

University of Missouri, St. Louis

IRL @ UMSL

---

Dissertations

UMSL Graduate Works

---

12-12-2016

## Implementation of Sleep Assessment Questionnaire in College Health and Counseling Visits: A Quality Improvement Pilot

Sarah Ruth Jackson

University of Missouri-St. Louis, [srjtgb@mail.umsl.edu](mailto:srjtgb@mail.umsl.edu)

Follow this and additional works at: <https://irl.umsl.edu/dissertation>



Part of the [Nursing Commons](#)

---

### Recommended Citation

Jackson, Sarah Ruth, "Implementation of Sleep Assessment Questionnaire in College Health and Counseling Visits: A Quality Improvement Pilot" (2016). *Dissertations*. 43.

<https://irl.umsl.edu/dissertation/43>

This Dissertation is brought to you for free and open access by the UMSL Graduate Works at IRL @ UMSL. It has been accepted for inclusion in Dissertations by an authorized administrator of IRL @ UMSL. For more information, please contact [marvinh@umsl.edu](mailto:marvinh@umsl.edu).

DNP Project: Implementation of Sleep Assessment Questionnaire in College Health and  
Counseling Visits: A Quality Improvement Pilot

Sarah R. Jackson, MSN, APRN, FNP-C

BSN, Deaconess College of Nursing, 2005

MSN, Family Practice Nurse Practitioner Program, University of Missouri-St. Louis, 2013

A Doctor of Nursing Practice Project Submitted to The Graduate School at the University of  
Missouri-St. Louis in partial fulfillment of the requirements for the degree  
Doctor of Nursing Practice

December, 2016

Project Committee

Nancy Magnuson, DSN  
Chairperson

Richard Yakimo, PhD

Roxanne Vandermause, PhD

### Abstract

Sleep deprivation or sub-optimal sleep hygiene in college students has profound implications. Decreased cognitive performance, increased depression or mood concerns, higher rates of usage of alcohol or marijuana to compensate for poor sleep are all interconnected. The American College Health Survey (2011) results indicated that students do not receive support or education on the importance of sleep habits from their schools or medical providers. This DNP project explored two areas of interest. The first was a change in patient interview protocol as a quality improvement project in UMSL University Health, Wellness, Counseling & Disability Access Services (UHC&DAS). The second area of interest explored a qualitative evaluation of the clinicians' experience of having a sleep assessment questionnaire imbedded in an electronic health record (EHR) for college health and counseling visits. The questionnaire was developed to aid the provider in streamlining education and discussions with individual students based on their initial responses, thus improving the quality of services offered in UHC&DAS. Subjects were the doctoral prepared health & counseling providers in UHC&DAS. A focus group was completed at the end of the study to explore the subjects' experience and feedback. This data was collected using qualitative descriptive methodology. Quantitative data was collected & evaluated from the electronic medical record. **Results:** Qualitative descriptive methodology indicated clinicians found the sleep questionnaire useful, time efficient, and user-friendly. Further streamlining of the sleep assessment questionnaire would aid in continued use for clinicians. Quantitative results indicated that student sleep habits are less than ideal, and subsequent education/interventions could be assets in assisting students develop improved sleep hygiene habits.

*Key words:* sleep questionnaire, sleep hygiene, college students, electronic health record

DNP Project: Implementation of Sleep Assessment Questionnaire in College Health and  
Counseling Visits: A Quality Improvement Pilot

### **Background**

In the 2005 National Sleep Foundation Poll (National Sleep Foundation, 2005) 24% of adult respondents admitted to having missed a work/social event, or made errors in the previous three months as a result of being sleepy or due to lack of sleep. Sleeping less than five hours nightly for a period of a week is the equivalent of a blood alcohol level of 0.1% (Harvard Medical School of Sleep Medicine, n.d.). Sleep is vital for learning, memory, safety, and health. Sleep deprivation was considered a contributing factor in such worldwide disasters such as Chernobyl, the Exxon Valdez oil tanker, and even the spaceship Challenger explosion (Harvard Medical School of Sleep Medicine, n.d.). Excessive sleepiness is associated with seven times more automobile accidents, more occupational accidents, and higher rates of job dismissal in individuals who report subjective fatigue (Brown, Buboltz, & Soper, 2006).

