# Factors Associated with Poor Sleep among Young People in Mauritius: A Survey-Based Study 

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#### Abstract

Background: Poor sleep quality in young people is a global concern. This study was conducted to explore sleep quality and its contributory factors in young people of Mauritius. Methods: This cross-sectional study comprised 202 participants aged between 14 to 29 years. The Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS) and the Adolescent Sleep Hygiene Scale (ASHS) were used to measure sleep quality, daytime sleepiness, and sleep hygiene respectively. Chi-squared tests were conducted to evaluate relationships between the collected variables. Multivariate logistic regression was used to identify associated factors with poor sleep quality. Results: The mean global PSQI was 4.81 ( $95 \%$ CI: 4.4, 5.22). Prevalence of poor sleep quality (global PSQI score > 5) was $30.7 \%$. The male gender reported better sleep ( $p=0.008$ ). Sleep quality was significantly associated with longer sleep duration ( $p<0.0001$ ), pre-bedtime relaxing activities ( $p=0.01$ ), and daytime physical exercise ( $p=0.001$ ). In contrast, alcohol consumption after 18:00 ( $p<0.0001$ ), tobacco smoking after 18:00 ( $p<0.0001$ ), pre-bedtime awakening activities ( $p=0.001$ ), and poor sleep environment ( $p<0.0001$ ) negatively influenced sleep quality. Multivariate logistic regression confirmed that female gender and sleep environment factors were associated with higher likelihood of poor sleep quality, while participants with longer duration of sleep ( $>7$ hours), cognitive/emotional and sleep stability factors were less likely to have poor sleep quality. Conclusion: This study showed that the prevalence of poor sleep in young people in Mauritius was $30.7 \%$. Female gender and sleep environment factors were main contributory factors. These initial results can guide further research on sleep quality.


Key Words: Sleep Quality; Global Health; Prevalence; Mauritius; Sleep Hygiene; Cross-Sectional Studies (Source: MeSH-NLM).

## Introduction

Sufficient sleep is an essential human need and is comparable to other basic needs such as food, clothing, and shelter. ${ }^{1}$ In a systematic literature review carried out by Ohayon et al., ${ }^{2}$ selected criteria were validated as indicators of good sleep quality for teenagers and young adults. These were sleep latency within 30 minutes, waking up at most once per night, not waking up within 20 minutes after sleep onset, and having a minimum sleep efficiency, which compares sleep time to time spent in bed, of $85 \%$. With regards to sleep architecture in young people, having a maximum of one daily nap of fewer than 20 minutes implied good sleep quality.

Research studies from across the world have provided insights on the measures of sleep in young people and have suggested an important variation in sleep difficulties globally. A study from Hong Kong reported that 58.9\% of participants, aged between 12 to 17 years, had obtained less than 7 hours of sleep daily, with $72.3 \%$ having poor sleep quality, as assessed by the global PSQI score. ${ }^{3}$ A longitudinal study among Korean adolescents initially aged 15 , showed that $22.8 \%$ of youths had poor sleep quality, and $25.6 \%$ had short sleep duration. ${ }^{4}$ A large study from Slovakia in

13 - and 15-year olds indicated that $30 \%$ of girls and $17 \%$ of boys had difficulties in falling asleep. ${ }^{5}$ A cross-sectional survey among university students from 26 low- and middle-income countries confirmed major differences in the prevalence of sleep problems from $3 \%$ in Thailand to $28.9 \%$ in Indonesia. ${ }^{6}$ In the study, it was revealed that $15.3 \%$ of Mauritian youths, of average age 20.9 years, had faced nocturnal sleep problems in 2013. It was postulated that increased social stress could be a contributing factor. However, the reasons for this alarming figure could not be evaluated further due to the scarcity of sleep-related studies in Mauritius.

