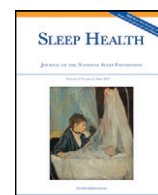




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## Sleep quality and psychological distress among undergraduate students of a Nigerian university

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### ABSTRACT

**Objectives:** The objectives of the study were to assess the sleep quality of undergraduate students in a Nigerian University, to determine its association with psychological distress, and to evaluate some of the factors associated with poor sleep quality among the students.

**Methods:** It is a descriptive cross-sectional study conducted among the undergraduate students of Obafemi Awolowo University, Ile-Ife. The multistage sampling method was used to select 520 study participants, and a self-administered instrument including a questionnaire on sociodemographic characteristics, Pittsburgh Sleep Quality index, General Health Questionnaire, and Hospital Anxiety-Depression Scale was administered.

**Results:** Out of 520 students who gave consent to participate in the study, 505 students (97.1%) returned a fully-completed questionnaire. Half of the students (50.1%; 95% confidence interval [CI], 45.7–54.5%) had poor sleep quality, with a minority (5.7%) taking sleep medications at least once or twice a week. About one-fourth (24.4%; 95% CI, 21.7–27.1%) had psychological distress. Among the demographic factors, the year of study ( $\chi^2 = 13.80 [P < .01]$ ) had significant association with poor sleep quality. Presence of psychological distress and symptoms of depression and anxiety were also significantly associated with poor sleep quality. The year of study, psychological distress, and anxiety symptoms were significant predictors of poor sleep quality among the students.

**Conclusion:** The strong association between psychological distress and quality of sleep further underscores the benefit of advocating for habits that can improve optimal mental health and sleep quality among the undergraduate students.

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### Introduction

Sleep plays an important physiological role in life. It has once been described as the single most important health behavior humans engage in. Healthy sleep patterns play a critical role in self-regulation—an executive function in the brain that controls our behaviors.<sup>1</sup> Repeated disruption of the natural sleep cycle or failure to initiate sleep can lead to a sleep deficit, which in turn causes physical, mental, and emotional fatigue.<sup>2</sup>

Sleep quality varies with sex and age. Female sex<sup>3,4</sup> and increased age<sup>5,6</sup> have been associated with a higher risk of poor sleep quality. Moreover, studies have documented high prevalence estimates ( $\geq 40\%$ )

of short sleep duration ( $< 7$  hours)<sup>7,8</sup> and poor sleep quality as measured by Pittsburgh Sleep Quality Index (PSQI)<sup>9,10</sup> among university students.

Among university students, poor sleep quality has been observed to be prevalent.<sup>11,12</sup> New social and academic environment, reduced parental supervision,<sup>13</sup> and increased demand for academic performance<sup>8</sup> are some of the factors attributed to poor sleep quality among undergraduate students. Also, the use of social media<sup>14</sup> and unhealthy lifestyle choices<sup>8</sup> have been identified to be important factors contributing to poor sleep quality in this population. Poor sleep quality has been observed to have a negative impact on academic functioning.<sup>11,15</sup> It has also been associated with increased risk for burnout,<sup>15</sup> psychoactive substance use,<sup>8</sup> fatigue,<sup>16</sup> and comorbid physical or psychological problems.<sup>17,18</sup>

Studies have documented symptoms of depression<sup>17,19,20</sup> and anxiety<sup>19,21</sup> to be common among university students with poor sleep. They have been associated with lower levels of satisfaction with life.<sup>22</sup> There is also evidence to suggest that individuals with

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significant psychological distress while being a student go on to have high level of distress during their professional careers.<sup>23</sup>

In Nigeria, because of the high poverty level, some students engage in menial jobs to augment tuition fees, which may contribute to disruption of sleep schedules. Furthermore, because of poor government funding, undergraduates are exposed to overcrowded classrooms, poor or nonexistent teaching aids, as well as scarce accommodation facilities,<sup>24</sup> which can contribute to stress in the academic environment, thereby affecting sleep. However, despite these, there is a dearth of research on sleep quality among Nigerian student population.<sup>11,12</sup> The few available ones described sleep quality among particular subsets of the student population.<sup>11,12</sup> This study aims to assess sleep quality among the entire student population of a Nigerian University and its association with psychological distress. It also identifies factors that may be associated with poor sleep quality among the students.

## Methods

### Study design and participants

A cross-sectional descriptive study was conducted among undergraduate students of Obafemi Awolowo University, Ile-Ife, who are residents within the school premises. Students who did not give consent were excluded from the study.

