

## **Sleep Wellness in Schools a Comprehensive Analysis of The Efficacy of a Sleep Promotion Program for Adolescents**

**Mousumi Das**

Research Scholar, Department of Physiology, CMJ University, Jorabat, Meghalaya, India.

**Dr. Nimai Chand Masanta**

Professor, Research Guide, Department of Physiology, CMJ University, Jorabat, Meghalaya, India.

**Dr. Kartik Maiti**

Assistant Professor, Research Co-Guide, CMJ University, Jorabat, Meghalaya, India.

### **ABSTRACT**

Sleep is physiologically necessary and driven. Sleep is the golden link between health and body. Sleep relaxes and refreshes the mind and body, giving a break to tackle daily tasks with energy and comfort. Many teenagers have sleep problems during the school week due to sleep physiology changes and poor sleep hygiene. Reduced sleep in teens is linked to poorer health. Comprehensive sleep intervention programmes can teach appropriate sleep habits and educate about sleep health. Healthy adolescents with less than 8 hours of school night sleep and inconsistent weekday-weekend bedtimes are the target audience for such programmes. These programmes use psycho education and Yoga to help adolescents regulate their sleep habits and prevent recurrence. Researchers employed quantitative methods in this investigation. The study took place at Dehradun schools. PSQI tested 175 participants; 48 experienced sleep problems. The experimental group received one lesson followed by two weeks of rest. Next, sleep quality was examined on days 14 and 28 of intervention. Control group participants were examined for sleep quality and followed up. The mean sleep quality of adolescents receiving sleep education deteriorated gradually. The experimental group had a mean  $\pm$  SD of  $9.38 \pm 8.31$  in preintervention sleep quality, while the control group had  $10.22 \pm 8.22$  the mean  $\pm$  SD after two weeks of intervention was  $4.83 \pm 0.008$  in experimental group and  $10.11 \pm 7.44$  in control group. After four weeks, the mean  $\pm$  SD was  $3.30 \pm 8.22$  in experimental group and  $10.22 \pm 8.22$  in control group. Conclusion: Regular Yoga practice after quality sleep education improved sleep quality immediately after intervention.

**Keywords:** *Sleep Promotion, Adolescents, Good Sleep Behaviors, Sleep Education Program, Sleep Hygiene Behavior*

## 1. INTRODUCTION

Nowadays, many people follow the trend of getting less sleep each night. Sleep restriction is most common and worrisome in teenagers, according to growing data. A recent survey by the National Sleep Foundation<sup>4</sup> indicated that 61% of teenagers are not receiving the required amount of sleep, even though doctors say that the ideal amount of sleep for adolescents is about per night. Biological and psychological changes that accompany the transition from childhood to adolescence may make it more difficult to get a decent night's sleep. To start, a number of studies have shown that when puberty begins, teenage bodies naturally begin to favour later bedtimes compared to those of children and adults. This is known as the delayed sleep phase. There is evidence that the biological changes that occur during puberty are linked to a delay in circadian timing, since the later phase of the morning melatonin offset has been linked to advanced pubertal development. Adolescents experience a combination of changes, including a shift in their circadian rhythm and a slower buildup of the homeostatic drive, which causes them to feel sleepy later in the day and causes them to push back their bedtimes. Secondly, a number of adolescent-specific psychological and social variables may heighten the inclination to postpone the phasing of sleep. As parental influence wanes, peer influence grows, and prospects for first jobs present themselves; adolescents develop a sense of independence and learn to accept responsibility. What matters most to teenagers when it comes to sleep could change depending on these things. High school students have a lot of options when it comes to extracurricular activities, so getting enough sleep might not be their first priority. Lastly, environmental factors including using technology (e.g., television, the internet, and cell phones) and consuming stimulants (e.g., caffeine) also raise the likelihood of delaying bedtime. Adolescents frequently struggle to get enough sleep because of societal expectations, including early school start times, and their preference for the delayed sleep phase. In order to have enough time to get ready for school and get there, the majority of teenagers in India had to wake up about 6:30 in the morning, according to a nationwide survey. High school starts at an average of 7:51 to 7:56 in the morning. Adolescents may not be getting enough sleep on school nights, since most high school students reported feeling tired between 8:00 and 10:00 on weekdays. Such early start times force students to stay alert when they would rather be sleeping, which goes against the teen body's natural inclination to sleep during the sleep phase. When school is out for the week, teenagers typically sleep in on the weekends. People often attribute weekend sleep pattern delays to the exhaustion that comes from not getting enough sleep throughout the week.<sup>14</sup> Adding to the already delayed circadian phase of adolescence, sleeping in on weekends drives the process even farther. Because of this, I find myself staying up later and getting up later on weekends. The issue manifests itself once the weekend ends and classes resume. A new cycle of sleep debt buildup begins once more because the postponed wake-up time cannot be sustained. For instance, the peak hour for single-vehicle accidents was between midnight and 7:00 a.m., and drivers who were 25 or younger made up 55% of those involved in crashes caused by drowsiness. Several studies have shown that drivers' ability to operate a vehicle safely and the likelihood of accidents are negatively affected by sleep deprivation (26, 27). Additionally, drivers who report getting less than 7 hours of sleep each night is more likely to be involved in accidents that are directly related to sleep deprivation.<sup>28</sup> See also 29 for a review of the

