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SLEEP QUALITY AND LEVELS OF STRESS AMONG COLLEGE STUDENTS

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ABSTRACT

The objective of the research was to study the correlation between levels of stress and sleep quality among the college students. In order to examine the relationship between sleep quality and levels of stress, a sample of sixty students ranged in age from 16 to 21 years was taken. All subjects completed the Perceived Stress Scale (PSS) as a measure to assess level of stress. They also completed the Pittsburgh Sleep Quality Index (PSQI) as a measure of sleep quality. Pearson product-moment correlations were examined indicating an overall significance of $p<0.01$ and negative correlation between perceived stress levels and sleep quality.
Keywords: perceived stress, sleep quality

Introduction

1.1 Introduction and Significance:

The present study discusses the significance, statement of problem, conceptual theoretical background, objectives of the study and summary.

1.1.1 Introduction

Students experience several important developments when starting university. These include increased independence, increased responsibilities and changes in peer groups.This stage of life generally consists of leaving home, completing education and beginning full-time work. The stages of a individual's life are characterized by sudden physical, cognitive, social as well as emotional changes which can have an impact on their health and most importantly their sleep. A 50% of college students report daytime sleepiness and 70% attain insufficient sleep. 62% of adults around the world say they don't sleep as well as they'd like. India has been ranked the 2nd most sleep-deprived country on the planet, closely ranking behind Japan.

Stress has been known to affect us physically (blood pressure rise, palpitations, muscle tensions) and mentally (affect our thinking ability). 35% of adults don't get enough sleep (7 hours per day) according to the CDC. 20% of teenagers get less than 5 hours of sleep, while average amount is 6.5 hour.

1.1.1 Significance

Sleep is a recurring state of relaxation that alternates between REM and non-REM sleep. Sleep deprivation is the condition of not having enough sleep; it can be either chronic or acute.

Stress is the term used to describe the physical, emotional, cognitive, and behavioural responses to events that are appraised as threatening or challenging.

1.2 Statement of the Problem

To study the correlation between levels of stress and sleep quality among the college students.

1.3 Conceptual background and Theoretical definition

This section clarifies the conceptual background of the study as well as the technical definition of the variables. The terms and issues pertinent to the present study are discusses here one after the other.

1.3.1. Sleep

Sleep can be defined as “an active state of unconsciousness produced by the body where the brain is in a relative state of rest and is reactive primarily to internal stimulus." Sleep is characterised by:

- low physical activity levels
- reduced sensory awareness

discussed by (Siegel, 2008), a definition of sleep must also include mention of the interplay of the circadian and homeostatic mechanisms that regulate sleep. Sleep is one of the human body's biological rhythms, natural cycles of activity that the body must go through. Sleep was once referred to as "the gentle tyrant" (Webb, 1992). A circadian rhythm is a cycle that takes "about a day" to complete. For most people, this means that they experience several hours of sleep at least once during every 24-hour period.

Most young adults need about 7 to 9 hours of sleep each 24-hour period to function well (McCann &Stewin, 1988). Poor sleep quality is associated with several factors, including demographic characteristics, behavioral and lifestyle factors, physical activity, psychological factors, and chronic diseases. According to Abraham Maslow, in his "Theory of Human Motivation" showed sleep as part of our physiological needs. According to Stores, sleep can be categorized into satisfactory and unsatisfactory. Good sleep is sleep that which has satisfactory (sufficient in duration and good quality). Unsatisfactory sleep that occurs on a continued that cause more serious effects like; often feel very tired, uncontrolled emotion, difficult to concentrate, unsatisfactory work, depression, and cancer.

1.3.2 **Stress**

Stress is the term used to describe the physical, emotional, cognitive, and behavioral responses to events that are appraised as threatening or challenging. Physical problems can include unusual fatigue, sleeping problems, frequent colds, and even chest pains and nausea. Mental symptoms of stress include problems in concentration, memory, and decision making. The Adaptive Theory of Sleep states that sleep is a product of evolution (Webb, 1992), while the Restorative Theory says it is necessary for physical health.We experience different types of stress in our lives and not all types are harmful or even negative. Acute stress is a very short-term type of stress that can either be positive or more distressing. Chronic stress is stress that seems never-ending and inescapable, like the stress stemming from traumatic experiences.