Numerous vital and obligatory processes occur during sleep to help people stay healthy in the physical, mental, and emotional domains. For children and adolescents, sleep is fundamental as important physical developments occur in these age groups. Getting an adequate amount of sleep has multiple benefits: sleep stimulates tissue repair and growth, enhances the immune system, and consolidates memory and learning. ${ }^{7}$ On the other hand, failing to reach the sleep recommendations may lead to behavioral problems, such as not being able to follow instructions, cognitive impairment, depression, anxiety, and lack

[^0]of self-control, which can increase the risk of severe illnesses and accidents. ${ }^{8}$ Furthermore, dementia and chronic pain can result from advanced sleep disturbances. ${ }^{9}$ It has been noted that an irregular sleep pattern in adolescents and young adults is related to negative changes in brain development, decreases the duration of sleep, and prevents the medial prefrontal cortex from functioning properly. ${ }^{10}$ Smiley et al. ${ }^{11}$ reported that both short and long sleep duration increased the likelihood of developing metabolic syndrome. Both acute sleep deprivation of more than 2 hours per night and chronic sleep deprivation of 1 to 4 hours per night worsened driving attitudes among youngsters at the wheel. ${ }^{12}$ In another study, ${ }^{13}$ poor sleep quality was associated with aggression, anxiety, antisocial personalities, attentiondeficit/hyperactivity problems, depression, and somatic complaints in adolescents, even though they had good sleep hygiene.

Numerous factors can affect the sleep quality in young people. These include age, gender, substance use (caffeine, alcohol, nicotine, cannabis, cocaine, and opioids), stimulants (prescribed or recreational), mobile phone addiction, physical exercise, and the bedroom environment. Moreover, traveling to other countries with a different time zone affects the sleep pattern as the circadian rhythm is disturbed. ${ }^{3}$ Some studies have shown that medical students have poor sleep hygiene as they choose to sleep less to cope with their heavy syllabus. Almojali et al., ${ }^{14}$ reported that the prevalence of poor sleep quality in his study among Saudi medical students was $76 \%$ and this was associated with a decline in academic performance. Furthermore, in the study by Heijdenet al, ${ }^{15}$ teenagers who had media devices in their bedroom were shown to have insufficient sleep and had daytime sleepiness when compared to those who had few such devices. Regarding lifestyle factors, a study ${ }^{16}$ showed that one exercise session performed five or more days a week could enhance the perception of sleep quality by $50 \%$ in youngsters.

Several studies have demonstrated that sleep problems are increasing in young people worldwide. However, there is little documentation regarding the factors that impact the quality of sleep in young people, with no previously diagnosed sleep disorders in Mauritius. This study explores the factors associated with poor sleep in such young people.

## Methods

## Study Design

This cross-sectional study was carried out to investigate the factors associated with poor sleep among young people aged between 14 and 29 years in Mauritius. Ethical clearance was granted by the Ethics Sub-Committee of the Ministry of Health and Wellness (Reference: MHC/CT/NETH/2019/V2). Participants were selected using a snowball sampling method across a young population of 290,111 out of the 1.27 million inhabitants of Mauritius. The time frame was from November 19, 2019 to January 31, 2020. University students were initially recruited, and they subsequently referred their contacts from all over the island. A sample size of 384 was calculated at a $95 \%$ confidence level
with a $5 \%$ margin of error. The purpose of the study was explained to each participant in a non-technical language. Consent forms were signed either by the participants themselves (if they were above 18 years) or by responsible parties of minor participants. They were assured that anonymity and confidentiality would be maintained throughout the research process, and that they could withdraw from the study at any time. The questionnaires were completed with the help of the study investigator during face-toface interviews. Out of an initial 384 potential participants, only 202 people completed the study questionnaires.

## Questionnaire

The questionnaires used were the Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS), and the Adolescent Sleep Hygiene Scale (ASHS).

The PSQI is a self-reported questionnaire used to assess sleep quality over one month and yields seven component scores (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction). The questions were scored on a 0 to 3scale basis. The total of these scores gave the Global PSQI score, ranging from 0 to 21. A global PSQI score greater than 5 indicated poor sleep quality.

