Sleep Habits and Patterns of College Students: A Preliminary Study

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Abstract. The negative effects of sleep difficulties have been well documented. However, the prevalence of such problems among US college students has not been well studied. Design difficulties are common in the limited number of existing investigations, making it difficult to estimates the prevalence and types of disturbance studied. The authors describe the use of a quantitative-based assessment instrument to provide an initial indication of students' sleep problems and to serve as a means of addressing some of the deficiencies in the literature. In their sample of 191 undergraduates at a rural southern university, they found that most of the students exhibited some form of sleep disturbance and that women, in general, reported more sleep disturbances than men did. They suggest how colleges and university officials can alter procedures to minimize students' sleep disturbances and reduce the deleterious effects of sleep problems on academic performance.

Key Words: habits, prevalence, sleep difficulties, students

The influence of sleep difficulties on people's lives has been increasingly noted recently, with college students recognized as a population group particularly affected by sleep difficulties. Researchers have explored the effects of sleep deprivation, variations, and reductions among US college students for the past 25 years, yet the extent and specific types of problems have never been documented.

Earlier research indicated that students' poor sleep quality is linked to increased tension, irritability, depression, confusion, and generally lower life satisfaction.[1] Those who report excess daytime sleepiness also report more frequent use of marijuana and alcohol.[2] Interestingly, even students who sleep 8 hours nightly but shift their sleep-wake cycle by 2 hours experience increased feelings of depression, reduced affability, and difficulty in concentrating.[3] Students who regularly sleep significantly later on the weekend than they do during the week do not adjust to this changed schedule but develop chronic psychomotor slowing and concentration problems; they also experience increased irritability and depression.[4] Although most of these findings have been explored under controlled laboratory conditions, there is support for the belief that sleep difficulties can significantly impair students' academic performance.[5]

Unfortunately, students who experience academic difficulties do not realize that poor sleep habits may contribute to their problems. Pilcher and Walters[6] found that sleep-deprived students performed significantly worse than students who had a normal night's sleep, but the students inaccurately rated their performance as better than that of students who were not sleep deprived. Even though their grades do not reflect this confidence, these students may not make the possible connection between their poor performance and their all-night "cramming" sessions. As a result, they may blame external sources. Anyone who has taught college classes can recall such comments as, "I don't understand why I did so badly, I studied for hours." Thus, sleep difficulties may be one of many contributors to poor student performance.

Previous studies have narrowed the dependence of learning consolidation to the rapid eye movement (REM) stage of sleep, when most dreaming occurs. De Koninck and associates[7] reported that students who demonstrated a significant increase in REM sleep following an intensive learning period performed significantly better on examinations. The connection between REM sleep and learning is of particular importance for those students who consistently re-

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ceive less than 8 hours of sleep: they miss some of the last 2 hours of REM sleep. Those 2 hours tend to be the most important for integrating new information.[8] Therefore, students who do most of their studying during the night before tests seem to be impairing their ability to consolidate new information.

The studies mentioned above demonstrate the importance of good sleep habits. However, how many students are actually affected? Intuitively, one may assume that many students have poor sleep habits, especially because the structure of the high school is replaced with loosely organized collegiate lifestyles that often include many reasons to postpone sleep.[1] Empirical evidence revealed that student sleep length was declining until at least 1991, when Hicks and Pellegrini[9] published the most recent data. More than half of the students surveyed in the past reported significant sleep difficulties.[5] However, the actual prevalence of student sleep difficulties has been left to conjecture.

Earlier attempts to study student sleep disturbances were problematic in three ways. First, the frequencies of sleep difficulties were measured on 5-point Likert-type scales that used qualifiers such as *frequently* and *seldom*. Because they do not reveal actual frequencies and duration, these terms are not necessarily appropriate for measuring sleep-related symptoms. Second, these studies are geographically limited to non-US samples and are dated (1960s–1970s). Third, these studies used various sleep measures that made meaningful comparisons impossible.

Sleep is clearly an important aspect of successful academic and personal life in college, yet previous sleep studies suffer from shortcomings. In our study, we used psychometrically reliable and valid instruments consisting of quantitative items to explore the prevalence of sleep difficulties in a sample of US college students.

METHOD

Participants

The sample consisted of 191 undergraduates (95 men and 96 women) who were attending a rural university in the South. Their ages ranged from 17 to 55 years (M = 19 y; SD = 4.5). The majority (82.8%) of the students in the sample identified themselves as White; 13% identified themselves as African American; 1.6% as Asian American; and 1% as Native American.

