



## **A study to assess knowledge on sleep pattern and its impact on quality of life among people attending OPD at selected hospitals, Punjab**

**Hemant Kumar Saini, Narendra Kumar Sumariya and Hemlata Saini**

<sup>1</sup> Associate Professor, University Institute of Nursing, Jalalabad, Punjab, India

<sup>2</sup> Professor, Dasmesh College of Nursing, Faridkot, Punjab, India

<sup>3</sup> Nursing Tutor, Govt. College of Nursing, Alwar, Rajasthan, India

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### **Abstract**

**Aim:** A study to assess knowledge on sleep pattern and its impact on quality of life among people attending OPD at selected hospitals, Punjab.

**Material and Methods:** There were originally going to be 200 participants aged 18-65, however after excluding individuals with invalid PSQI and QoL characteristics, the final sample size was 200 adults. Considering the link between depression and quality of life (QoL), we looked into depression as a potential moderator by using the Patient Health Questionnaire-9 (PHQ-9).

**Results:** Stress levels and overall health were both greater in the bad sleepers and decreased in the excellent sleepers (all  $p < 0.001$ ). Poor sleep quality was associated with a higher prevalence of depression (as measured by a PHQ-9 score of 10) and functional restriction due to SCD than excellent sleep quality was ( $p < 0.001$ ). There was a statistically significant difference between the groups regarding the mean EQ-5D index score, with the poor sleep quality group having a lower score. Comparing individuals with poor sleep quality (0.79; 0.39-0.89) to those with high sleep quality (0.89; 0.74-0.94), there was a statistically significant difference ( $p < 0.001$ ). The percentage of individuals reporting some or severe issues across all five EQ-5D categories was likewise greater in the poor sleep quality group compared to the excellent sleep quality group.

**Conclusion:** In this research, we employed the PSQI to evaluate sleep and discovered that some aspects of poor sleep quality were associated with QoL in a statistically significant manner.

**Keywords:** PSQI, QoL, sleep

### **Introduction**

You have to obtain enough sleep in order to keep your brain operating correctly, and sleep is a recurring process that is characterised by a loss in consciousness, lower muscle tone, and changes in autonomic function. This is not an operation that can be carried out in a passive manner; rather, it requires the coordinated efforts of multiple different control systems. It's possible that messing with a person's regular sleep pattern might end up being both dangerous and expensive [2]. In today's world, sleep disturbances are a common complaint voiced to medical professionals, and studies have shown that individuals of many ages and ethnicities have quite distinct sleeping patterns. Many studies have shown that some groups, such as the elderly, women, and those with a variety of diseases that might influence their physical, psychological, or neurological health, are disproportionately affected by sleep disruptions. [3, 4, 5, 6, 7] Occupations with high demands and shift work are associated with a higher prevalence of poor sleep quality as well as sleep disorders. Sleep problems are very common among medical professionals, and they have been linked to impaired cognitive functioning, daytime drowsiness, poor

academic performance, lower efficiency and productivity at work, and a poor quality of life [8]. Sleep problems are also associated with a lower quality of life [9, 10]. Sleep disorders are far more common among medical students than they are among members of the general population or even among students of other disciplines. Yet, there is no universally accepted standard for the average amount of time that individuals spend sleeping. The self-reported duration of sleep among 1,500 adults in the United States aged 18 years and older in 2015 was 6.8 hours per night during the week and 7.4 hours per night on the weekends. The work and sleeping habits of the residents have been investigated by epidemiologists in several of their studies. A study carried out in the United States on a total of 2737 medical residents revealed that the longer the residents worked, the less sleep they had, which in turn increased the number of errors they made and lowered their level of productivity [10]. Despite the fact that poor sleep quality is associated with substantial health risks and is one of the primary causes of accidents, medical practitioners have given the topic of sleep quality very little attention. Accidents at work may be a direct result of employees not getting enough sleep. The decisions that

individuals make about how they want to conduct their lives are making the problem even worse. Several of these variables contribute to the knowledge gap that currently exists among physicians about the quality of sleep. The PSQI is a reliable and efficient self-assessment survey tool that may be used to evaluate an individual's quality of sleep over the course of the last month. There is a correlation between not getting enough sleep, having a poor quality of life, being disabled, feeling unhappy, and having increased PSQI scores. The EuroQol five-dimension (EQ-5D) questionnaire is an example of a general quality-of-life (QoL) questionnaire that is considered valid for use in cross-sectional population research <sup>[10]</sup>.