potential long-term detrimental health effects of chronic sleep deprivation, which include an increased chance of developing cardiovascular disease, hypertension, diabetes, and obesity. It is evident that school-based programmes addressing adolescent sleep restriction are necessary, due to the high prevalence of this issue, the detrimental effects of sleep restriction on mental and physical health as well as academic achievement, and the numerous obstacles that prevent this age group from implementing healthy sleep habits. A number of sleep interventions have been used in schools with the goal of getting teenagers to go to bed earlier by teaching them why sleep is so important. Therefore, there are three objectives of this article: 1. To assess current school-based sleep promotion (SBSP) programmes that target improving teens' sleep habits; 2. To determine how well these programmes work in changing teens' sleep behavior and how feasible they are to implement in a school setting; 3. To suggest new approaches to tailor-made SBSP programmes for teens, such as incorporating motivational interviewing (MI) and internet-based dissemination strategies.

### **1.1 School-Based Sleep Promotion Programs**

There are typically two routes that SBSP programmes pursue. While some try to synthesize what is already known about sleep, others use cognitive and behavioral tactics that are specific to sleep. The first set of initiatives, which may be described as "school-based sleep education programmes," seek to increase adolescents' understanding of the importance of sleep in the hopes that doing so will lead to more favorable attitudes towards sleep and, eventually, better sleep habits. It is typically not known whether sleep education programmes really cause changes in sleep behavior in adolescents, even though the majority of these programmes are effective in increasing their sleep knowledge. Information synthesis is ineffective in preventing sleep restriction in adolescents due to the absence of data showing benefits in sleep and the fact that information acquisition does not always predict behavioral changes in other areas of health. Some studies on sleep education in schools have found that students not only learn more about sleep, but also improve their sleep habits. For instance, a clinical psychologist and two aides taught healthy sleep patterns as part of the Sleep-Smart Programme, which sought to prevent teenagers from developing unhealthy sleep habits. A health class that took part in an additional study on teens' sleeping patterns served as the control group. The following characteristics were evaluated in all participants before and after the intervention: bedtime, rise time, total sleep time, bedtime delay, and oversleep time on the weekend (compared to during the week). After the programme, it was found that the intervention group, which included people who had gotten sleep instruction, had earlier bed and waking times on both weekdays and weekends. In addition, the results of the actigraphy showed that the intervention group slept more regularly throughout the week and on weekends. Despite promising early results, the pilot programmes failed to adequately control for confounding variables, reported no follow-up data, and used too small of a sample size to draw firm conclusions. This means that there is a need to view the data regarding the effectiveness of sleep education programmes in schools as preliminary. Even programmes aimed at increasing adolescents' sleep that combine sleep instruction with cognitive and behavioral techniques have had mixed results. To better understand how adolescents sleep, Moseley and Gradisar<sup>36</sup> developed the Improving Adolescent Well-Being: Day and Night programme. The programme was either given to or not given to high school students at random based on their documented

bedtimes. In order to enhance health and sustain a healthy lifestyle, the programmed provided health education, goal-setting exercises, behavioral and cognitive methods, and a focus on health-related behaviors including eating, exercising, and getting enough sleep. The intervention group's pupils clearly had more information about sleep after the programmed. The programmed had no effect on sleep behavior or the percentage of participants feeling sad mood when data from all participants were analyzed. Nevertheless, when examining solely the teenagers whose bedtimes were later than average before the programmed began, it was found that the intervention group initially had a smaller gap between their school and weekend out-of-bed hours after the intervention compared to the control group. The 6-week follow-up showed no sign of this improvement. Teens' plans to change other habits (such as exercising more and eating healthier) were more prominent than their plans to get a better night's rest, according to the behavior intention questionnaire. According to the qualitative responses, the teenagers lacked the drive to put their newfound knowledge into practice and get a better night's rest.