The sample size was estimated using the Kish's formula, as follows<sup>25</sup>:  $n = z^2p(1 - p) \div d^2$ , where

$n$  = required sample size,  $z$  = confidence level at 95% (standard value of 1.96),

$p$  = estimated prevalence rate, and  $d$  = margin of error at 5% (standard value of 0.05).

$n = 1.96^2 \cdot 0.325(1 - 0.325) \div 0.05^2$  using 32.5% from a previous study<sup>12</sup>; as the best estimate of poor sleep quality among medical students at a Nigerian University, a minimum sample size of 337.1 was calculated but was increased to 520 to increase the reliability of the study.

A multistage sampling method by means of probability proportionate to size was used to recruit the study participants. Participants were recruited via the halls of residence within the school premises. Two male and two female halls were selected randomly, and the number of participants per hall was determined by proportional sampling from the odd-numbered blocks in the halls. Participants were then recruited until the sample from each hall is complete.

Ethical clearance was approved by the Health Research Ethics Committee, Institute of Public Health, Obafemi Awolowo University, Ile-Ife.

## Measurement

### Sociodemographic questionnaire

Variables to assess sociodemographic status of the study participants were formulated by the authors. It includes questions on age, sex, year of study, and others.

### Pittsburgh Sleep Quality Index

Pittsburgh Sleep Quality Index (PSQI) is a self-administered and brief instrument to assess the sleep quality and some factors that can influence it over a 1-month period.<sup>26</sup> It consists of 19 self-rated questions and 5 questions rated by the bed partner or roommate (if one is available), which generate 7 component scores including sleep duration, sleep disturbance, habitual sleep efficiency, subjective sleep quality, use of sleep medication, daytime dysfunction, and sleep latency. Each component score ranges from 0 to 3 (0 score equals

better and 3 is worst). PSQI has good psychometric properties and has been validated among a student population in Nigeria.<sup>27</sup> A global score  $>5$  designates poor sleep quality, whereas a score  $\leq 5$  is considered good-quality sleep.<sup>27</sup>

### General Health Questionnaire

General Health Questionnaire (GHQ) is a self-administered screening questionnaire designed to detect those likely to have or be at risk of developing diagnosable psychiatric disorders.<sup>28</sup> The 12-item GHQ (GHQ-12) is an instrument used to screen for common mental disorders, in addition to being a more general measure of psychiatric well-being or psychological distress. Its brevity makes it attractive for use in busy clinical settings as well in settings in which patients need help to complete the questionnaire. It has been previously validated in this environment.<sup>29</sup>

This psychometric instrument was used to assess psychological distress in this study. Scoring was done using the binary system. Thus, the total score was 12, and scores of 3 and above were considered significant for psychological distress.

### Hospital Anxiety and Depression Scale

Hospital Anxiety and Depression Scale (HADS) is a self-rated screening instrument for anxiety and depressive disorders in nonpsychiatric units of the hospital.<sup>30</sup> It has also been found useful in the assessment of psychiatric morbidity in the community. It consists of 7 items each for depression and anxiety. Scores are rated on a 4-point scale ranging from 0 to 3. A cutoff point of 8 and above in either or both of the anxiety and depressive subscales indicates depression and/or anxiety. It has been validated for use in Nigeria.<sup>31</sup>

## Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS, Chicago, IL) version 20. The data were summarized using descriptive statistics such as proportion, frequency, and mean.  $\chi^2$  and Pearson correlation analyses were used to explore associations and relationships between variables. Binary logistic regression was used to determine the predictors with sleep quality being the dependent variable. A  $P$  value  $< .05$  was considered statistically significant in all cases.

## Results

### Demographic and psychological variables

Of 520 students who gave consent to participate in the study, 505 returned an appropriately-filled questionnaire, representing a response rate of 97.1%. Table 1 showed the results of the demographic and psychological variables. The age range of the participants was between 18 and 35 years (mean age [SD] = 21.9 [2.7]), and 50.5% were male. A significant proportion (97.1%) of the students were single. A minority (10.5%) were carrying over some courses from the previous semester. In our university system, students who failed some courses considered minor are allowed promotion to the next year of study. This creates extra burden on the students because they have to combine the failed courses with courses allocated for the current year. Aside from their academic program, 65 students (12.9%) engaged in other jobs on part-time basis.

One hundred and twenty-three students (24.4%; 95% confidence interval [CI], 21.7%-27.1%) had psychological distress (scored  $\geq 3$  on GHQ), whereas 83 students (16.4%; 95% CI, 13.2%-19.6%) reported anxiety (scored  $\geq 8$  on HADS) and 64 (12.7%; 95% CI, 9.8%-15.6%) reported depressive symptoms (scored  $\geq 8$  on HADS).

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