## Material and Methods

A questionnaire was used to gather data, and the interviewers were taught to do it effectively <sup>[11]</sup>. We employed a two-stage sampling approach to guarantee that our sample was really representative of the local Punjabi community. There were originally going to be 200 participants aged 18-65, however after excluding individuals with invalid PSQI and QoL characteristics, the final sample size was 200 adults. Demographic profile was studied.

Two broad categories were used to classify stress levels: low and high stress. To gauge the participants' stress levels, we asked them: How often do you feel stressed out by life in general? Respondents were asked, "How do you feel about your health?" and then classified accordingly (very good, good, moderate, terrible, or very poor).

Because of its correlation with sleep, cognitive performance was also studied <sup>[12]</sup>. The Behavioral Risk Factor Monitoring System was used to assess SCD. Memory problems or disorientation that got in the way of employment, volunteering, socializing, or even the most basic of tasks like cooking, cleaning, taking prescriptions, driving, or paying bills were classified as SCD-related functional restrictions.

Considering the link between depression and quality of life (QoL) <sup>[13]</sup>, we looked into depression as a potential moderator. The presence of depression was evaluated using the Patient Health Questionnaire-9 (PHQ-9). Scores between 10 and 14 on the PHQ-9 indicate mild depression, scores between 15 and 19 indicate moderately severe depression, and scores between 20 and 27 indicate severe depression. Indicative of serious depression, a PHQ-9 score of >10 is very sensitive and specific.

## Sleep Quality Evaluation

The PSQI is a 19-item self-report questionnaire designed to evaluate the following sleep-related factors: component 1 (C1), subjective sleep quality; component 2 (C2), sleep latency; component 3 (C3), total sleep duration; component 4 (C4), sleep efficiency; component 5 (C5), sleep disturbance; component 6 (C6), use of sleep medication; and component 7 (C7), daytime dysfunction. Subscores vary from 0 to 3 for each factor, and the highest possible PSQI score is 21. Our participants were divided into two groups based on their PSQI scores: those with high quality sleep (PSQI 6) and those with low quality sleep (PSQI 5). (27). Measuring Quality of Life

The EQ-5D questionnaire was used to measure QoL. The EQ-5D is a quick, self-rating tool for measuring quality of life. Mobility, self-care, typical activities, pain/discomfort,

and anxiety/depressive mood are the five domains that make up EQ-5D. There are three tiers in each of the five categories: problem-free, somewhat problematic, and severely problematic. Quality of life was evaluated by calculating the mean scores on the preference-based EQ-5D measure.

Because to its social and cultural context, QoL interpretation requires care. We employed Korean-specific preference weights to calculate EQ-5D index scores since Koreans' preference weights vary greatly from those of Caucasians. We used the EQ-5D since it is a well accepted general quality of life questionnaire for use in cross-sectional population studies like ours. As the EQ-5D index is a continuous variable, we classified it as follows: bad, fair, excellent, and very good for the first, third, and fourth quartiles, respectively. We divided the participants' EQ-5D index scores into these quartiles before running the analysis. Poor quality of life was defined as belonging to the lowest quartile <sup>[14]</sup>.

## Analyzing Data

Quantitative information was presented in the form of frequency and percentage tables. The association between PSQI score and age, gender and chronic disease was examined using a chi-square test and regression analysis. The significance level used was  $p < 0.05$ . The cutoff for statistical significance was  $p < 0.05$ . SPSS24.0 was used for all data analysis.