Stress can be defined as a process in which environmental demands strain an organisms adaptive capacity (Cohen et. al., 1995). Perceived stress is the feelings or thoughts that an individual has about how much stress they are under at a given point in time or over a given time period. The American Psychological Association (APA) periodically surveys for stress in the American public. Since 2013, teens have reported higher levels of stress than adults. In the 2018 APA survey, teens reported worse mental health and anxiety and depression than all other age groups. Adolescence has been considered, almost by definition, a period of heightened stress (Spear,2000) During adolescence the prefrontal cortex is biologically immature and the ability to inhibit impulses is not fully developed. This may lead to some of the risky and impulsive behaviors that are characteristic of adolescence. Incidences of depression were also found among stressful adolescents as it is linked with inability to concentrate, fear of failure, negative evaluation of future, etc. (Busari, 2012)

1.3.3 **Relationship between Stress and Sleep**

Stress and a lack of sleep can both have a severe impact on physical and mental health.Frequently being in a heightened state of alertness can delay the onset of sleep and cause rapid, anxious thoughts to occur at night. 43 percent of people aged 13–64 have reported lying awake at night due to stress at least once in the past month. Stress is now understood as a lifestyle crisis (Masih &Gulrez, 2006) affecting any individual regardless of their developmental stage(Banerjee & Chatterjee, 2016). Observations regarding students' sleep established that their sleep duration is commonly shorter than the recommended 9.2 h (Gradisar *et al*., 2011) During adolescence, academic demands can become an important source of stress (Astill *et al*., 2013; Dewald *et al*., 2014). Dewald and Astill (2013) found examination weeks to be associated negatively with sleep duration, sleep quality, and sleep efficiency.

Stress about school and life keeps 68 percent of students awake at night - 20 percent of them at least once a week. More than 60 percent of college students have disturbed sleep-wake patterns. Many take drugs and alcohol regularly to help them do one or the other. Study of 1,125 students appears online in the Journal of Adolescent Health.

1.4 **Objectives**

1.4.1 To assess the relationship between stress levels on the sleep quality in college students.

Review of Literature

2.1 Introduction

The researcher was interested in studying the correlation of sleep quality and stress levels among the undergraduates. Most of the studies were conducted in foreign countries and very little has been researched in Indian context.

2.1.1 Studies of Sleep Quality and Stress Levels

According to the study conducted by (Buboltz WC Jr, Brown F, Soper B, 2001), on a sample of 191 students, it was found that about Up to 60% of all college students suffer from a poor sleep quality. 90% of university students have roommates, and 41% wake up at night due to the noise of others. Bed- and risetimes on weekdays and weekends often differ in the range of more than 1 to 2 hours. Due to irregular daytime routines, chronotype changes and exam periods, they need specialized treatments for improving sleep.

A sample of university students participated in a study(Schlarb, Friedrich and Claßen, 2017) of pre–post design to study the sleep problems among university students. The findings showed that 74% participants fulfilled criteria for an insomnia disorder or reported various insomnia symptoms in the SPQ (items 1–3). After SWIS sleep training significant improvements were observed in the subjective sleep quality and sleep-related personality traits, as well as clinical improvements in objective sleep measures.

About 25% of young adults are affected by psychological distress, a measure of poor mental health comprising common symptoms of low mood and anxiety (Glozier et al., 2010). Researchers reported that shorter sleep duration was linearly associated with prevalent psychological distress. Long sleep duration showed no association with distress at any time point.

The researchers (Hershner, Chervin, 2014) focused on the current prevalence of sleepiness and sleep deprivation among college students. Daytime sleepiness is a major problem, exhibited by 50% of college students compared to 36% of adolescents and adults. At least 3 days a week, 60% of students reported that they were dragging, tired, or sleepy. Many college students are sleep deprived because they go to sleep late and wake up for classes or employment before adequate sleep is obtained.

According to (Lund et. al, 2010) over 60% were categorized as poor-quality sleepers, bedtimes and risetimes were delayed during weekends, and students reported frequently taking prescription, over-the-counter, and recreational psychoactive drugs to alter sleep/wakefulness. Tension and stress accounted for 24% of the variance in the PSQI score, whereas alcohol and caffeine consumption and consistency of sleep schedule were not significant predictors of sleep quality.

Methodology

3.1. Overview

The chapter includes data collection procedure, operational definition of variables, plan for research, hypothesis, sample, tools, procedure and proposed statistical analysis.

3.1.1 Data collection Procedure

Data collection was carried out using a battery of questionnaires using the google forms in November 2021. Information regarding this survey was distributed to all students studying in the college. Informed consent form and demographic profile sheet were given to all the participants. The objectives of the study were explained as well as the aims of the survey.