The importance of sleep on academic performance for college students has been upheld by numerous studies (Kloss et al., 2010; Chaput, McNeil, Despres, Bouchard, & Tremblay, 2013; Taylor, Vathauer, Bramoweth, Ruggero, & Roane, 2013). In U.S. colleges, 83% of undergraduates surveyed described “not getting enough sleep” as having an effect on academic performance (Gradisar et al, 2013). The 2009 National College Health Assessment summary reported 20% of college students in the United States conveyed sleep difficulties as impacting academic performance. In the 2011 National College Health Assessment survey, it was noted that 89% of students surveyed reported

sleepiness during daytime activities. Inadequate sleep contributes to a decrease in cognitive, psychomotor, and emotional functioning (Kloss, Nash, Horsey, & Taylor, 2010).

The American Thoracic Society recommends that adults in good health maintain sleep schedules between seven and nine hours (Mukherjee, et al., 2015). Forty percent of adults in the 2005 Sleep in America poll admitted getting less than seven hours of sleep on weekdays (National Sleep Foundation, 2005). The 2005 National Sleep Survey results noted that 70 % of adults stated they were not asked about sleep health by their primary care providers (National Sleep Foundation, 2005). By increasing sleep, adults benefit from many physiological and mental symptom improvements. Less respiratory infections, lower rates of metabolic syndrome, and heart disease are all associated with good sleep health (Wilder-Smith, Mustafa, Earnest, Gen, & Macary, 2013, Chaput, McNeil, Despres, Bouchard, & Tremblay, 2013).

Sleep deprivation or sub-optimal sleep hygiene in college students has profound implications. Decreased cognitive performance, increased depression or mood concerns, higher rates of usage of alcohol or marijuana to compensate for poor sleep are all interconnected with poor sleep for students (Gaultney, 2010). The American College Health Survey (2011) results support that students are not receiving support or education on the importance of sleep habits from their schools or their medical providers. This is a growing problem that may affect, not only school performance but, lifelong earnings, mental health, physical health, and may increase the risk of dropout, burnout, and larger student debt burden (Kloss et al., 2010; Caldwell, Harrison, Adams, Quin, & Greeson, 2010).

The National Sleep Foundation's 2011 Sleep in America poll found nine out of ten of the participants polled used a technological device in the hour before bed, with the television being the most popular response (Gradisar et al., 2013). Those participants under 30 were more likely to use their cell phones in the hour before bed than those over thirty years old. Young adults (aged 19-29 years) reported later bed times and more difficulties falling asleep.

Inadequate sleep hygiene (ISH) is one of the most common sleep disorders seen in college students (Kloss et al., 2010). Inadequate sleep hygiene is defined as a form of insomnia present for at least one month, where the insomnia is caused by one of the following: improper sleep scheduling; variable bed or rising times; spending excessive amounts of time in bed; routine use of alcohol, nicotine, or caffeine; engaging in mentally stimulating, physically activating, or emotionally upsetting activities close to bedtime; frequent use of bed for activities other than sleep; or failure to maintain a comfortable sleep environment (American Academy of Sleep Medicine [AASM], 2005).

The duration and quality of one's sleep is affected by many factors. For college students, this may be the first time they share a room. Outside noise can cause disturbances. Excess caffeine during the day can contribute to difficulties with falling asleep (Kloss et al., 2010). Early classes, social events late at night, and studying can shorten the time devoted to sleep. While the list of contributing causes is long, what can be controlled by students is their maintenance of sleep hygiene. Without the realization that sleep is necessary for cognitive activities, good health, and reduced mental health symptoms, students are at a disadvantage to change the cycle. This can lead to an overall reduction in health status with lifelong implications.