## Results

Of the 200 people who filled out the survey, half said they had been told they had a sleep disorder. Table 1 displays participant characteristics. Subjects in the poor sleep quality group were significantly older, more likely to be female, less likely to have a job, have a low level of education, live in urban area, have a lower household income, smoke cigarettes, drink alcohol, and have more comorbid diseases (diabetes, hypertension, etc.; all  $p < 0.001$ ).

**Table 1:** Basic profile of the participants

Demographic Variables	Poor sleep quality	Good sleep quality	P value
<b>Sex</b>			
Male	49	35	0.003
Female	51	65	
Age	58.36±6.36	54.63±5.58	0.002
Employment status			
Regular	47	34	0.002
Temporarily	53	66	
<b>Education</b>			
12 <sup>th</sup>	60	72	0.003
Graduate	40	28	
Family income			
Low	65	54	0.001
High	35	46	
<b>Residence</b>			
Rural	43	44	0.004
Urban	57	56	
Alcohol	22	21	0.001
Smoking	36	32	0.002
Exercise	47	41	0.002
Hypertension	35	26	0.001
Diabetes	15	10	0.002

In Table 2 we see how different aspects of mental health and quality of life are related to how well you slept. Stress levels and overall health were both greater in the bad sleepers and decreased in the excellent sleepers (all  $p < 0.001$ ). Poor sleep quality was associated with a higher prevalence of depression (as measured by a PHQ-9 score of 10) and functional restriction due to SCD than excellent sleep quality was ( $p < 0.001$ ).

There was a statistically significant difference between the groups regarding the mean EQ-5D index score, with the poor sleep quality group having a lower score. Comparing individuals with poor sleep quality (0.79; 0.39–0.89) to

those with high sleep quality (0.89; 0.74–0.94), there was a statistically significant difference ( $p < 0.001$ ). The percentage of individuals reporting some or severe issues across all five EQ-5D categories was likewise greater in the poor sleep quality group compared to the excellent sleep quality group. After controlling for demographic factors such as age, gender, residence, level of education, family income, stress level, and the presence of comorbidity, the differences in psychological health and QoL variables between participants with poor and good sleep quality are presented in Table 3.

**Table 2:** EQ-5D index score in poor and good sleep quality

EQ-5D index score	Poor sleep quality	Good sleep quality	p-value
<b>Perceived stress</b>			
No	64	83	0.001
Yes	36	17	
<b>Perceived health status</b>			
Good	35	40	0.002
Moderate	45	45	
Bad	20	15	
<b>PHQ9 score</b>			
Normal (0-4)	62	93	0.003
Mild (5-9)	27	4	
Moderate (10-14)	7	1	
Moderately severe (15-19)	3	1	
Severe (20-27)	1	1	
<b>Depression (PHQ9 <math>\geq</math> 10)</b>			
Yes	11	1	0.002
No	89	99	
<b>Depressed mood (2 weeks in a row)</b>			
Yes	13	2	0.001
No	87	98	
EQ-5D index score, mean	0.79 (0.39-0.89)	0.89 (0.74-0.94)	0.003
<b>EQ-5D</b>			
<b>Mobility problem</b>			
No	73	88	0.001
Some	26	11	
Severe	1	1	
<b>Self-care Problem</b>			
No	89	96	0.002
Some	10	3	
Severe	1	1	
<b>Usual activity Problem</b>			
No	78	92	0.001
Some	19	7	
Severe	3	1	
<b>Pain/Discomfort</b>			
No	55	79	0.003
Some	39	20	
Severe	6	1	
<b>Anxiety/Depression</b>			
No	74	94	0.002
Some	23	5	
Severe	3	1	

**Table 3:** Ratio of adjusted risks associated with poor sleep quality for poor mental health and moderate to severe EQ-5D issues

EQ	OR (95% CL)
Physical Activity	1.48 (1.43-1.53)
Self-Control	1.37 (1.31-1.44)
Daily Activity	1.46 (1.41-1.52)
Pain	1.83 (1.79-1.88)
Anxiety/Depression	2.26 (2.19-2.33)