3.2 Variables and Operational Definition

3.2.1 Variables

In this research, the variables which will be used are:

1. Perceived Stress levels as variable 1.
2. Sleep Quality as variable 2.

3.2.2 Operational definition of Variables

Perceived Stress was measured by the Perceived Stress Scale developed by Sheldon Cohen in 1983. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The individual scores on PSS range from 0-40 and the highest score indicate higher perceived stress.

The Pittsburgh Sleep Quality Index (PSQI) is a self-report questionnaire that assesses sleep quality over a 1-month time interval. It was developed in 1988, by Buysse and his colleagues at the University of Pittsburgh. The PSQI contains 19 self-related questions and 5 questions rated by the bed partner or roommate. In all the cases, "0" indicates no difficulty whereas a score "3" indicates severe difficulty. The seven component scores are added to yield one "Global PSQI" score, with a range of 0-21 points, in which "0" indicating no difficulty and a score of "21" indicating severe difficulties in all areas.

3.3 Hypothesis

The hypothesis of this research is formulated as follows:

1. There would be no specific correlation between perceived stress levels and sleep quality among college students.
2. There would be a negative correlation between perceived stress levels and sleep quality among college students.

3.4 Sample

For this research, the sample consists of a total of 78 college students (42 female and 36 male) aged between 16 to 21 years.

3.5 Tools

Two measurement instruments were used in the study. The Pittsburgh Sleep Quality Index (PSQI) by Buysse and his colleagues and the Perceived Stress Scale by Sheldon Cohen,1983.

3.5.1 Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) is an effective instrument used to measure the quality and patterns of sleepin adults. PSQI was developed in 1988, by Buysse and his colleagues, to create a standardized measure designed to gather consistent information about the subjective nature of people's sleep habits. It differentiates "poor" from "good" sleep quality. The global PSQI score is then calculated by totalling the seven component scores, providing an overall score ranging from 0 to 21.

Reliability

The internal consistency test of PSQI scores showed an overall reliability coefficient (Cronbach's alpha) of 0.736, a value suggesting acceptable consistency with the majority of correlations between questionnaire component scores and the summed global score being significant ($p<0.010$). A meta-analysis showed that nine studies had correlation coefficients greater than or equal to 0.70.(Hunsley and Mash, 2008).

Validity

It has been observed that original study showed a sensitivity of 89.6%, but not enough research has been conducted to determine sensitivity across multiple studies. The internal consistency test of PSQI scores showed an overall reliability coefficient (Cronbach's alpha) of 0.736. The area under the curve, sensitivity, specificity, positive and negative likelihood ratios at the cut-o' score were 0.838 ($p<0.0001$), 75.0%, 88.9%, 6.75, and 0.280, respectively.

3.5.2 Perceived stress scale (PSS)

The Perceived stress scale (PSS) is a classic stress assessment instrument. The 14-item self-report is widely used to assess the degree to which situations in one's life are appraised as stressful (Cohen et. al, 1983). PSS items are general in nature rather than event-specific and evaluate the extent to which individuals perceive their lives to be "unpredictable, uncontrollable, and overloading".

Reliability

Across diverse conditions, researchers Roberti et al. (2006) report reliability estimates of.85 and.82 in a university sample and.79 in a sample of middle-aged adults.

Validity

Correlates in a predicted way with other measure of stress. (Job Responsibilities Scale, life events scales).

Scoring

Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scoresfrom 0-13 would be considered low stress, while scores ranging from 14-26 would be classified as moderate stress and 27-40 would be high stress. PSS-10 scores are obtained by reversing the scores on the four positive items and then summing across all 10 items.

3.7. Research design

This research will be appropriately called correlational research. It is a quantitative research and random sampling method was used to collect the data.

3.8 Procedure for data collection

Data was gathered from an incidental sample of 78 students, age ranging from 16 to 21 years who responded to a survey sent to them through google forms. Total time required for the test was approximately 10 minutes. Students were given information about the on-going project work and consent was taken well before the tests were given to them.

3.9 Summary

This chapter gave information about the methodology of this study.

Results and Discussion

4.1 Introduction

This chapter on results and discussion includes tables of normality of distribution, descriptive and inferential statistics and their interpretation. Discussion of the scores is given and lastly summary of the chapter is presented. The present study is undertaken to determine the correlation between perceived stress levels and sleep quality among college students.

4.2 Normality of distribution

Results: The data collected from the sample of 78 students, included forty-two females and thirty-six males. Given below are the results of the descriptive statistics calculated from the data. The Mean and standard deviations for all the scores are given below in the table 4.1

Table 4.1. Mean and Std. Deviation of total scores from PSQI and PSS scale.