The ESS is a self-administered questionnaire used to assess daytime sleepiness. In this study, daytime sleepiness was assessed over a period of one month. The questionnaire comprised of eight questions that included different circumstances in everyday life, where a person may feel sleepy during the day. Each question had four possible responses: $0,1,2$, or 3 . The sum of all the responses produced the ESS score, ranging from 0 to 24 . Higher scores indicate a greater tendency to fall asleep. Scores from 0 to 5 indicate lower normal daytime sleepiness, scores from 6 to 10 indicate higher normal daytime sleepiness, scores from 11 to 12 indicate mild excessive daytime sleepiness, scores from 13 to 15 indicate moderate excessive daytime sleepiness, and scores from 16 to 24 indicate severe excessive daytime sleepiness. ${ }^{17}$

The ASHS is a self-report questionnaire used to assess sleep hygiene behaviors. This section contains 33 questions based on sleep hygiene, which can affect sleep quality and quantity during the past month. The scale is divided into eight subscales: (1) physiological factor, (2) behavioral arousal factor, (3) cognitive/ emotional factor, (4) sleep environment factor, (5) sleep stability factor, (6) daytime sleep factor, (7) substances factor and (8) bedtime routine factor. ${ }^{18}$ Each question had six responses: never, once in a while, sometimes, quite often, frequently, and always. One factor is reverse coded. In order to obtain the subscale and final scores, averages were taken so that the ASHS scores range from 1 to 6 . The higher the scores, the better the sleep hygiene.

## Statistical Analysis

The data from all 202 questionnaires were recorded and analyzed in IBM SPSS Statistics 25 . Results were shown in the form of tables
and charts. Inferential statistics such as the chi-squared test were used to test for any relationships between the collected variables. If the $p$-value obtained was less than 0.05 , the relationship was considered statistically significant. We used a multivariate logistic regression model to identify associated factors with poor sleep quality. Sleep duration was recoded to fit the model in the following categories: $<7$ hours or $>7$ hours. Variables with a pvalue $<0.20$ in the univariate regressions with sleep quality as the dependent variable were included in the multivariate model. Variance inflation factor and Pearson's goodness-of-fit test were used to evaluate the model.

## Results

A total of 202 participants completed the questionnaire; $39.6 \%$ were males, and $60.4 \%$ were females. The mean age was 20.8 years (standard deviation $(S D)=4.3)$. The most typical age range was between 18 and 21 years (34.7\%). Most of the participants (64.9\%) were students. Table 1 shows a summary of the profile of the participants. None of the participants had any previously diagnosed sleep disorders.

Table 2 summarizes the sleep schedules and sleep latency of participants. Figure 1 shows the time at which participants went to bed. The mean bedtime was 23:08, and the most common bedtime interval was 22:00 to 23:00 (25.2\%). The most popular wake-up time interval was 05:00 to 06:00 (34.2\%), and the mean wake-up time was $06: 55$. Overall, $73.8 \%$ of the participants took at most 15 minutes to fall asleep, while $2.5 \%$ required more than 60 minutes. The mean time taken to fall asleep was 20.7 minutes ( $S D=16.2$ ). Regarding the duration of sleep, $64.4 \%$ of the participants slept for more than 7 hours, and $2.5 \%$ had less than 5 hours of sleep. The mean duration of sleep was 7.7 hours (SD = 4.1). On average, $35.6 \%$ of the participants slept for less than 7 hours and were considered poor sleepers, as described in recent literature. ${ }^{3}$ Among the poor sleepers, $68.6 \%$ were females and $31.3 \%$ were males.

Table 1. Gender, Age, and Employment Profile of the Participants in the Study about Sleep Quality among Young People in Mauritius.

| Variables | Number of participants (\%) |
| :--- | :---: |
| Gender |  |
| Male | $80(39.6)$ |
| Female | $122(60.4)$ |
| Age |  |
| $14-17$ | $49(24.3)$ |
| $18-21$ | $70(34.7)$ |
| $22-25$ | $48(23.8)$ |
| $26-29$ | $35(17.3)$ |
| Employment Status |  |
| Employed | $53(26.2)$ |
| Unemployed | $18(8.9)$ |
| Student | $131(64.9)$ |
| Total | $202(100)$ |

Table 3 summarizes the distribution of the sleep hygiene practices of the participants during the past month of the study. Overall, 48.0\% of the participants frequently or always performed some awakening activities such as playing video games or watching television in bed before sleeping while $62.9 \%$ of the participants never or rarely followed a bedtime routine. Furthermore, $16.8 \%$ of the participants took a nap in the evening after 6 o'clock.

