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Sleep Quality and Its Correlates Among Adolescents-Cross Sectional Study

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ABSTRACT

Sleep quality has a long-term impact on health leading to depression among adolescent students. We conducted a cross-sectional study to assess the prevalenceofsleepqualityanditsassociatedfactorsamongadolescentsofhigher secondary school. 514 adolescents from different schools were selected by the probability proportionate to size (PPS) method. The Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality among adolescents.

Frequency distribution and percentage were identified as descriptive analysis whereas chi-square test was done. Variables that were found statistically significant ($P < 0{:}05$) were further analyzed using the logistic regression model. Theprevalenceofsleepqualityinthisstudywas39.1%. In an analysis, religions, place of residence, satisfaction with academic performance, relationship with friends or classmates, more use of internet per day, and use of internet before falling asleep were found to be statistically significant with sleep quality. The overall prevalence of sleep quality among school going adolescent students was 39.1 percent which was comparatively high

1. INTRODUCTION

Sleep is an important physiological process for human beings.It is considered one of the major contributing factors for the physical and mental health well- being, especially among the adolescents. Sleep plays vital roles in the somatic, cognitive, and psychological process. Even though the direct benefits of sleep are not well quantified across many populations, it is understood that sleep disorder has serious health issues. Sleep deprivation is the condition of not having enough sleep than the average. The amount of sleep required may vary from person to person but on average most of the adults required 8-10 hours of sleepfromage14to17yearsand7-9hoursofsleepfromage18to25years.Sleep deprivation can be either chronic or acute. Adolescents with sleep deprivation report more depression, anxiety, inattention, conduct problems, drug and alcohol use (abuse), impaired academic performance, and suicidal thoughts and behaviors. Sleep habits include bedtime, wake-up time, and sleep duration.

There are Sleep Disorders numerous evidences regarding the negative effects of sleeping disorders on mental health of adolescents. The available research advocates that sleeping disorders are related with short fall in functioning across a wide range of indicators of psychological, interpersonal, and well-being. Sleep disorders are considered to be harmful to adolescents as it may decrease the work efficiency and learning ability. Sleep quality leads to issues with learning and behaviours.Adolescentswhodonotgetproperandadequatesleeparemorelikely to(be)inattentive,distracted,uninterested,impulsive,andhyperactive.Sustained, untreated sleeping disorder may lead to major depression, anxiety disorders, and substanceabuse.Variousfactorsdecidesleepquality(suchasage,gender,habitat, BMI, physical activity or sports). Heavy smoking, frequent alcohol and coffee intake, lack of regular exercise, poor diet, and skipping breakfast are associated with short sleep duration and insomnia among adolescents. Short-term effects of sleepdisorderinschool-agedchildrenandadolescentsmanifestasdaytimefatigue only while medium-term effects have been associated with daytime sleepiness and behavior problems. Attention deficit/hyperactivity disorder has been associated with sleep disorders among children and adolescents. Evidences show a strong association between sleep quality and poor academic performance of the adolescents. Epidemiological studies conducted in West Bengal and Karnataka has reported prevalence of sleeping disorder-related

Symptoms ranging from 20% to 48%. Students experiencing number of sleep problems may have impact on their academic performance, health, and mood. Sleepqualityisthecommonproblemamongcollegestudents.Bothbiologicaland social factors contribute to sleep quality. Adolescents' sleep pattern requires specific attention because it may affect the academic environment. Adolescents comparatively have insufficient sleep than younger children because of their daily Schedule and the physical, mental, and emotional changes they are going through. Thus, we tried to assess sleep quality and its correlates among adolescents of selected schools. **The overall aims of the study to assess the prevalence of sleep quality and its associated factors among adolescents of higher secondary school**

authors give historical background information on the topic, present current issues and concerns, highlight the aims and relevance of the study [1].

2. METHODS

A school-based descriptive cross-sectional study was conducted among the adolescent students of age 15-19 years currently studying in grade 11 and 12 of rural area. Sample Size. The sample size was determined by using the prevalence of 21.2% (prevalence was obtained from study conducted in trichy district schools) with confidence level 95% and allowable error 5%.