## **2. LITERATURE REVIEW**

**LeBourgeois et al. (2017)** this study explained given the widespread use of screen-based media and the high incidence of inadequate sleep among American kids and teenagers, this concise paper compiles the research on electronic media and sleep and offers suggestions for future studies. Most studies have shown a negative correlation between screen usage and sleep health, largely through later bedtimes and shorter overall sleep duration, according to recent literature evaluations. There are a number of factors that may be at play here, including (1) time displacement (when screen time takes the place of sleep and other activities), (2) psychological stimulation from media content, and (3) the impact of device light on circadian rhythms, sleep physiology, and alertness. Unfortunately, most of what we know about these processes comes from observational, cross-sectional, and self-reported studies. We need more observational and experimental studies to understand how the digital revolution is changing sleep and circadian cycles from infancy all the way into adulthood, and how this is leading to health problems, learning disabilities, and safety issues including depression, obesity, and risk-taking.

**Tanaka & Tamura (2016)** revealed that there was a marked improvement in sleep/wake patterns that were either delayed or irregular. Additionally, it helped with morning mood, daytime drowsiness, sleep satisfaction, and sleep-onset latency. The goal of this sleep education programmed was to help people learn what they need to know to have better sleep, including what habits to form and what information to seek out. Promoting sleep and mental health with the help of a sleep health class that included nighttime exercise and brief naps was successful with the elderly. Effective waking maintenance, defined as maintaining an appropriate level of arousal throughout the night, was shown to improve sleep quality in the interventions. In addition, both the quantity and quality of sleep were enhanced by sleep education and cognitive-behavioral therapies as part of a comprehensive approach to sleep management. This research led to the creation of a sleep education programmed that makes use of few cognitive-behavioral modification strategies. Better sleep also benefited the physical and mental health of the elderly. The findings point to the efficacy of sleep health promotion in promoting physical and mental wellness among the aged.

**Adrian et al. (2014)** estimated the percentage of teenagers who adhere to the Healthy People 2020 guidelines for healthy lifestyle choices that reduce the risk of chronic disease and to identify any correlation between mental health conditions (such as depression or behavioral issues) and this likelihood of adhering to these guidelines. The Washington State Healthy Youth Survey of 2010 provided the data utilized in this research. We estimated the proportion of adolescents meeting guidelines and the correlations between youth mental health status markers and health-promoting behaviors using descriptive statistics and linear regression. Only 5.8% of young people fulfilled all six guidelines in the following areas: not using tobacco or other substances, being physically active every day, eating breakfast, maintaining a healthy weight, and getting enough sleep. However, 84.3% of them fulfilled at least three of these criteria. All but substance abuse abstinence were outperformed by the overall percentage of Washington State kids who fulfilled Healthy People 2020 standards. Only a small percentage of young people (23.3%) and adults (30.9%) met the recommended daily allowances for physical exercise and sleep. The amount of health-promoting behaviors that teenagers supported was significantly correlated with their mental health state. Adolescent health programmes in schools, communities, and primary care settings should incorporate interventions to improve students' sleep hygiene and physical activity levels as part of a comprehensive positive youth development framework. In order to lower obstacles to healthy behavior, it may be crucial to pay attention to the mental health of adolescents and common risk factors.

**Owens et al. (2014)** this study explained that a major public health concern that the academic performance, health, and safety of our country's kids are jeopardised by the chronic sleep loss, drowsiness, and daytime impairments that occur during adolescence. For the purpose of formulating public policies to reduce the negative impacts of sleep restriction and for the purpose of providing clinical counseling to patients and their families, it is crucial to have a thorough understanding of the causes of sleep loss in adolescents, including unhealthy sleep habits and environmental factors. This paper compiles the most recent research on teenage sleep patterns, the variables that lead to chronic sleep loss (such as coffee and electronic media use), and the health effects of this problem, including increased risk of obesity, depression, and sleepy driving accidents. In order to lessen the effects of tiredness on adolescents, the report also explores the possibility of later school start times.