Among the participants, 69.3\% had good sleep quality, and 30.7\% had a PSQI score of greater than 5 , indicating poor sleep quality. More females (37.7\%) reported poor sleep quality than males (20.0\%). The mean PSQI score was 4.8 (SD = 2.9). Additionally, $29.7 \%$ and $57.9 \%$ of the participants reported their subjective sleep quality as "very good" and "fairly good" respectively. Moreover, $10.9 \%$ and $1.5 \%$ described their sleep quality as "fairly bad" and "very bad" respectively.

Table 2. Sleep Schedules and Sleep Latency of the Participants in the Study about Sleep Quality among Young People in Mauritius.

| Variable | Percentage (\%) |
| :--- | :---: |
| Wake-up time (hour) |  |
| 04:00-05:00 | 18.3 |
| 05:00-06:00 | 34.2 |
| 06:00-07:00 | 18.3 |
| 07:00-08:00 | 15.8 |
| 08:00-09:00 | 7.4 |
| $09: 00-10: 00$ | 5.4 |
| 10:00-11:00 | 0.6 |
| Time taken to fall asleep (minutes) |  |
| Less or equal to 15 | 73.7 |
| 16 to 30 | 23 |
| 31 to 60 | 25 |
| More than 60 | 5 |

Figure 1. Time at Which Participants Went to Bed in the Study "Factors Associated with Poor Sleep among Young People in Mauritius."


Regarding sleep quality, there was a positive association with the male gender $(p=0.008)$, a longer sleep duration ( $p<0.001$ ), performing relaxing activities one hour before bedtime ( $p=0.01$ ), and physical exercise during the day for more than 20 minutes ( $p=0.001$ ). In contrast, the following factors negatively impacted sleep quality: alcohol consumption after 18:00 ( $p<0.001$ ), tobacco smoking after 18:00 ( $\mathrm{p}<0.001$ ), pre-bedtime awakening activities ( $p=0.001$ ), and poor sleep environment ( $p<0.001$ ). The findings are summarized in Table 4.

Most of the participants (39.1\%) had higher normal daytime sleepiness, and $28.2 \%$ had lower normal daytime sleepiness as measured by the ESS. 11.4\% had mild excessive daytime sleepiness, and $17.8 \%$ had moderate excessive daytime sleepiness. $3.5 \%$ showed severe excessive daytime sleepiness.

Results from multivariate logistic regression confirmed that the female gender and sleep environment factors were associated with higher likelihood of poor sleeping quality, while participants with longer duration of sleep ( $>7$ hours), cognitive/emotional and sleep stability factors were found to be less likely to have poor sleep quality as shown in Table 5. The final model VIF was <10 and the Pearson's goodness-of-fit test $>0.05$, therefore the model was adequate.

Table 3. Sleep Hygiene Practices of the Participants in the Study about Sleep Quality among Young People in Mauritius.

| Sleep hygiene practices | n (\%) |
| :---: | :---: |
| Have caffeinated drinks after 06.00 pm |  |
| Never/Rarely | 149 (73.8) |
| Frequently/Always | 53 (26.2) |
| Perform physical activities after 6:00 pm |  |
| Never/Rarely | 156 (77.2) |
| Frequently/Always | 46 (22.8) |
| Smoke after 06:00 pm |  |
| Never/Rarely | 189 (93.6) |
| Frequently/Always | 13 (6.4) |
| Consume alcoholic drink after 6:00 pm |  |
| Never/Rarely | 188 (93.1) |
| Frequently/Always | 14 (6.93) |
| Perform relaxing activities 1 hour before bedtime |  |
| Never/Rarely | 74 (36.6) |
| Frequently/Always | 128 (63.4) |
| Do things that make the participants awake in bed |  |
| Never/Rarely | 105 (52.0) |
| Frequently/Always | 97 (48.0) |
| Have a bedtime routine |  |
| Never/Rarely | 127 (62.9) |
| Frequently/Always | 37.1 (75) |
| Take a nap after 06:00 pm |  |
| Never/Rarely | 168 (83.2) |
| Frequently/Always | 34 (16.8) |

