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**Sleep Quality and Negative Associated Behaviors of College Students:
A Cross-Sectional Study**

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Abstract. Objective: The purpose of this study was to ascertain what negative behaviors college students are engaging in that could be causing them to have poor sleep. **Participants:** A total of 134 students completed the online surveys. **Methods:** An online sleep survey was e-mailed to health science department students at the College at Brockport. Survey questions included demographics, sleep patterns, living situation, and asked them to self-report their negative sleep behaviors. **Results:** Most students reported to live near campus in off campus housing. Students claimed to average 8-9 hours of sleep each weekday and weekend night. Of the top negative self-reported behaviors students submitted 23 students claimed their sleep loss was due to school work and studying. 18 students claimed poor sleep due to mental issues like stress and depression and 16 students claimed drugs, alcohol, and caffeine related stimulants lead to their poor sleep. Lastly 14 students reported going out with friends or partying lead to their poor sleep quality. The 64 other collected student surveys had a mix of answers that did not lend themselves to a particular larger theme or category. **Conclusions:** There are many college students that suffer from poor sleep quality overall. This study attempted to shed light on what may be causing these students poor sleep in general. College administrators and school related faculty could use these results in forming prevention strategies to help college students improve their sleep. This better quality of sleep could help improve overall academic performance.

In the United States, sleep has been shown to be a problem within the realm of public health. Sleep is an essential part of life for several reasons. When we sleep the brain regains energy and is able to boost the human immune system to deal with illness and fatigue. Proper sleep also allows individuals think more clearly and objectively. Sleep is also important for memory, and performance growth (University Health Center, 2013). Individuals who get quality uninterrupted sleep are typically more positive during the day. That is why the issue of poor sleep quality is very important to study.

One group of individuals which has been identified with trouble sleeping is college students. Over the last few decades there has been increased research into the importance of a good night's sleep and its relation to academic performance. According to Clete A. Kushida, MD, PhD, director of the Stanford University Center for Human Sleep Research and a member of the American Academy of Sleep Medicine (AASM) board of directors, "There are data that sleep loss leads to learning and memory impairment, as well as decreased attention and vigilance" (College students, 2007, para. 4.). Another physician-scientist Lawrence Epstein, MD, the medical director of Sleep Health Centers in Brighton, Mass., says "that sleep deprivation effects not only whether a student can stay awake in class but how they perform as well" (College students, 2007, para. 4.). In addition, Lawrence Epstein, MD, the medical director of Sleep Health Centers in Brighton, Mass., said "that sleep deprivation effects not only whether a student can stay awake in class but how they perform as well" (College students, 2007, para. 2).

Throughout the typical college experience students deal with an array of complex academic, social, and personal daily situations which shape them into who they will become. It is these daily experiences that may also be having an impact on their individual sleeping patterns.

Therefore research into the area of sleep quality is necessary because sleep is important to active learning in the college environment.

One example of research into poor sleep quality was conducted by Forquer, Camden, Gabrielau, and Johnson at the Department of Psychology at Central Michigan University in Mount Pleasant. Their study examined college students' sleep patterns at a public university to identify problem such as sleep patterns, problems, and possible influencing factors. The investigators found that of 313 students surveyed, more than 33% of the students took longer than 30 minutes to fall asleep, 43% woke more than once nightly, and more than 33% reported being tired during the day. The researchers found no differences between undergraduate students and the graduate students (Forquer et al, 2008). The study concluded that many college students have problems that can negatively impact academic performance and driving abilities.

Another sleep study conducted by Buboltz, Brown, and Soper (2001) of the Counseling Psychology Department at Louisiana Tech University used a quantitative based approach to find indications of students' sleep problems. The researchers did this to help address deficiencies in the literature. In the study a sample of 191 undergraduates at a rural southern university found that most of the students exhibited some form of sleep disturbance. Women, in general, reported more sleep disturbances than men did. In the end the researchers concluded that universities and college authorities should look into sleep habits of college students to reduce the effects of sleep issues on overall academic performance.