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### 3. RESEARCH METHODOLOGY

This study used a quantitative methodology and a quasiexperimental design (time series with a comparison group), with samples selected using purposive sampling approaches. The study included 48 teenagers from the Dehradun district who were enrolled in the sixth, seventh, and eighth levels. Pittsburgh Sleep Quality Index (PSQI) was utilized for the purpose of studying sleep quality. The ethical committee gave their approval. After obtaining authorization from the relevant school authorities, data was collected when teenagers were not in class. Everyone who took part, including their parents, gave their informed consent before the study began. Afterwards, they were provided with self-administered questionnaires that contained baseline data and the Pittsburg Sleep Quality Index. In a study with 175 participants, 48 had PSQI scores greater than 5, indicating the presence of a sleep issue. The study's sample was then expanded to include individuals whose sleep issues were determined by the cut off score. The location dictated whether they were placed in the control or experimental group. Within the experimental group, 22 people took part, while 26 people served as controls. A trained yoga instructor led the experimental group through a two-week (14-day) yoga session after a 35- to 40-minute teaching session on the first day of the intervention, as part of the sleep promotion education programmed. The participants were evaluated for their sleep quality using the aforementioned measure on the final day of the intervention. After then, on the 28th day of the intervention, we checked in with them again to see how well they were sleeping. In contrast, no intervention was administered to the control group, and the experimental group followed the same time period. The sleep quality of the control group was also evaluated using the aforementioned instruments, and they were also followed up with.

### 4. DATA ANALYSIS

**Table 1: Baseline Data from Teenagers in The Experimental and Control Groups Is Compared**

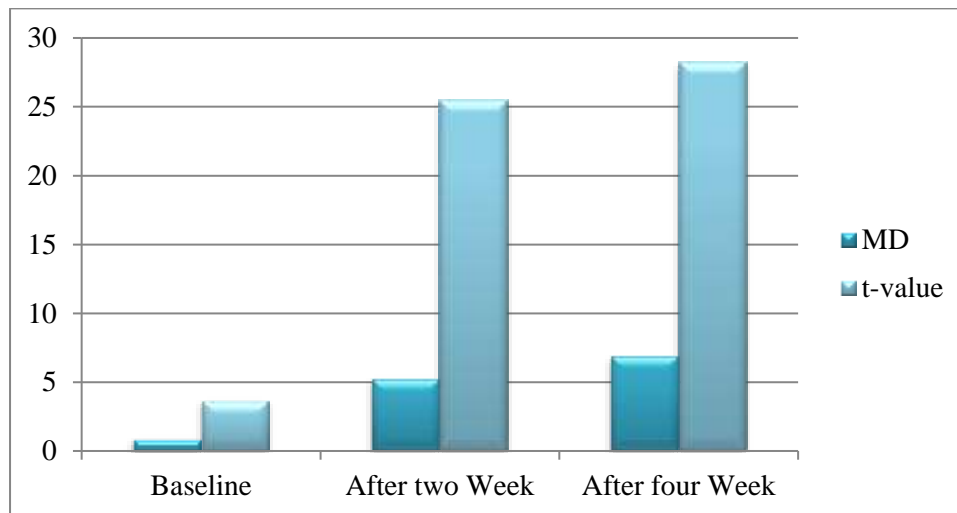
S.No.	Variables	Experimental group (n=22)	Control group (n=26)	X <sup>2</sup> VALUE	df	p-value
1.	Age (years)					
	12	7	8	2380	2	.304 NS
	13	7	8			
	14	8	10			



2.	<b>Class</b> 6 <sup>th</sup> 7 <sup>th</sup> 8 <sup>th</sup>	10 6 6	5 5 16	4.116	3	.127 NS
3.	<b>Gender</b> Male Female	8 14	20 6	1.342	1	.908 NS
4.	<b>Type of family</b> Joint Nuclear	12 10	15 11	.001	1	.879 NS
5.	<b>Day time nap</b> Yes No	1 21	25 1	50.00	1	.001 NS
6.	<b>Problem during menstruation</b> Yes No	21 1	12 14	.140	1	.008 NS
7.	<b>Sleep problem during menstruation how much</b> 3 4 5	16 5 1	17 5 4	.313	1	.247 NS

**Table 2: Programme Effectiveness for Improving Sleep Quality (N=48)**

Sleep Quality (PSQI)	Group	Mean ± SD	MD	t-value	df	p-value
Baseline	Exp.	9.36 ± .831	.875	3.664	47	.002
	Control	10.22 ± .892				
After two Week	Exp.	4.83 ± .008	5.286	25.491	47	.002
	Control	10.11 ± .744				
After four Week	Exp.	3.30 ± 8.22	6.938	28.235	44	.002
	Control	10.22 ± 8.22				