Universities have taken note that sleep is an undervalued habit which can greatly influence students' physical & mental health. In the 2014 spring College Health Survey, 74.3 % of respondents reported not receiving information from the university regarding sleep difficulties (American College Health Association, 2014). Research and programs are being conducted in many post-secondary institutions to evaluate and implement techniques to improve this vital aspect of students' lives. Successful improvements in sleep health enables students to better focus, manage time, complete course work, and maintain functioning of their immune systems. Outcomes of these programs focus on grade point averages, mental health, and daytime functioning. A recent study that consisted of a comprehensive look at college student well-being scale scores concluded "the strongest predictor of well-being was sleep quality...the quality and not quantity of college students' sleep was associated with lower scores on measures of subjective well-being." (Ridner, Newton, Staten, Crawford, & Hall, 2016)

Methods of evaluating sleep hygiene in students vary by university, as do interventions to improve sleep health (Conley, Travers, & Bryant, 2013; Macan, Shahani, Dipboye, & Phillips, 1990; Trockel, Manber, Chang, Thurston, & Tailor, 2011; Quan, Anderson, & Hodge, 2013). Currently, a proven sleep assessment tool specific to college students has not been identified. Thus, many studies use screening tools or open ended statements for the general adult population. Standard sleep tools such as the Epworth Sleepiness Scale (ESS) or the Pittsburgh Sleep Quality Index (PSQI) are the most commonly used tools in research on sleep health of college students. The PSQI is designed to assess sleep quality during the previous thirty days with using a nineteen question self-rated tool (Buysse, Reynolds, Monk, Verman, & Kupfer, 1988). The ESS

was designed to evaluate general levels of daytime sleepiness via an eight question self-rated tool (Johns, 1991). These two tools were tested and implemented based on reliability for early middle aged adults (aged 38-50 years). While the typical college undergraduate age has increased in recent years, according to the National Student Clearinghouse adult learners (aged 25 years or older) only comprise 38% of college students nationwide (National Student Clearinghouse Research Center, 2015) . College health is a primary source of health care for many students in this nation. Inclusion of an assessment of sleep health during college health clinic visits could be of great benefit in identifying sources of poor sleep. Additionally, an assessment that is easy for clinicians to use during a health concern visit would be optimal. Ease of use is imperative in order to be streamlined into student appointments. Excellent time management is required of clinicians in all arenas; thus a questionnaire that lends useful information while not significantly hindering current flow is necessary.

This study examined clinicians' qualitative feedback on a pilot questionnaire incorporated in the student EHR for health and counseling appointments at an urban university.

### **Objectives**

In this DNP project, a short screening questionnaire was embedded in the electronic health record for providers' use to assess sleep habits of college students during scheduled appointments in health and counseling services. The sleep screening questionnaire was developed in effort to:

- Obtain objective information relevant to sleep hygiene of individual students



- Aid in identifying health ailments which could affect sleep
- Streamline sleep conversations during visits for providers
- Identify sleep intervention or education needs of individual students
- Identify areas of potential education for Health, Wellness, Counseling & Disability Access Services (HWC&DAS)

A short eight question evaluation was developed by reviewing the current validated tools such as the Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), and Sleep Hygiene Awareness and Practices tool (SHAPS). Areas of importance in relation to college students emerged as these tools were reviewed. Brief and relevant questions were developed to aid the clinician in screening students for sleep health.

The purpose of this study was to examine the value to the nurse practitioner and counseling providers of adding a sleep questionnaire into the EHR. Did using the questionnaire result in additional assessment information related to students' sleep habits and health issues that affect sleep? A useful questionnaire could potentially aid the providers in assessing sleep and identifying student educational needs related to sleep hygiene. This could influence changes clinical practice. Evidence continues to emerge regarding sleep health and the great importance it plays in overall health. Use of a sleep questionnaire could aid in transferring evidence into practice.