Table 4. Factors Associated with Sleep Quality among the Participants in the Study about Sleep Quality among Young People in Mauritius.

| Characteristics | Sleep quality |  | p-value |
| :---: | :---: | :---: | :---: |
|  | Good, n (\%) | Poor, n (\%) |  |
| Gender |  |  | 0.008 |
| Male | 64 (31.7) | 16 (7.9) |  |
| Female | 76 (37.6) | 46 (22.8) |  |
| Sleep duration |  |  | <0.001 |
| Category 1 (> 7 hours) | 113 (55.9) | 17 (8.4) |  |
| Category 2 (6-7 hours) | 21 (10.4) | 26 (12.9) |  |
| Category 3 (5-6 hours) | 6 (3.0) | 14 (6.9) |  |
| Category 4 (< 5 hours) | 0 (0.0) | 5 (2.5) |  |
| Alcohol consumption |  |  | <0.001 |
| Never | 95 (47.0) | 47 (23.3) |  |
| Once in a while | 17 (8.4) | 8 (4.0) |  |
| Sometimes | 17 (8.4) | 4 (2.0) |  |
| Quite often | 4 (2.0) | 3 (1.5) |  |
| Always | 7 (3.5) | 0 (0.0) |  |
| Smoking |  |  | <0.001 |
| Never | 120 (59.4) | 54 (26.7) |  |
| Once in a while | 5 (2.5) | 4 (2.0) |  |
| Sometimes | 6 (3.0) | 0 (0.0) |  |
| Quite often | 1 (0.5) | 2 (1.0) |  |
| Frequently | 3 (1.5) | 0 (0.0) |  |
| Always | 5 (2.5) | 2 (1.0) |  |
| Awakening activities |  |  | 0.001 |
| Never | 29 (14.4) | 16 (7.9) |  |
| Once in a while | 22 (10.9) | 15 (7.4) |  |
| Sometimes | 27 (13.4) | 7 (3.5) |  |
| Quite often | 17 (8.4) | 7 (3.5) |  |
| Frequently | 10 (5.0) | 7 (3.5) |  |
| Always | 35 (17.3) | 10 (5.0) |  |
| Sleep environment |  |  | <0.001 |
| <2 | 4 (2.0) | 0 (0.0) |  |
| 2.1-3 | 5 (2.5) | 2 (1.0) |  |
| 3.1-4 | 20 (10.0) | 4 (2.0) |  |
| 4.1-5 | 45 (22.3) | 17 (8.5) |  |
| 5.1-6 | 66 (32.5) | 39 (19.3) |  |
| Physical exercise |  |  | 0.001 |
| Never | 52 (25.7) | 20 (9.9) |  |
| Once in a while | 32 (15.8) | 22 (10.9) |  |
| Sometimes | 18 (8.9) | 12 (5.9) |  |
| Quite often | 12 (5.9) | 3 (1.5) |  |
| Frequently | 16 (7.9) | 3 (1.5) |  |
| Always | 10 (5.0) | 2 (1.0) |  |
| Relaxing activities |  |  | 0.010 |
| Never | 20 (9.9) | 2 (1.0) |  |
| Once in a while | 18 (8.9) | 8 (4.0) |  |
| Sometimes | 18 (8.9) | 8 (4.0) |  |
| Quite often | 29 (14.4) | 7 (3.5) |  |
| Frequently | 23 (11.4) | 23 (11.4) |  |
| Always | 32 (15.8) | 14 (6.9) |  |

## Discussion

This is the first study on sleep quality among youths in Mauritius using validated questionnaires such as PSQI, ESS, and ASHS. There is a lack of local data on sleep issues in this age group, which makes contextualization of results difficult. A previous international study, which had comprised Mauritian university students, ${ }^{6}$ had assessed nocturnal sleep problems based on a general question on sleep problems with five options. Their results had shown that $15.3 \%$ of local participants had reported sleep problems in 2013. In our study, we found that poor sleep quality, as quantified by the PSQI scale, was experienced by $30.7 \%$ of local youngsters in 2019/2020. Although different methodologies underpinned the studies, the results suggest an increase in poor sleep quality in Mauritian young people in the last decade.