**Figure 1: Programme Effectiveness for Improving Sleep Quality (N=48)**

Table No. 2 presents data indicating a progressive drop in the mean sleep quality score among teenagers enrolled in sleep education programmes. The experimental group's mean  $\pm$  SD of sleep quality prior to intervention was  $9.36 \pm .83$ , while the control group's was  $10.22 \pm .89$ . Following a two-week intervention, the experimental group's mean  $\pm$  SD was  $4.83 \pm .008$ , while the control group's was  $10.11 \pm .744$ . Following a four-week intervention, the experimental group's mean  $\pm$  SD was  $3.30 \pm 8.22$ , while the control group's was  $10.22 \pm 8.22$ . This resulted in a "p" value that was statistically significant at the  $<0.002$  level and a mean post-test score that was lower than the pretest score, indicating that the participant interventions were beneficial.

## 5. DISCUSSION

The outcomes of the study were interpreted based on the Pittsburgh Sleep Quality Score, which demonstrated that a higher score on the PSQI sleep quality will result in a lower score on the sleep quality score, and vice versa. The outcomes of the study demonstrated that the average score on the PSQI for sleep quality among adolescents who participated in a sleep education programme gradually dropped over the course of the study. The interpretation of the findings and the ramifications of those findings are the primary focuses of the study. A substantial drop in mean sleep quality ratings was observed in the experimental group when compared to the control group, which is evidence that the sleep promotion programme was effective in enhancing the quality of sleep among adolescents. This was proved by the fact that the study revealed that the programme was effective. It would appear from this that the treatments that were implemented within the programme, which included yoga sessions and instruction on sleep, had a beneficial effect on the participants' sleeping patterns. These findings are consistent with previous research that has highlighted the significance of sleep for the health and well-being of adolescents across time. Particularly throughout the developmental stage of adolescence, getting an adequate amount of sleep is essential for maintaining cognitive performance, emotional stability, and overall physical health among adolescents. Interventions such as the one that was conducted in this study have the potential to contribute to long-term health advantages for adolescents. These benefits could be achieved by addressing sleep-



related disorders at an earlier stage. Furthermore, the fact that the quality of sleep in the participants continued to improve throughout the course of the four-week follow-up period provides evidence that the program's effects were not only temporary. This is a promising sign that the programme has the potential to have a noticeable and long-lasting influence on the participants' sleeping patterns as well as their general health.

## **6. CONCLUSION**

In order to evaluate the effect that a sleep promotion programme has on the quality of sleep that adolescents get, the research was conducted using a quantitative research approach and a quasi-experimental design (time series with a comparison group). The selection of 48 participants from the sixth, seventh, and eighth grades in the Dehradun district was accomplished through the use of purposeful sampling procedures. Regarding the quality of sleep, the Pittsburgh Sleep Quality Index (PSQI) was utilized as a measurement tool. In addition to obtaining informed consent from the participants and their parents, ethical clearance was also sought with the participants. If we compare the participants in the control group to those who participated in the sleep education programme, we find that the people who got the programme shown a considerable improvement in the quality of their sleep. The experimental group saw a gradual decline in the mean sleep quality ratings during the intervention period. The scores went from  $9.36 \pm 8.31$  at the beginning of the intervention to  $3.30 \pm 8.22$  after a period of four weeks. During the same period, the control group did not exhibit any noteworthy alterations in the quality of sleep. The mean score for this group was  $10.22 \pm 8.92$  at the beginning of the study, and it increased to  $10.22 \pm 8.22$  after a period of four weeks. Based on the data, it can be concluded that the sleep promotion programme was successful in enhancing the quality of sleep among adolescents, as evidenced by statistically significant results ( $p$  values less than 0.002). It is clear from this that the improvements that were seen were not likely to have been the result of random chance. The fact that the quality of sleep continued to improve even after the four-week follow-up period provides additional evidence that the programme is helpful. Considering that getting enough sleep is critical to one's general health and well-being, these findings have significant repercussions for the health of adolescents. Following the findings of the study, it is suggested that comparable sleep promotion programmes be implemented in educational institutions in order to address sleep problems among adolescents. More research might be done in the future to investigate the long-term impacts of programmes like these, as well as their wider impact on the health and development of adolescents.

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