Engaging stakeholders who were both influential and committed to a project was a key aspect of developing a successful plan. These individuals and groups can guide and reflect on project strengths and weaknesses which may result in changes to create a more impactful study. Key stakeholders can help studies gain momentum, financial support,

and an overall interest in a program. Capitalizing on feedback of involved stakeholders may result in small changes to the phrasing of the proposed tool. However, a quality evaluation on the provider's experience and perceived value of the additional questions was the goal. Those to be identified and sought for program support are those who are affected, those involved in program operations, and those who are impacted or will use study results.

Identified stakeholders for this project included University of Missouri – St. Louis (UMSL) Student Affairs, University Health, Wellness, and Counseling providers, and college students. These key stakeholders were priorities to engage and excite others about this study. University of Missouri St. Louis reports a 42% graduation rate within 6 years, far below some of the sister institutions in the University of Missouri system. Mental health and sleep are noted to contribute to stress levels of students and may have an impact on graduation rate. Decreased grade point averages may increase time to graduation, drop out, increase student loan burden, and may result in less consideration for competitive internships (Gaultney, 2010). Poor test scores (thus poor grades), less mental resiliency, and exacerbated physical symptoms due to poor sleep habits may be a contributor to the graduation rate at UMSL. The administration of UMSL may be interested in reviewing questionnaire results and considering the impact on existing graduation data in an interest to improve the student experience.

### **Problem Statement**

This project was designed to answer these key questions:

1. Did use of the sleep questionnaire provide additional valuable information for providers to discuss?

2. Did the sleep questionnaire provide an organized way of evaluating sleep habits and identifying health issues which could affect student's sleep?
3. Did the sleep questionnaire use increase the visit time substantially?
4. Did healthcare staff perceive the sleep questionnaire as useful?

### **Project Theoretical Framework**

The Diffusion of Innovations theory will serve as a framework for designing this project. The Diffusion of Innovations focuses on “reinvention of products or behaviours so they become better fits for the needs of individuals or groups” (Robinson, n.d.). Rogers outlined five steps in his Diffusion of Innovations theory: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003). In this project, the researcher created a questionnaire to evaluate sleep habits of college students. The focus was to evaluate whether or not the questionnaire provided valuable assessment information, determine if an advantage was perceived to embedding a questionnaire in the EHR, and if the questionnaire contributed to assessment during a student health visit. The data comprised of qualitative questions to allow capture of comprehensive responses from providers. Additionally, the questionnaire data was reviewed for common themes in student responses. A minimal amount of quantitative data was collected, which comprised of number of questionnaires and percentages of specific question responses. Discussion in the focus group considered whether or not to implement this method as a new standard of care for providers at UMSL Health, Wellness, and Counseling services. The focus group interview concluded the confirmation portion of the theory for this short

pilot. Future implementation and revision as a result of this project's findings would begin a new cycle of the Diffusion of Innovations theory

### **Project and Study Design**

A questionnaire was incorporated into the existing electronic health record in order to streamline a brief sleep evaluation during college health clinic and counseling visits. A group focus interview with providers was utilized to examine whether the proposed questionnaire affected the care delivered to students, from the perspective of the provider. The provider subjects were the doctorally prepared nurse practitioner and counseling psychologists for undergraduate college students aged 18-26 in an urban setting, specifically at UMSL. Exclusion criteria did not apply, as the questionnaire is an aid for visits. Questions to ask students were embedded in the current electronic health record. Additionally, paper forms were provided. Health and counseling subjects accessed to the questionnaire template via the electronic health record during visits with students, or utilized the paper form and discussed upon review. The streamlined questionnaire was developed to identify the sleep habits of students and possible health concerns that may affect sleep of students. Areas of education and intervention for students related to sleep hygiene were also identified.

The questions created for this project were:

1. In the past 2 weeks, how many nights have you slept at least 7 hours?
2. In the past 2 weeks, how many nights have you had difficulty falling asleep?
3. In the past 2 weeks, how many nights have you had difficulty staying asleep?
4. Do you have a regular bedtime routine?

5. How often do you have screen time in bed (smart phone, television, and internet)?
6. Do you feel refreshed when you awaken?
7. How often in a semester do you pull “all-nighters”?
8. Would you like assistance in changing any of these habits?