Our findings are also consistent with selected international population estimates of sleep quality. In a study carried out in China ${ }^{19}$ among college students (using the PSQI instrument in 2016), $31 \%$ of participants had poor sleep quality. Higher prevalence of poor sleep has been reported in the literature. A recent study conducted in three European countries ${ }^{20}$ namely Spain, Iceland, and Estonia showed that 44\% of boys and 53\% of girls aged 13 to 16 years had poor sleep quality as determined by the PSQI scale. Other studies using different methodologies and instruments have also reported a high proportion of young people experiencing poor sleep. A longitudinal study was carried out from 2015 to 2018 in New York city ${ }^{21}$ where sleep quality was explored by the use of wearable sleep tracking mobile technology, and it reported that good sleep quality was experienced by only $21.56 \%$ of teenagers and $19 \%$ of young adults, highlighting the high prevalence of poor sleep in young people.

In our study, a significant relationship between gender and sleep quality was observed, with males experiencing better sleep quality on the PSQI scale. This was confirmed by multivariate logistic regression. Several studies ${ }^{22,23}$ have reported poorer sleep quality in young females, although this is not a consistent finding in all studies. A study ${ }^{23}$ in college students aged 18-24 years, which used 7-day sleep logs to assess sleep variables, revealed that the female students had earlier bedtimes and rise times, longer sleep latency, woke up more frequently at night, and had poorer sleep quality than male students throughout the week and during weekends. With respect to the study, ${ }^{23}$ it is noteworthy that most of the female students were single, had no bed partners, and had no children, which could have contributed to the sleep disturbances. Although there are no clear explanations for the gender differences in sleep quality, it has been postulated that biological, societal, and psychosocial features play an important role, and that gender differences in the self-reporting of symptoms also contribute to the findings. ${ }^{22,23}$

The relationship between alcohol consumption and sleep quality is not straightforward. Alcohol has sedative effects via its effects on the mediators of sleep homeostasis and decreases sleep latency in non-alcoholic people. But it also disturbs sleep
homeostasis and sleep architecture, causing sleep disruptions in alcoholics. ${ }^{24}$ In a large community-based study in China, higher alcohol consumption and hard liquor were reported to be significantly associated with poor sleep quality. ${ }^{25}$ In our study, we did not quantify the alcohol intake nor the type of alcohol consumed, and therefore, could not assess the influence of alcohol on sleep precisely. However, our results clearly showed that alcohol consumption after 18:00 negatively impacted on sleep quality. Similarly, we found that tobacco smoking after 18:00 had an adverse effect on sleep quality. Other studies have also reported an association between nicotine dependence and poor sleep, and specifically between PSQI scores and the number of cigarettes smoked per day ${ }^{26}$. Nicotine is a well-known stimulant and raises alertness, and when consumed before sleeping, it can affect sleep latency and may change the circadian rhythm, ${ }^{27}$ leading to poor sleep.

We found that awakening activities performed 1 hour before bedtime, such as using screen-based electronic devices such as television viewing, video games, computer, tablet, and smartphone, were associated with poor sleep quality. This finding is consistent with an increasing body of evidence linking the usage of electronic and screen media devices in the bedroom with poor sleep in youths. ${ }^{28,29}$ Explanations for this finding include displacement of sleep by awakening activities, physiological and psychological stimulation of the user with interactive forms of the media especially social media use, and exposure to bright light influencing the circadian rhythm. ${ }^{28,29}$ Indeed, some studies have shown that sleep quality and other sleep variables can be negatively influenced by only the presence of a portable screenbased media device in the bedroom, ${ }^{28,29}$ highlighting the insidious negative impact of such devices on sleep.