Descriptive Statistics

	Mean	Std. Deviation	N
PSQI	5.4231	2.86274	78
PSS	20.2051	7.63172	78

4.3 Statistical analysis

The following table 4.2 shows the Pearson's correlation matrix for the Pittsburgh Sleep Quality Index (PSQI) and Perceived Stress Scale (PSS).

Table 4.2. Pearson’s Correlation Matrix of PSQI and PSS

Correlations

		PSQI	PSS
PSQI	Pearson Correlation	1	.527**
	Sig. (2-tailed)		<.001
	N	78	78
PSS	Pearson Correlation	.527**	1
	Sig. (2-tailed)	<.001	
	N	78	78

**. Correlation is significant at the 0.01 level (2-tailed).

From the above table, we can observe that correlation is significant at 0.01 level (2-tailed). According to the Pearson's r, the coefficient can vary between +1 and -1 where +1 indicating a positive correlation and -1 indicating a negative correlation. Our figure indicates that the correlation of PSQI with itself (r=1), and the number of non-missing observations for PSQI (n=78). Similarly, the correlation of PSS with itself shows r=1 and the non-missing observations for PSS (n=78). Most importantly, there was a moderate, positive

correlation observed between the two variables, PSQI and PSS, r=.527, N=78, moreover PSQI and PSS have a statistically significant relationship p <.001. The magnitude, or strength of the association is approximately moderate (.4< |r| <.6).

After calculating the data inferred was that for PSQI scale, the mean (5.42) is greater than median (5.00) as well as the mode (3.00), indicating that the distribution is positively skewed. As compared to the PSS scale, where the mean (20.20) is lesser than the median (20.50), but greater than the mode (20.00), shows an almost symmetrical data as the mean, median as well as mode are close to each other. It can also be inferred that the skewness for PSQI is 0.51 and hence the distribution is positively and moderately skewed. Whereas, for the PSS scale, the skewness is -0.96, the distribution is negatively moderately skewed. In addition, as per the data above, the PSQI scale has the kurtosis as 0.24, indicating that the peak is slightly higher than the normal curve. As per the PSS scale is concerned the kurtosis is -0.58 which means that the distribution is platykurtic.

The z score was counted for the data. The z-value for the PSQI, for skewness is z=1.87 and for kurtosis is z=0.46. Similarly, in the PSS, the z scores for skewness is z=-0.35 and for kurtosis is z=-1.07. Overall, we can conclude from the above data that PSQI and PSS scales scores are little skewed and kurtotic, but it does not differ significantly from normality. To sum up, we can assume that the data is approximately normally distributed, in terms of kurtosis and skewness.

Poor sleep quality is said if the PSQI total score of more than 5. From the data calculated of PSQI component scores,the PSQI total score in this study had a mean value of 10.5 (± 8.26), indicating that the average students had poor sleep quality with global PSQI score >5. Components that have the highest scores are sleep disturbances and sleep latency, followed by a dysfunction during the daytime and sleep quality.

4.4 Discussion

The purpose of this study was to find the relationship between sleep quality and levels of stress among students.

The results indicated that poor sleep quality was found among all the participants in the study (M= 10.5, SD=8.26) which is consistent with previous research by (Herawati, Gayatri, 2021), where the total PSQI mean value was (M=8.40) and majority of the students indicated poor sleep quality. A study conducted by (Hershner and Chervin 2014) found that only 0.03 students were found taking prescriptions whereas, according to (Lund et. al, 2010), students reported taking prescriptions and medicines. The study also found that 60% of students were categorized as poor-quality sleepers and 70% reported poor sleep quality and insufficient sleep. Highest scores were obtained on the components regarding sleep disturbances, sleep latency and daytime dysfunction which supports a study conducted previously by (Glozier et al. 2010).Overall, the present study showed a statistically significant (p<0.01) relationship between PSQI and PSS. In addition, as per the statistical analysis, it was found that that the relationship between PSQI and PSS is positively correlated (r=0.527) hence supporting the hypothesis of the present study that is sleep quality is negatively correlated with perceived stress levels. As the stress levels increase, the PSQI scores also increase indicating poor sleep quality. This supports the previous studies by (Alotaibi et. al, 2020), where 77% of the participants reported poor sleep and 63.5% reported stress. Further studies should take into account the types of stressors and their relationship with the sleep quality to add more support to the current hypothesis.

4.5 Conclusion

This study has showed that the quality of sleep-in college students was poor, and their stress levels elevated, with these two variables significantly associated. Thus, proving the hypothesis that stress and sleep quality are negatively correlated.

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