The study conducted by Gilbert and Weaver (2010) looked into sleep quality and its relation to academic performance in college undergraduates. The study examined the relationship between sleep deprivation, sleep, quality, and academic performance. The results found a significant negative correlation between global sleep quality (GSQ) on the Pittsburgh Sleep

Quality Index and grade point average (GPA). This finding supported the researchers' initial hypothesis that poor sleep quality is associated with lower academic performance for non-depressed students. However, one of the limitations of their study was that they could not determine the underlying cause of the poor sleep quality, and the resultant lower grade point average. Gilbert and Weaver (2010) suggested, "Because this was correlational research, we cannot infer directionality of effect (i.e., that poor sleep quality caused lower grade point average). It is possible that students with academic difficulties engage in other behaviors that in turn cause poor sleep (e.g., substance abuse)" (p.303).

It is the Gilbert and Weaver study limitations and the lack of behavioral information that gave cause for further investigation. This study seeks to address this gap in the literature by asking: *What specific behaviors the college undergraduates engage in that affect their sleep quality?* It is hoped that the current study will allow for characterization of the behaviors themselves along with evaluation of the impact of individual and synergistic combinations of behaviors. This valuable information may provide insight into key factors behind the poor sleep epidemic.

Methods

Participants

Both undergraduate and graduate students who are majoring in a field from Health Science department the College at Brockport State University of New York were invited through email to participate in this institutional review board (IRB) approved survey. Invitations were sent to approximately 700 students in the Health Science department at the College at Brockport.

Measures

To examine and determine the other specific behaviors causing poor sleep quality we conducted an online survey generated through surveymonkey.com. The survey asked basic demographic questions about gender, age, year of schooling and the students' current housing situation. The survey also asked about sleep duration (how many hours a day/night they sleep) and variability (if they sleep more or less on a weekday or a weekend). The final two survey questions asked the participant to list in rank order of importance their own negative and positive sleep behaviors that they believe affects their sleep quality.

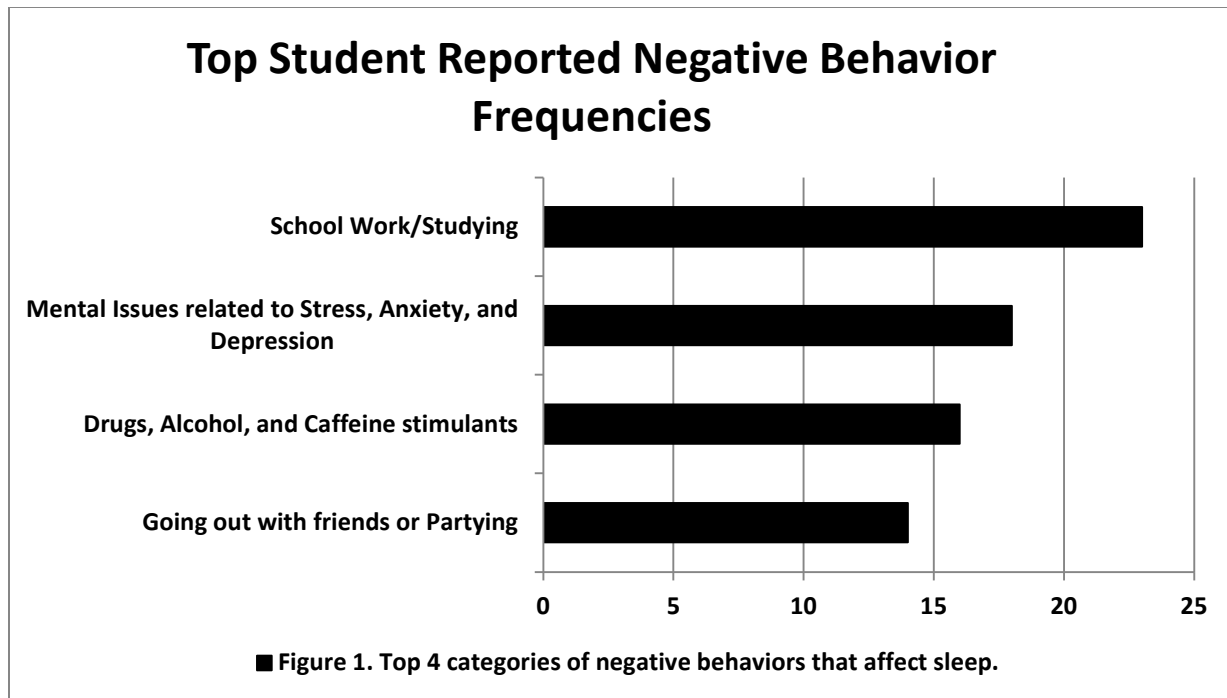
Procedure

The link to the survey was included in an e-mail below a recruitment script that explained the purpose of the study. The e-mail was sent to all Health Science students at the College at Brockport who have current school addresses and student ANGEL online network e-mail accounts. All of the information was confidential. The students clicked the survey link to acknowledge their agreement to participate, then clicked through the informed consent statement page to participate in the study and complete the survey. All completed surveys were submitted to our password protected, limited access survey-monkey account where the data was collected.