Results from multivariate logistic regression also confirmed that sleep environment factors were associated with higher likelihood of poor sleeping quality, while participants with longer duration of sleep ( $>7$ hours), cognitive/emotional and sleep stability factors were less likely to have poor sleep quality. The sleep environment is important for sleep quality, and it has been reported that both physical and social features of the environment at both household and neighborhood levels can influence sleep health. ${ }^{30}$ In our study, we found a significant association between sleep environment and sleep quality. We focused on the physical aspects of the sleep environment at the

Table 5. Associated Factors with Poor Sleep Quality in Participants in the Study about Sleep Quality among Young People in Mauritius.

| Independent variables | uOR | $\mathbf{9 5 \%}$ CI | aOR | $\mathbf{9 5 \%}$ CI | p-value |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Gender category | 2.42 | $1.25-4.68$ | 2.41 | $1.05-5.53$ | 0.038 |
| Sleep duration | 0.09 | $0.04-0.18$ | 0.10 | $0.04-0.21$ | 0.000 |
| Cognitive or emotional factor | 0.54 | $0.41-0.72$ | 0.53 | $0.35-0.83$ | 0.005 |
| Sleep environment factor | 1.4 | $0.98-1.98$ | 1.99 | $1.20-3.31$ | 0.007 |
| Sleep stability factor | 0.68 | $0.54-0.86$ | 0.74 | $0.54-1.01$ | 0.059 |

Legend: uOR: Unadjusted odds ratio; 95\% CI: 95\% confidence interval; aOR: Adjusted odds ratio.
household level, namely the brightness level of the room, the room temperature, and the quality of the bed. We did not study the neighborhood context, family structures, socioeconomic environments, or parental behaviors that could also influence sleep habits. ${ }^{30}$ On the other hand, we noted that good sleep quality was significantly associated with longer sleep duration, pre-bedtime relaxing activities, and daytime physical exercise of more than 20 minutes.

This study has several limitations. A snowball sampling method was used to recruit participants and hence, caution needs to be exercised when extrapolating the findings to the young population of the island. The study relied on the self-reporting of symptoms. These may be less reliable than sleep studies using sleep-tracking devices and actigraphy. The utilization of more objective measures of sleep could have added further insights into the sleeping patterns of the participants. Comparison of the results with other local studies was limited due to a lack of locally published literature. In addition, the questionnaires used in this study assessed sleepovers for a limited period of time, so the results do not necessarily reflect enduring patterns. Nonetheless, our findings add to the current body of knowledge regarding sleep quality, expand on sleep data that could guide future research in the topic, and promote awareness of the factors which contribute to poor sleep in Mauritius so that remedial actions can be taken to prevent detrimental health consequences of poor sleep in young people.

## Summary - Accelerating Translation

Title: Factors Associated with Poor Sleep among Young People in Mauritius: A Survey-Based Study

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Main problem to solve: There is a lack of data regarding sleeping habits in young people in Mauritius. This is an important topic as deprivation of good quality sleep at a young age can contribute to many health conditions in later life.

Aims of the study: In this study, we investigate the prevalence of poor sleep among young people in Mauritius, and its associated contributory factors.

Methodology: We conducted a survey among young people in Mauritius. We were able to recruit 202 participants. We used well-known questionnaires to determine the quality of sleep such as the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality, the Epworth Sleepiness Scale (ESS) to evaluate daytime sleepiness, and the Adolescent Sleep Hygiene Scale (ASHS) to assess sleep hygiene.

Results: The prevalence of poor sleep quality was $30.7 \%$. Our results showed that $35.6 \%$ of the participants slept less than seven hours over a period of one month. Young males reported better sleep quality than young females, and sleep quality was associated with longer sleep duration, pre-bedtime relaxing activities, and daytime physical exercise of more than 20 minutes. In contrast, alcohol consumption after 18:00, tobacco smoking after 18:00, pre-bedtime awakening activities, and poor sleep environment negatively influenced sleep quality.

Conclusion: This study showed that a significant percentage of young people had poor sleep quality. This was observed to be associated to several factors. Female gender and sleep environment factors were main contributory factors. These initial results can help to guide further research on sleep quality in Mauritius.
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