The first seven questions were answered on a Likert scale of: “none, less than ½ nights, ½ nights, more than ½ nights, or every night.” Question number eight was answered yes or no.

These questions were created in an effort to identify specific conditions that may affect sleep in college students. Questions number one, four, five, seven and eight all relate to sleep hygiene, a modifiable habit that, if improved, could result in healthier sleep and improved cognitive functioning. Questions number two and three identify whether anxiety or depression may be impacting sleep. Question number six identifies whether poor quality of sleep, for example, obstructive sleep apnea, may be occurring. Question number eight allows for the student to verbalize if they are interested in more information or assistance in changing lifestyle habits.

Following the questions, an area for the provider to indicate if further conversation occurred as a result of the tool, as well as space for free text of qualitative answers was available in the electronic health record. Providers were not required to free text in the space, but were encouraged to use the area for thoughts and feedback to be reported at the time of visit or during charting.

A qualitative descriptive methodology was used to gather and analyze the data collected. Content analysis, a systematic coding and categorizing approach, was used to determine trends, patterns, and aid in the interpretation of emerging themes (Vaismoradi, Turunen, & Bondas, 2013). The data that emerged offered descriptive validity regarding the experience of the subjects in this study, answering the question of sustainability in the questionnaires current form (Sandelowskin, 2000).

### **Settings and Resources**

The sleep assessment questionnaire was completed during scheduled counseling and health visits. The developed questionnaire assessed the students' performance of healthy sleep habits, as well as identified mental and physical symptoms that may be impacted by poor sleep.

Resources for this project included the University Health, Wellness, Counseling & Disability Access Services (UHWC & DAS) providers, registered nurse, and the technology department. The cost was anticipated to be minimal for the template adjustment in the existing electronic health record, transcription costs, and office supplies. Clinic visit time experienced a small impact, dependent upon the student being identified as needing further education during the visit. Educational sleep brochures were made available after the initial survey to students. These are provided free of cost by the Centers for Disease Control and Prevention (CDC).

### **Project Population**

The subjects of this project were the doctoral prepared counseling and health services providers in the University of Missouri-St. Louis Health, Wellness, Counseling, and Disability Access Services (UHWC & DAS). Reports omitting all identifiable data

were composed to evaluate the results of the template initiation. Number of templates completed, student responses, and trends were reviewed. University Health and Counseling providers participated in a focus group to evaluate the effectiveness of the questionnaire after data collection was complete. One area of requested feedback was the provider's opinion regarding the information collected by the sleep tool: did it result in an impact on care provided or contribute to the patient visit?

University Health Services and Counseling Services personnel have a vested interest in improving the health of students. The quality of their participation was a key indicator of program success, as suggested by tenets of the Diffusion of Innovations theory. Without adequate engagement, a reduced number of tools might have been completed, which may have led to an incomplete assessment.

Survey numbers were routinely monitored to serve as an indicator of whether short term goals were met including number of tools completed, staff participation, and initial provider thoughts on usefulness during office visits. Initial provider responses led to a change in the usage during some visits, with the questionnaire being completed on paper by the student prior to appointment time, at check in. Thereafter, the provider reviewed the information during the visit. This is further examined in the discussion section.

### **Quality**

This project was submitted for expedited review by the University of Missouri Institutional Review Board for research activities involving minimal risk with interaction with human subjects. The data was secured via online secure electronic health record software. Study subjects (participants) completed informed consent. Students who

present to the UHWC&DAS routinely sign consent for treatment and evaluation upon arrival at the clinic. The questionnaire falls well within the existing consent; providers ask appropriate assessment questions for student evaluation as a part of routine care. However, as student responses may be accumulated for analysis at a later date, each student was handed a letter of notification of possible review of sleep question responses at a later date. The form gave students the choice to initial a box implying consent and included directions not to sign should they wish to opt out.

