**Original Article**

# Association between Self-Rated Health and Quality of Life with Sleep Quality among Bangladeshi University Students

## Abstract

**Introduction:** Poor sleep quality is adversely affecting student's mental health. However, the impact of poor sleep quality on student's health and quality of life (QOL) has not been previously studied in Bangladesh. The objective of this study was to assess the association between self-rated health (SRH) and QOL of university students with their sleep quality. **Methods:** A quantitative cross-sectional survey was carried out among 332 students of Patuakhali Science and Technology University (Bangladesh) aged from 18 to 25 years (mean = 21.6 years; standard deviation ± 1.7). Data were collected through one-to-one interviews using a pretested structured questionnaire. **Results:** There was a significant association between SRH and QOL with sleep quality. Students experiencing poor sleep quality had a 2.4 times higher risk for poor SRH (odds ratio [OR] = 2.45, 95% confidence interval [CI]: 1.21–4.95, $P$ = 0.012) The OR of poor QOL was 3.3 times higher among the students whose sleep quality was poor (OR = 3.38, 95% CI: 1.70–6.75, $P$ = 0.001). **Conclusion:** Study findings indicated that poor sleep quality adversely affects the health status and QOL of Bangladeshi university students. University authorities in Bangladesh should develop programs to improve the overall health and sleep quality of the students.

**Keywords:** *Bangladesh students, health, quality of life, sleep, university students*

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## Introduction

Sleep plays a vital role in maintaining good health and well-being through the life cycle. The National Sleep Foundation recommends 7–9 h of sleep for the 18–25 years' age group of young adults of whom many are university students.[1] However, a study conducted on a nationwide representative sample of the Bangladeshi population found that 8.9% of young adults sleep less than their recommended sleeping hours.[2] Among Asian university students, sleep-related problems are very common and adversely affects their health condition and academic performance.[3,4]

Self-rated health (SRH) measures have become popular tools for assessing subjective perception of health worldwide.[5] Quality of life (QOL) is a construct that has been assessed using SRH measures and is also important beccause it specifically assesses how an individual feels about their health status and other nonmedical aspects of life.[6] In recent years, several studies have indicated that sleep duration, as well as sleep quality, is an important predictor of an individual's health status.[7] A recent study conducted among university students from 21 countries showed a significant association between sleep duration with poor SRH and QOL.[7] To date, no previous study conducted in Bangladesh has examined the impact of poor SRH and QOL. Therefore, the main purpose of the present study was to address the association between SRH and QOL with sleep quality among university students in a small city of Bangladesh.

## Methods

### Design and participants

This quantitative survey was cross-sectional in nature, and the data were collected from the students of Patuakhali Science and Technology University (Bangladesh) to explore the study objectives. Completed surveys were collected from 332 students (response rate 94.5% among those that were asked to participate). Students were recruited from each of the seven faculties in the university. A list of the

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**Access this article online**

**Website:** www.shbonweb.com

**DOI:** 10.4103/SHB.SHB_15_20

**Quick Response Code:**

**How to cite this article:** Ahmed MS, Sen LC, Griffiths MD. Association between self-rated health and quality of life with sleep quality among Bangladeshi university students. Soc Health Behav 2020;3:35-7.

students with their registration number was collected from the respective faculty Dean's office, and this list was used as a sampling frame. From the sampling frame, students were selected randomly using a lottery method. Data were collected through one-to-one interviews using a pretested structured questionnaire from the students who were willing to participate.

## Measures

To assess the sleep quality of the students (past month), the Pittsburgh Sleep Quality Index (PSQI) was used.[8] The PSQI is the most used and validated psychometric scale that assesses subjective sleep quality. This tool has only previously been used in one Bangladesh study, but the psychometric properties were not reported.[9] For this present study, the Cronbach's alpha of the PSQI was good (0.73).

Two single-item questions were used to determine the SRH and QOL of the students. These two questions were taken from a previously published study.[6] SRH was determined from the question *"In general, how would you rate your overall health?"* Participants responded on a five-point Likert scale using the response categories: "excellent," "very good," "good," "fair," and "poor." For the present analysis, the reponses were collapsed to form two categories: good SRH (i.e., excellent/very good/good) and poor SRH (i.e., poor/fair). QOL was determined from the question *"In general, how would you rate your overall quality of life?"* The response categories were the same as for SRH and again the responses were collapsed to form two categories: good QOL (i.e., excellent/very good/good) and poor QOL (i.e., poor/fair).