Materials

The Sleep Quality Index (SQI)[11] is an 8-item self-report inventory of general sleep difficulties. The SQI is composed of one scale, which is labeled *sleep quality*. For each item, respondents chose one of three possible responses: *no, < 3 days per week*, and *3–7 days per week*. Each response was weighted as a 0, 1, or 2, with 2 representing the most common or severe symptom. To determine sleep quality of individuals, the examiner summed the items to derive a total score of sleep quality. Scores of 0 or 1 indicated good sleep quality, scores from 2 to 8 indicated occasional sleep difficulties, and scores ranging from 9 to 16 indicated poor sleep quality. Interitem reliability has been found to be acceptable at Cronbach's alpha level = .74. Initial support for the validity of the SQI is provided by a significant relationship between quality of sleep and subjective health;[11] no other validity information is currently available.

Participants also completed a sleep-habits questionnaire based on an instrument designed by Lack.[5] The habits section consists of open-ended items on which the students reported their usual amount of sleep, wake-up times, bedtimes, and other sleep-wake habits for the week and weekend.

Procedure

We recruited student volunteers from psychology courses. All of the students who agreed to participate were given a survey packet that included a copy of the SQI, a sleep-habits questionnaire, and a brief series of demographic questions. The University Institutional Review Board approved the study, and all participants thus gave informed consent before completing the survey; we maintained confidentiality at all times.

RESULTS

The data in Table 1 show the prevalence of symptoms on the SQI.[11] Results of the SQI showed that only 11% of our sample of college students had a total score of 0 or 1 and would be considered having good sleep quality. More than 73% of the sample obtained a total score between 2 and 8 on the SQI, indicating occasional sleep problems. Scores of more than 15% of the sample were greater than 9, indicating that those students' sleep quality was poor. We compared these numbers with those from previous studies of working adults and found that our results were similar to those reported in the earlier reports, except that more of the students we surveyed had poorer sleep quality (15% vs 9%).

We examined individual items on the SQI separately for women and men because of the differences isolated in previous research using the SQI. A one-way analysis of variance (ANOVA) showed that women endorsed some symptoms significantly more often than men did. Specifically, women reported significantly more instances than men did of difficulty in falling asleep $F(1, 189) = 4.95$, $p < .05$; disturbed night sleep, $F(1, 189) = 5.61$, $p < .05$; frequent nocturnal awakenings, $F(1, 189) = 5.22$, $p < .05$; and poorer overall sleep quality, $F(1, 188) = 5.00$, $p < .05$. However, we did not find significant differences ($p > .05$) by gender for the amount of time it takes to fall asleep, ratings of insomnia, morning tiredness, early morning awakenings, use of sleep medications, or symptoms consistent with delayed sleep phase syndrome (DSPS).

In focusing on some specific items of the SQI, we found that almost 18% of the men and 30% of the women reported suffering from some form of insomnia in the last 3 months. More than 8% of the men and 15.8% of the women reported having difficulty falling asleep three or more times a week; 10.5% of the men and 18.8% of the women report-

TABLE 1
Students' Responses to Items in the Sleep Quality Index

	Men (%) (n = 95)	Women (%) (n = 96)	Total (%) (n = 191)
Time to fall asleep (min)			
< 10	29.5	14.6	22.0
11–30	51.6	64.6	58.1
> 30	18.9	20.8	19.9
Suffered from insomnia			
Not past 3 mo	82.1	70.8	76.4
< 3 ×/wk	14.7	24.0	19.4
≥ 3 ×/wk	3.2	5.2	4.2
Difficulties falling asleep			
Not past 3 mo	56.8	42.1	49.5
< 3 ×/wk	34.7	42.1	38.4
≥ 3 ×/wk	8.4	15.8	12.1
Disturbed night sleep			
Not past 3 mo	56.8	40.6	48.7
< 3 ×/wk	32.6	40.6	36.6
≥ 3 ×/wk	10.5	18.8	14.7
Waking up during night			
< 1 ×/mo	61.1	47.9	54.5
< 3 ×/wk	30.5	33.3	31.9
Most nights	8.4	18.8	13.6
Morning tiredness			
Mostly alert	30.5	32.3	31.4
Cannot say	15.8	12.5	14.1
Mostly tired	53.7	55.2	54.5
Waking too early			
Not past 3 mo	50.5	59.4	55.0
< 3 ×/wk	36.8	26.0	31.4
≥ 3 ×/wk	12.6	14.6	13.6
Sleep medicines			
Not past 3 mo	90.5	86.5	88.5
Occasionally	8.4	12.5	10.5
At least 1 ×/wk	.5	.5	1.0

ed having a disturbed night's sleep three or more times a week. In addition, 8.4% of the men and 18.8% of the women reported waking during most nights. A very surprising finding that is of particular interest is that 53.7% of men and 55.2% of women reported that they felt tired during the morning.