Upon close of the data collection window, a dataset consisting of anonymous question responses was exported and stored in a password-protected account and all data on the Survey-Monkey.com site was cleared.

Results

We sent out 700 requests for participation by the Health Science students and 134 participants completed the survey. In the sample of participating students 118 were female, 16 were male. Mean age of the participants was 21 years (approximately 90% could be considered “traditional” college age students). The demographics of participants were representative of students in the Brockport Health Science department: 40% were in their third year of college, the highest at 45% reported living off campus in a housing residence near by campus, and 27% reported living on campus in a dorm or on campus apartment. The rest lived off campus with parents or by themselves not near the college campus. When asked to estimate the total number of hours the student sleep each weekday and weekend, participants averaged around the same at 8-9 hours total each night. When asked if they sleep around the same time each weekday, 67% said yes around the same time each weekday. The students were also asked if they go to sleep around the same time on both weekdays and weekends; 77% reported that they went to sleep (and woke) later during the weekend.



Comments

The majority of college students that answered the survey reported that they go to sleep later during the weekends. Almost half also reported living in off campus housing that was near by the college. This suggests that there is a possible association between where the students reside with the lifestyle and behavioral choices that they make. That this population is near campus both during and after school offers the possibility for general health promotion programming by campus life offices that specifically targets improving sleep quality (such as time management skills when studying or the importance of maintaining sleep routines throughout weekdays and weekends).

The different negative behaviors that were reported also suggest possible targets for tailored health programming. For example, time management skills might benefit those who reported negative school-work/study and relaxation skills might benefit those who reported mental health stress-anxiety negative behavior. The drug and alcohol behavior group may be

associated with the going out and partying behavior group. Both of these might benefit from increased alternatives within student life programming.

Another interesting find was that participants reported a close range in total hours of sleep for both weekdays and weekends (means of 8-9 hours). So, even when stressed over life, homework, school, or going out and drinking, participants are seemingly getting an adequate quantity of sleep hours, but the quality of these hours is in question. Given that there were few commonalities among the reported positive behaviors, there seems to be a need to teach students awareness and management skills to improve their quality of sleep.

There are some limitations in this study that should be noted. First, the 134 responses of the survey consisted only of students from the Health Science department at the College at Brockport. This issue could cause bias to the results of the study if students in the Health Science Department have a greater level of information on the subject of poor sleep hygiene. If so, this would mean that these results are probably conservative and the level of negative behaviors among the general college population may be worse. There may also be other negative behaviors that have yet to be identified among other groups on campus.

Secondly, the main question in the survey asked the student to self-report what they believe is the negative behavior impacting their quality of sleep. These responses may be affected by the participants' current social, personal, or cultural situations. In addition, the geographic location of this college in a Western New York suburban area may not allow for generalizing to other college students across the United States.

Recommendations

Based on the high frequencies of stress/school work, mental issues, drugs/alcohol, and partying found and the negative reported behaviors, it is not surprising that students at the College at Brockport also report suffering from some form of poor sleep quality. Poor sleep quality is an issue that has seen several studies yet relatively little preventive actions. Action on this issue must be taken in order to achieve a positive impact on the college student population at large. At the College at Brockport, stress and anxiety along with time requirements for studying and assignments appear to play a role in a majority of the poor sleep quality cases that students are facing. Perhaps more large-scale studies looking at potential interventions toward the reported negative behaviors will prompt improvement in students' overall quality of sleep. Faculty and administrative leadership of colleges and universities across the country need greater awareness of how important sleep is. Students' outside lives are complicated, with pressures from peers and jobs competing with long assignments, presentations and test preparation. More emphasis on time management skills training seems like a novel target for health promotion programming to indirectly improve sleep quality among college students.

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