Where$n$istherequiredsamplesize,α=5%(desiredlevelofsignificance),$Z\alpha$=

$Z0.05$=1.96(from normal table),P=21.2%, i.e.,0.212 (prevalence),Q= 1 −P

=0.788, and E=0.05(desired error).n0 =1.96.

3. SAMPLING TECHNIQUE

Among the total schools, 2 were selected randomly by using the lottery method. Among them,1 was private schools and 1was public schools.Thetotalnumberofstudentsinpublicwas400andprivatewas350.After that by using probability proportionate to size(PPS), schools were selected in equalnumber,i.e.,onefromeachcategory.Asthetotalnumberofstudentsinboth public and private were almost equal. Then, in the second stage, the sample size from each school was determined proportionately ,and finally, further stratificationwasdoneinclass11and12andfromeachfaculty(science and

History).The sample frame was prepared from the school attendance. The required sample of 514 was selected by a random number table through excel. Adolescent students aged between 15 and 19 years who were present during the day of data collectionwereincludedinthisstudy.Thosestudentswhowereabsentandrefused to participate were replaced by randomly selected new participants.2.3. Data Collection Tools. Semi structured self-administrated questionnaire was used fordatacollection.Thequestionnaireincludedsociodemographicinformationand behavioral and psychologicalcharacteristicsofstudents.Sleep quality was measured by the Pittsburgh Sleep Quality Index (PSQI).PSQI is an effective instrumentusedtomeasurethequalityandpatternsofsleep.Itisabrief, reliable, standardize valid self-report instrument. It differentiates “poor” from “good” Sleep by measuring seven domains. Subjective sleep quality, sleepduration, sleeplatency, habitualsleepefficiency, andsleepdisturbances, useofsleepmedication, and daytime dysfunction over the last month. Scoring of the answer was based on a“0”to“3”scale, where by 3reflectedthe negative extreme on Likert’sscale. PSQIscorerangesfrom0to21inwhichagreaterscoresuggestspoorsleep quality. PSQIglobalscore>5wasusedwhichhadasensitivityof89.6% and specificity of 86.5%, to determine the quality of sleep of adolescent students In this study, only a self-rated questionnaire are included.

4. DATA COLLECTION PROCEDURE AND TECHNIQUE

The questionnaire was in their language and piloted in 50 individuals before use in the survey. A translated version of PSQI used in this study has Cronbach’s alpha of 0.76. Participants were briefed about the study objectives, and parental consent was taken for the respondents aged below 18 years. Data were collected in separate classroom(s). Participants were briefed about the techniques of filling the questionnaire. Seating arrangements of the students were made properly in such a way that chances of peeking each other’s answers were as low as possible.

Figure 1 shows that the prevalence of sleep quality was found to be 39.1% among adolescents.