### **Methods**

To engage support, the investigator invited the subjects to a meeting to review the existing published data of the impact poor sleep has on student academic performance, perceived stress, and overall health. Lowry, Dean, & Manders (2010), in an evaluation of sleep quantity and academic performance, reported that quantity of sleep significantly correlates with academic performance. At the time of study, there was no standardized method to screen for poor sleep habits specific to college students. Students who are encouraged to embrace healthy sleep habits may experience less anxiety, less illness, higher grade point averages, and stability of mental/physical health (Orzech, Salafsky, & Hamilton, 2011). Evaluation and education on healthy sleep is a non-pharmacological health intervention often overlooked. By implementation of a screening questionnaire, conversations regarding sleep health were able to be addressed as a routine part of a visit. Additionally, poor sleep is a contributor to obesity, metabolic syndrome, future sleep disorders, and heart disease (Brown, Bubolz, & Soper, 2002; Gaultney, 2010). As a result of this initial meeting, the opt-out form for students was modified to include a place for the student to initial if they agreed to have their data reviewed.



Further, as many of the counseling subjects do not use the electronic health record during the visit, in order to establish rapport, paper forms were provided for use during visit intake.

Indication that the sleep assessment questionnaire was adequately implemented was first evaluated based on the number of charts with results entered. The electronic health record had the capability to generate a report with the number of students with specific templates embedded in charting. By using this report, questionnaire usage was evaluated. When the survey number neared 100, data collection ceased and the focus group interview was scheduled. The de-identified questionnaire responses via electronic health record were reviewed prior to the focus group by the researcher.

The focus group interview took place in a conference room located in the HWC & DAS office at a time that was mutually agreed upon by the subjects. The focus group interview questions were created to ensure that, even with subject elaboration of responses, minimal time would be taken away from subjects' work activities. The interview was recorded with a digital recorder and sent via a secure file to a professional transcriptionist. When the transcriptionist returned the de-identified transcript, it was evaluated by the primary researcher for common themes. Qualitative descriptive methodology was used to evaluate the transcript.

## **Results**

### **Questionnaire**

Ninety two questionnaires were successfully completed and entered into the electronic health record. Of these, seventy three were related to student health visits, and nineteen were the result of a counseling visit. Eighty-six students answered question

number eight “would you like assistance in changing any of these habits?” Of these, thirty-six percent responses were yes. Based on questionnaire responses, thirty eight percent of students indicated they slept less than seven hours nightly three or more nights in the past two weeks. Twenty-four percent indicated difficulty falling asleep four or more nights; twenty-one percent had difficulty staying asleep four or more nights; thirty five percent admitted to not having a regular bedtime routine; and screen time was present in bed four or more nights for sixty percent of students.

The free text area available for clinician use was utilized in forty-one sleep templates. Of these, the most commonly identified themes of notation included: student with poor sleep schedule due to work/school/family commitments (twenty two percent), poor habits notated (seventeen percent), and more pressing concerns addressed during visit (fifteen percent).

### **Focus Group Interview**

The first topic explored in the focus group interview was how the questionnaire contributed to the student visit. The recurrent themes which emerged in discussion of this topic were: *reflection by students*, *importance of sleep*, and *emphasis of sleep health*. The subjects viewed that by using the questionnaire sleep importance was emphasized to the students. They also identified that, by using the questionnaire, there were more topics related to sleep than simply the number of hours of sleep nightly discussed. Subjects indicated that, by using the questionnaire, students often became aware of less than ideal sleep habits.

The questions agreed upon by the subjects as most useful pertained to the students’ bedtime routine and reports of screen time in bed. The subjects agreed that

evaluation of difficulty falling or staying asleep elicited data which may have been obtained from some students regardless of questionnaire. The subjects did see, however, these questions as very useful. Additionally, bedtime routine and screen time were areas that the subjects saw as beneficial to students visits, as these topics were discussed and habits of students assessed, which may not have happened without having the questionnaire.