## Statistical analysis

Descriptive statistics were run to assess the frequency and percentages of sociodemographic variables. Binary and multiple logistic regression was used to determine the odds ratio (OR), adjusted OR, and association between SRH and QOL with sleep quality of the students. The tests for the main effects were considered statistically significant at the $P < 0.05$ level. All statistical analyses were performed using the SPSS software for Windows version 23 (IBM, Armonk, NY, USA).

## Ethical consideration

All study procedures were carried out following the guidelines of the Helsinki Declaration 1975. Written informed consent was obtained from the participants before each survey was started. Ethical approval was obtained from the Institutional Ethical Committee of Patuakhali Science and Technology University (Ref. PSTU/IEC/2019/03).

## Results

Three hundred and thirty-two students were aged between 18 and 25 years (mean 21.6 years; standard deviation ± 1.7), and the majority of them were male

### Table 1: Sociodemographic profile of the participants (*n*=332)

| Variables | *n* (%) |
|---|---|
| Age (years) | |
| 18-21 | 168 (50.6) |
| 22-25 | 164 (49.4) |
| Gender | |
| Male | 214 (64.5) |
| Female | 118 (35.5) |
| Sleep quality | |
| Poor | 221 (66.6) |
| Good | 111 (33.4) |
| Self-rated health | |
| Poor | 58 (17.5) |
| Good | 274 (82.5) |
| Quality of life | |
| Poor | 71 (21.4) |
| Good | 261 (78.6) |

(64.5%). The prevalence of poor sleep quality, SRH, and QOL among the students was 66.6%, 17.5%, and 21.4%, respectively [Table 1].

Table 2 shows the association between sleep quality with SRH and QOL. There was a significant association between SRH and QOL and the sleep quality of university students. Students whose sleep quality was poor had a 2.4 times higher risk of poor SRH (OR = 2.45, 95% confidence interval [CI]: 1.21–4.95), and the association was statistically significant at the $P < 0.05$ level. After controlling for age and gender, the risk slightly reduced to 2.2 times higher risk (Adjusted Odds Ratio = 2.18, 95% CI: 1.06–4.48). The OR of poor QOL was 3.4 times higher among students whose sleep quality was poor (OR = 3.38, 95% CI: 1.70–6.75), and the association was statistically significant at the $P < 0.001$ level. After controlling for age and gender, the risk slightly increased to 3.5 times higher risk (Adjusted Odds Ratio = 3.48, 95% CI: 1.71–7.07, $P = 0.001$).

## Discussion

The results show that student's poor sleep quality was associated with poor SRH and poor QOL. These findings are similar to a previous study conducted among Croatian university students,[5] and those found by Steptoe *et al*. from a sample of university students from 21 countries.[7] Previous studies have also reported a strong association between sleep quality and SRH among young adults.[10,11] As the present study is the first to investigate the association between SRH and QOL with sleep quality in Bangladesh, there are no comparative Bangladeshi findings.

## Limitation

Given the study was a cross-sectional survey, it was not possible to establish a causal relationship between the variables examined. The major strengths of the present study were that sleep quality was assessed using a PSQI.

**Table 2: Logistic regression between self-rated health and quality of life with sleep quality of the students**

| Sleep quality | Self-rated health | | | | Quality of life | | | |
|---|---|---|---|---|---|---|---|---|
| | OR (95% CI) | *P* | AOR[a] (95%CI) | *P* | OR (95% CI) | *P* | AOR[a] (95%CI) | *P* |
| Good | Reference | | | | Reference | | | |
| Poor | 2.45 (1.21-4.95) | 0.012 | 2.18 (1.06-4.48) | 0.033 | 3.38 (1.70-6.75) | 0.001 | 3.48 (1.71-7.07) | 0.001 |

[a]Adjusted with respondent's age and sex. OR: Odds' ratio, AOR: Adjusted OR, CI: Confidence interval

A countrywide representative study is required to confirm and generalize the findings.

## Conclusion

Poor sleep quality adversely affects the health status and QOL of Bangladeshi university students. The study findings will be useful to help develop institutional-based interventions in Bangladesh to improve the overall health and sleep quality of the students given the relationship between the two.

### Financial support

Nil.

### Conflicts of interest

There are no conflicts of interest.

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