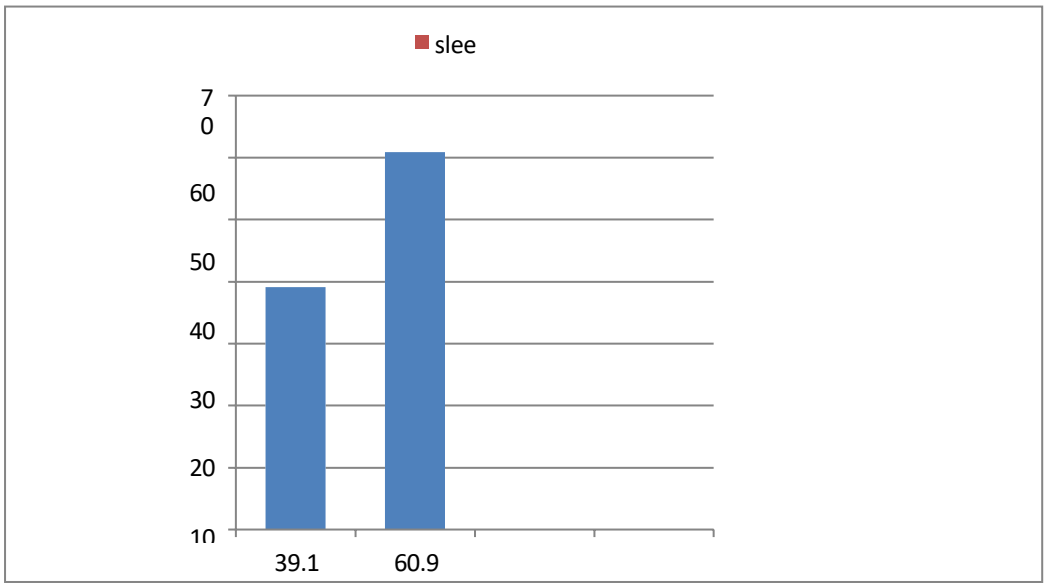

Table 1 represents educational characteristics of the students. 55.8 percent of the respondent was from grade 11.

More than forty out of hundred (41.1%) were studying in the management faculty. Four-fifths (80.4%) of the students currently studying their respective facultywasbecauseoftheirownpreferenceandmorethanthree-quarters (78.2%) passed in their previous exams. About two-thirds (64.6%) of the students were not satisfied with their academic performance. It also represents the behavioral characteristics of respondents. Majorities (93.2%) of the students were non tobacco users, and 93.8% of students have never had alcohol.

Almosthalfoftherespondentsusedinternetuptotwohoursdaily.About67%of the respondents used minimum of 1 hour of internet before going to bed. Similarly, it portrays psychological factors of respondents. More than three quarters (79.0%) report that theyhavehadconflictintheirfamilies.Majority(93.0%)oftheparentsneverscoldtheirchildrenmoreoften.Almosthalf(49.2%)

Of the students had a good relationship with friends, and about one-third (32.3%) of students had good relationship with teachers as well. Students frequently shared their feeling more with their close friends than with family.

Table1: Demographic and economic characteristics of respondents and their family (*n* = 514).

Characteristics Age ≤17 >17	***n*(%)** 275 (53.5) 239 (46.5)
Age mean age±SD(years)17*:*4±0*:*9 **Gender** Male Female	 270 (52.5) 244 (47.5)
Religion Hindu Christian	461 (89.7) 53 (10.3)
Place of residence Urban Rural	 401 (78.0) 113(22.0)
Type of family Nuclear Joint family	338 (65.8)

	176(34.2)
Monthly income of family(in Rs) ≤25000 >25000	301 (58.6) 213 (41.4)
Educational status of father ≤Secondary >Secondary	354 (68.9) 160 (31.1)

Occupational status of father	
coolie Business/job Other#	202 (39.3) 275 (53.5) 37 (7.2
Occupational status of mother Coolie Business/job Other	291 (56.6) 211 (41.1) 12 (2.3)
Drinking habit of father Yes	195 (37.9)
Type of school Public Private	252 (49.1) 262 (50.9)
Satisfied with academic performance Yes No	332 (64.6) 182 (35.4)
Physical exercise Regularly Frequently Occasionally Rarely Never	62 (12.1) 51 (9.9) 329 (64.0) 44 (8.6) 28 (5.4)
Participate in extracurricular activities Yes	209 (56.3)
Time spend on internet(hours) ≤2 >2	266 (51.8) 248 (48.2)

5. RESULTS

Table 1 represents the demographical and economical characteristics of 514 respondents.Meanage (in years) of the respondents was17.4(SD±0:92).Almost half of the students were male (52.5%). Almost three-fifths of the 89.7% of the students were from Hindu religion, whereas 10.3 % were Christian receding in theurbanandruralarea.Majority(65.8%)ofthestudentsliveinanuclearfamily and family size as mean ± SD of 5:51 ± 2:12. Majority (91.6%) of the parents were living together. More than 41% of the family monthly income was more than twenty-five thousand) in urban area, which is considered a less income in ruralcontext.Regardingcharacteristicsofrespondent'sparents, about 69%ofthe respondent'sfatherhadstudiedbelowsecondarylevelandmorethaneightoutof ten (82%) of the respondents' mother had studied below secondary level. Most of the student's parents were involved in coolie (53.5%) as their major occupation.