The subjects verbalized that the question regarding “pulling all-nighters” was confusing, and not applicable to student assessment, as this appeared to be a *rare event* for most students during a semester. They reported mixed responses regarding the questionnaire asking whether or not the students wanted help with their habits. One noted that when students indicated they wanted help with sleep, their visit would have included that plan regardless of the pilot study. Another subject verbalized their belief that many of the no responses had “excuses embedded in the answer”. The rest of the subjects agreed, stating that many students were aware of their poor sleep hygiene/skills, however, due to life circumstances, students voiced they were not currently able to work on changing these habits. Additionally, the difference in type of student visit (counseling vs. health) contributed to which questions seen as most useful. For instance, if the student was at an appointment for a health reason, the subjects regarded the questions which assessed quantity and quality of sleep as impactful to discussion in the treatment plan.

Modifications and improvements to flow were also discussed. Agreement was made that the questionnaire was helpful, but on an *as needed basis* for individual student assessment rather than a standard screening tool. One participant voiced that the

screening tool being used in an *initial* counseling assessment of a student limited the topics of discussion, when the “objective (at an initial visit) is to get a really broad sense (of what is going on for the student).” Conversely, another subject thought the questionnaire would be “really applicable and easy to transition” for student visits. Subjects agreed that for students with psychiatric disorders the questionnaire would be useful in assessing mental health and patterns of mood. Counseling subjects noted that they were concerned that using the questionnaire might make students defensive or fearful that their more pressing needs would not be addressed, that selective usage would be more beneficial.

Mutually agreed upon viewpoints of the implementation of the questionnaire included: ease of use, easy to include in Electronic health record charting, with less than 45 seconds to complete the template in the record, and sustainable as a practice based on individual assessment of patients.

### **Discussion & Implications**

The Center for Disease Control and Prevention (CDC) describes well-being as the synthesis of mental and physical health, which allows for the inclusion of holistic health approaches. Individuals with high levels of well-being are more productive at work, have better immune function, increased longevity, and decreased risk of disease, illness, or injury. Health promotion efforts targeted to college students which could positively impact their lifelong health are important considerations for HWC&DAS.

At the start of the study, a meeting with subjects took place in which the subjects asked questions and general tool usage directions were discussed. As noted earlier, at that time, the counseling providers verbalized that they would like the questionnaire to be

added to intake paperwork on new clients only for this pilot study. Subsequently, this led to a limitation on the number of questionnaires completed in this area of the clinic.

Moreover, the student population at UMSL is quite different from other universities. University of Missouri- St. Louis is largely a commuter campus, with students juggling multiple commitments in comparison to a typical campus which houses most students on campus. As such, a large number of students with reports of poor sleep quality or health was expected by the researcher.

The subjects in this study had varied opinions regarding adoption of a sleep questionnaire in widespread, standard student assessment. The subjects voiced that the questionnaire gave additional talking points. However, counseling providers documented tool usage for less than twenty percent of the questionnaire used, and only at initial visits. In general, the subjects who worked in counseling voiced more objections to using a standard screening tool for their visits. Further discussion revealed that the counseling clinicians do not utilize standard assessments during student visits. One subject voiced that this project had little impact or practicality in routine practice, as conversations are more fluid without assistance of tools.

Counseling subjects also voiced that usage would be more impactful during follow up visits, where previous answers could be compared. Appointments do occur where sleep habits are discussed, however these visits often revolved around treatment of the psychological causes of poor sleep (i.e. anxiety, depression, PTSD), rather than a plan regarding habit modification.

The health clinic responses noted that the assessment was useful, although to ask each question was time consuming as the students elaborated quite a bit. One participant

noted that using the questionnaire in its paper form at patient arrival was a method that could be easily adopted, applicable to student visits, and streamlined in accessibility. The questionnaire was verbalized to be poignant, useful to have students reflect on their habits, correlated well with medical concerns, and led to thoughtful conversations during student visits.