## Discussion

This study investigated the relationship between sleep and quality of life by analyzing the answers of persons living in the Punjab who participated in a survey that was community-based and nationally representative. The PSQI not only offers a grade for the quality of sleep taken as a whole, but it also makes it possible to evaluate seven distinct components of one's slumber. In the study, we found that those in the group with poor sleep quality had considerably lower levels of six different components of sleep when compared to those in the group with great sleep quality. In this study, the evaluation of quality of life was performed using the EQ-5D, and all five of that instrument's subscales—mobility, self-care, usual activities, pain/discomfort, and anxiety/depression—were taken into account. In a group of healthy Peoples, we observed that poor sleep quality was independently linked with reduced physical function/mobility, impaired self-control, impaired daily activities, pain, and anxiety/depression interference. This was the case even though the population was otherwise healthy. The strongest link between poor sleep quality and anxiety and hopelessness was found to be anxiety and depression. In a study that revealed similar results to ours, Pan *et al.* <sup>[15]</sup> discovered that a lack of quality sleep was related to poorer EQ-5D index scores. In a number of different logistic regression models, poor sleep quality was shown to be associated with mobility problems, heightened pain perception, and mental discomfort. There was a correlation between insufficient sleep and decreased movement. Travaglini *et al.* <sup>[16]</sup> found a relationship between poor sleep quality and higher pain interference as well as a worse quality of life on all fronts, including the physical, emotional, and environmental fronts. Similar prevalence rates of poor sleep quality were identified in previous studies conducted in Japan (30-45%) <sup>[17]</sup> and Taiwan (38%) <sup>[18]</sup>. Ours was determined to be 50%. Our sample population exhibited a higher prevalence of sleep problems than what has been recorded by a number of research in the West <sup>[19]</sup>. Throughout the course of our investigation, we found that the majority of those who slept well were female. Contradictory results have been found in research that compared men and women about their sleep patterns. According to study carried out by Buysse *et al.* <sup>[20]</sup>, the presence of a female gender was associated with higher PSQI scores in a sample of individuals who lived in the community. The previous research <sup>[21]</sup> found no statistically significant variations in the PSQI scores of healthy young and old adults based on their gender. The effects of sex hormones on sleep, the impact of stress on the systems that regulate sleep, and the social patterning of behaviors that affect sleep are some of the possible explanations of this variance <sup>[21]</sup>. In addition, the findings of our study showed that the group that had a poor quality of sleep also participated in a high amount of physical activity. In spite of the fact that the relationship between sleep and exercise works in both directions, Alley *et al.* <sup>[22]</sup> discovered that exercise did not have a significant effect on the quality of sleep. It's possible that the researchers used different approaches to their studies, but it's still relevant to explore the differences between the studies since they might provide some insight on the nature of the connection between sleep and exercise.

Since the quality of sleep and the quality of life are two aspects that are interwoven, we investigated the relationship between the two. According to the findings of this study, a poor quality of sleep is associated with a worse quality of life. This study offers some insight into the possible causes that are responsible for the connection that was found between the two parameters that were explored here. Poor sleep quality was independently linked with anxiety and depression interference, according to the findings that we obtained from a group of otherwise healthy individuals. There is a potential for a reduction in quality of life (QoL) as a consequence of a negative feedback loop that includes insufficient sleep and undesirable consequences such as depression. It's possible that a bad night's sleep is to blame for your fatigue. A person's sensitivity to pain may also be heightened by conditions such as tiredness and despair, among other things. According to the findings of our study, those who reported having trouble sleeping had greater degrees of tiredness, anxiety, and despair. It is likely that the association between sleep and pain is being influenced by other factors; however, in order to identify these other factors, further study is required.

## Conclusion

In this research, we employed the PSQI to evaluate sleep and discovered that some aspects of poor sleep quality were associated with QoL in a statistically significant manner. That's why it's important to include in how well you sleep when evaluating quality of life. Further well-designed prospective studies investigating the relationship between PSQI scores and QoL may aid in the development of efficient therapies aimed at enhancing QoL.

## Conflict of Interest

Not available

## Financial Support

Not available

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