The data in Table 2 provide descriptive statistics for participants' sleeping habits. This sample of college students reported an average bedtime of 11:40 PM during the week and 1:17 AM on the weekend. Average waking time during the week was 7:42 AM and on weekends was 9:45 AM. Average time to fall asleep was just over 22 minutes (SD = 18.6). Total time slept was 8 hours and 2 minutes per day during the week and 8 hours and 27 minutes during weekends.

Our examination of sleep perceptions of students showed a significant difference, t = 9.37, df = 191, p < .0001, between the actual hours slept as measured by the wake and sleep times during the week (M = 8.04, SD = 1.7) and their estimated amount of sleep for the week (M = 6.92, SD = 1.3), although we found no significant difference for the weekend. We found significant differences for perceived sleep during the week and on weekends, and for ideal sleep during the week and on weekends. When comparing actual sleep with ideal sleep, students desired significantly more sleep on the weekend, t = 4.985, df = 191, p < .0001, than during the week. Although students may have desired more sleep on the weekends, our results showed that they did not get more. It is interesting that students were able to estimate the amount of sleep obtained on the weekend almost exactly in concordance with the actual amount of sleep they obtained. Finally, there was a significant positive correlation (r = .19, p < .008) between the number of hours students participated in gainful employment and sleep quality.

COMMENT

Results of the current study supported the contention that many college students suffer from some form of sleep disturbance. A large majority (73%) of the students indicated at least occasional sleep problems, with women reporting more of some difficulties than men did.

The results of the SQI indicated a higher percentage of this sample (15.3% vs 9.3%) met the criteria for poor sleepers than did those in the original Finnish standardization sample.[11] More specifically, the current college student sample reported higher frequencies for many sleep difficulties than did the Finnish sample. The sleep difficulties that were more prevalent in the student sample were taking more than 30 minutes to fall asleep, difficulties falling asleep more than three times a week, morning tiredness, and waking too early. Our results indicated that college students suffer a decreased level of sleep quality compared with a "normal" adult population. Previous research has indicated that the quality, not the quantity, of sleep is related to overall well-being and health.

It is likely that environmental and other demands during the college years contribute to students' sleep difficulties; that student stress and demands may interfere with sleep habits; and that these sleep problems, in turn, lead to further problems and thus create more sleep difficulties. This pattern may become a self-perpetuating cycle that students are unaware of and may be unable to alter.

Responses to the survey indicate that the women reported significantly more symptoms than men did. Interestingly, this is consistent with the finding of Lindberg and associates[12] that women reported significantly more difficulty in maintaining sleep, more incidents of morning tiredness, and more daytime napping. This high level of difficulties for women may be related to women's experiencing more depression,[13] as well as to the relationships among somatic complaints, depression, anxiety, and sleep.[12,14]

One finding that we did not anticipate was that students' perceptions of sleep quantity differed for weekdays, but not for weekends. Students perceived themselves as getting less sleep during the week than the actual amount that they reported, although the students desired more sleep on weekends than they got during the week. These perceptions of sleep quantity by students may lead to more difficulties for

TABLE 2
Descriptive Statistics for Students' Sleep Habits

	M	*SD*	Minimum–maximum
Bedtime: wk	11:40 PM	1 hr, 2 min	8:30 PM–4 AM
Awakening: wk	7:42 AM	1 hr, 36 min	4:30 AM–1 PM
Bedtime: wkend	1:17 AM	1 hr, 36 min	10 PM–5:45 PM
Awakening: wkend	9:45 AM	1 hr, 46 min	5 AM–2 PM
Hr sleep from bed–wake time: wk	8 hr, 2 min	1 hr, 45 min	4 hr–13 hr, 30 min
Hr sleep from bed–wake time: wkend	8 hr, 27 min	1 hr, 48 min	3 hr–16 hr
Estimate hr sleep: wk	6 hr, 55 min	1 hr, 21 min	4 hr–15 hr
Estimate hr sleep: wkend	8 hr, 20 min	1 hr, 42 min	4 hr–12.5 hr
Ideal sleep: wk	8 hr, 15 min	1 hr, 2 min	6 hr–11 hr
Ideal sleep: wkend	9 hr, 17 min	1 hr, 45 min	4 hr–16 hr
Min until fall asleep	22 min	18 min	2 min–120 min

students; those who believe that they are not getting enough sleep during the week may act as if they should be tired. Our findings in this study, however, indicate that students get almost as much sleep per night during the week as on weekends and that the total number of hours falls in the range (8 to 9 h/night) that is considered normal for most individuals.