6. DISCUSSION

This was a correlation study with a primary purpose of finding the factors associated with sleep quality among adolescents of selected schools. In this study, the percentage of boys and girls was almost equal. All the school students were aged from 15 to 19 years. 10.3 percent of the respondents were from Christian, and 89.7 percent of the students followed Hindu. Mean. Almost half of the students' fathers were engaged in coolie, and 56.6 percent of student's motherswereengagedincoolie.Three-quartersofthestudentshadsmartphones, and 87.6 percent of the students had access to the internet.

Prevalence of Sleep Quality:

In this study, the prevalence of sleep quality was foundtobe39.1percent.Ourresultsindicatethatsleepqualitywasnotrareamong adolescent students of trichy district. This is similar to the research conducted among Karnataka adolescent students by Gou et al.in 2018. Similar prevalence was observed in a study conducted in Gwalior, India, where the prevalence was 37.6percent and a study conducted in Thailand where the prevalence was 42.4 percent. A study was conducted in Karnataka by Sebastianetal.where prevalence was 55.8 percent which is comparatively higher than our study findings. This might be due to the age of students being up to age 25 and sample size was comparatively higher (2551) than our study. Prevalence was less (24.0%) comparedtoourinastudyconductedbyKavithaetal.inselectedschoolsamong school adolescents. The differences might be due to the research conducted in different countries with different settings, and the sample size was comparatively higher than our study. A study conducted by rajalakshmi et al. among undergraduates of tamilnadu displayed almost similar prevalence (35.4%) of sleep quality.

Demography and Sleep Quality:

Demographic factors such as sex, age, family type,familysize,monthlyincome,parents'maritalstatus,educationofparents,

And employments of parent's were not significantly associated with sleep quality. A study conducted in Ethiopia and India had also found similar findings. A study conducted in Southern Thailand has prevalence of male and female (42.6% and42.3%)whichissimilartoourfindings(38.1%and40.1%).Monthlyincome was also found to be insignificant to sleep quality in a research conducted in Malaysia, but in similar research, father's and mother's education levels werefoundtobesignificantpredictorsofsleepqualitywhichwasdifferentthanin ourfindings.InastudyconductedamongChineseadolescentstudents,genderand family economic status were significantly associated with sleep quality which is different than our findings. The non significant association of income with sleep quality in this study was may be due to majority of the students being unsure about the exact family income. In this study, ethnicity, religion, and place of residence of students were found to be39.10%60.90%statistically significant. Showed no association between place of residence and sleep quality among adolescents' students. Similarly, religion was found to be statistically significant where non-Hindu people were two times more likely to have sleep quality compared to Hindu students (OR = 2:11, CI: 1.19-3.79), whereas in a study conductedinwestBengalnon-Hindustudentshadbettersleepquality.Permanent place of residence was significantly associated with sleep quality where rural people suffer more sleep quality but the study conducted in bengaluru urban students were more to have Poor sleep compared to rural. This might be due to different study settings and due to difference in sample size.

Having a smart phone and regular use of internet were not statistically significant with sleep quality whereas time spend on internet per hour daily and useofinternetbeforefallingasleepwerefoundtobeassociatedwithsleepquality (OR=2:10,CI:1.47-3.10andAOR=2:67,CI:1.61-4.48,respectively).Astudy conducted in Turkey also showed significant association between poor sleep qualityanduseofinternetperday.Poorsleepqualityincreasedby2.10timesfor anhourspentontheinternet[26].Thefindingscouldbeattributedtothefactthat

those students using internet for more than an hour before falling asleep could shorten their sleeping duration leading to poor sleep quality.

7. CONCLUSION

This study concluded that religion, place of residence, satisfaction with academic performance, relationship with friends or classmates, more use of internet per day, and use of internet before falling asleep were found to be statistically significant with sleep quality

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