with their age.34,35 A possible explanation for this correlation could be the decline in melatonin levels that occurs with age.

In our study, there was a statistically significant difference in the quality of sleep between CKD patients and non-CKD patients.Both end-stage renal disease (ESRD) patients receiving renal replacement therapy (RRT) and predialysis patients with chronic kidney disease (CKD) frequently have poor quality sleep.36 . In CKD patients, it is brought on by the interaction of multiple factors. These factors include side effects from medicine, overproduction of melatonin throughout the day, tyrosine deficiency, uraemia, stress, anxiety, depression, restless leg syndrome, abnormal body temperature rhythm changes, and dialysis treatments. 37.

CONCLUSION:

This study revealed a high prevalence of poor sleep quality (70.5%) among cancer patients on treatment; the variables such as fatigue, pain, poor social support, were found to be significantly associated with the outcome variable.

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