Limitations

Several limitations that may have influenced the results that we obtained should be noted.

1. The singular geographic location of the university in the rural southeast may lead to difficulties in generalizing the results to other regions.
2. The sample consisted exclusively of participants from introductory psychology classes. That effect would be somewhat mitigated because all university students are required to take this course.
3. The SQI was normed in Europe and therefore comparisons with a US population may be problematic.
4. The Sleep Habits Questionnaire has not been formally validated.
5. Finally, the student data are self-reported and the students may not have accurately reported their sleep habits or the nature of the difficulties they were experiencing.

Clearly, student sleep habits and patterns and their affect on student adjustment, academic performance, and health are underrepresented in the research literature. The current results are consistent with the few studies that have examined sleep habits and patterns of college students. Such studies consistently demonstrated that large proportions of students suffer from some form of sleep difficulties, yet the full impact of these sleep difficulties is currently unknown. However, it is logical to assume that sleep difficulties affect many aspects of students' lives. Lack[5] demonstrated that students' experience of DSPS was related to their poor performance in early morning classes, compared with performance of individuals who did not suffer from DSPS.

Recommendations

Universities and college authorities should acknowledge that students' sleep habits and patterns probably are significant concerns that warrant educational programs and interventions. The officials may want to provide students with training about appropriate sleep behaviors and explain how those habits and patterns are related to adjustment and performance. Despite the commonly held belief that educational programs lead to little behavioral change, some researchers indicate that is not the case. Educational programs have been shown to be more effective than long-term interventions and pharmacologic treatments for sleep difficulties.[15,16]

Campus administrators may also want to examine course schedules, allowing some sections to be offered later in the day for those students who have difficulty with morning tiredness. Such an action would allow these students to be fully awake and alert, which would afford them the opportunity to learn the material and perform at their maximal level without sleep-problem interference.

In addition, universities and college officers may want to examine how campus and community environments contribute to students' sleep difficulties. Activities, schedules, sports, and work routines may contribute to sleep difficulties. In conjunction with this, it would be beneficial for college healthcare providers to review sleep schedules as a routine part of all student visits.

The need for more research on student sleep is clear. Specifically, researchers should examine variables or factors that lead to poor sleep quality. Future research should also focus on how to help students combat sleep difficulties and avoid the deleterious effects that such problems they can have in students' lives.

It would also be beneficial to examine "good sleepers" to

determine what they do to achieve quality sleep and how those students' lifestyles are different from those of poor sleepers. Finally, researchers should examine the influence of sleep quality and difficulties on academic performance, student development, and adjustment to college life.

NOTE

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ABSTRACT

Williams, E. N., & Edwardson, T. L. **Managed Care and Counseling Centers: Training Issues for the New Millennium.** Journal of College Student Psychotheraph, 2000, 14 (No. 3) pp. 51–65.

One hundred and one counseling center directors from colleges and universities across the United States responded to a questionnaire about the impact of managed care. The results revealed that 53 percent of the respondents believed that managed care has impacted the counseling center, most frequently in the areas of increased accountability, a diminishing outside referral base, hiring and personnel policies, and apprehension among the staff of being outsourced. Fifty-seven percent of the respondents reported that they had been required to demonstrate the cost-effectiveness and impact of their services in some way. Concerning the types of skills and qualities most desired in new professionals in the era of change and managed care, the respondents most frequently reported consultation and outreach, brief therapy, crisis intervention, a generalist approach, and diversity skills. (39 ref)—*Department of Psychology, St. Mary's College of Maryland*

Cited in *Higher Education Abstracts.*

ABSTRACT

Matchen, J., & DeSouza, E. **The Sexual Harassment of Faculty Members by Students.** Sex Roles, 2000, 42 (February) pp. 295–306.

At a large midwestern university, 102 faculty members and 359 college students responded to the Sexual Experiences Questionnnaire, which measures the experience of sexual harassment. The results revealed that 63 percent of the students reported engaging in potentially sexually harassing behaviors at least once toward faculty members, and 53 percent of the faculty members indicated experiencing at least one sexually harassing behavior from students. The students did not differ by gender in their likelihood of perpetrating the three types of sexual harassment (gender harassment, unwanted sexual attention, and sexual coercion). The women professors reported more unwanted sexual attention than did the men professors and were also more bothered by unwanted sexual attention. The men and women faculty members were as likely to report experiencing gender harassment, but the women were more bothered by the experience. (29 ref)—*Second author is at the Department of Psychology, Illinois State University.*

Cited in *Higher Education Abstracts.*