New awareness of student sleep habits, as a result of the subjects participating in this project, could impact the care delivered at future visits. The student responses indicate that a large portion of those surveyed have sub-optimal sleep habits or experience. The clinicians' awareness of this result may result in a closer assessment of habits during visits. The enhancement of the electronic health record with the addition of the questionnaire template gives clinicians the opportunity to utilize questions if desired. Further, the clinicians may opt to use the questionnaire over a period of time to assess the individual student's progress towards goals of sleep health.

University Health, Wellness, Counseling, and Disability Access Services provides primary care and counseling services to many students. Using this study's results, a student evaluation to analyze perceived sleep quality and habits could be of great benefit to develop programs to support the university goals of graduation and retention. This project's results could assist in development of education for students on healthy habits of sleep. As a result of this pilot, HWC&DAS may be able to broaden the scope of services offered to include sleep hygiene. Subsequently, there may be opportunity for many different approaches to enhance student experience. Creation of a program would support the mission and goals of the unit, student affairs department, and university as a whole. Administration and student retention may use the responses as a way to

encourage use of support services in an effort to achieve more students graduating within five years of beginning at the university, which is a current university goal.

Students themselves may be inclined to adopt healthier sleep habits in an effort to improve their mental and physical health, as a result of completing a questionnaire and discussing with a care provider. By building on the existing value placed on good health habits, sleep can be incorporated as a habit to be improved. Immediate improvement in mental and physical health as a result of adequate sleep can be noticed quickly.

Additionally, the potential to increase grade point average (GPA) or decrease time to graduation without increasing studying time is of great benefit. In other published studies, higher GPA is highlighted as a quantifiable result of more sleep. Furthermore, there are other documented advantages to students with a higher GPA, such as shorter time to completion of academic program and greater financial reward professionally.

### **Conclusion**

Given the current state of sleep health noted on college campuses, serious consideration must be given to help students acquire strategies and knowledge to improve their habits. First, a systematic way of evaluating student sleep health must be developed. Current available tools do not provide for consideration of the unique differences between college students and adults not enrolled in school. Undergraduate students are in a unique position of being in a busy environment that fosters growth personally, educationally, as well as developing their own health habits independent of guardians. A reliable screening questionnaire is the first necessary step in the evaluation of college students' behaviors of healthy sleep. Depression screenings, safety screenings, and tobacco screenings are all routinely completed during office visits. Sleep however,

has not previously been implemented as a standard evaluation. The current and future health of the students could be greatly impacted by additional interventions. This project found that, with revisions, the questionnaire developed would be useful in continuing evaluation of sleep habits and experiences of college students. The goals of the questionnaire: ease of use, not increasing visit time, providing valuable information, and organized evaluation were all met as evidenced by the descriptive qualitative methodological review of the transcribed focus group interview. Further, the benefits of *reflection by students, importance of sleep, and emphasis of sleep health* were realized by students.

Successful adoption of a revision of this tool in HWC&DAS could lead to practice change with positive impact on students overall health. Using the Diffusion of Innovation theory to guide the process, future implementation could result in widespread practice change. College health clinicians should be encouraged to continue to discuss sleep health with students, facilitate interventions, and promote wellness in order to support the comprehensive health of students.



## References

American Academy of Sleep Medicine. (2005). International classification of sleep

disorders. In *Diagnostic and coding manual* (2nd ed.). Westchester, IL: Author

American College Health Association. (2009). *National college health assessment 2009*.

Retrieved from <http://www.acha-ncha.org/>

American College Health Association. (2011). *National college health assessment 2011*.

Retrieved from <http://www.acha-ncha.org/>

American College Health Association. (2014). *National college health assessment 2014*.

Retrieved from <http://www.acha-ncha.org/>

Brown, F. C., Buboltz, W. C., & Soper, B. (2006, January/February). Development and evaluation of the sleep treatment and education program for students (STEPS).

*Journal of American College Health, 54*, 231-7.

Buysse, D., Reynolds, C., Monk, T., Verman, S., & Kupfer, D. (1988). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research.

*Psychiatry Research, 193-213*.

Caldwell, K., Harrison, M., Adams, M., Quin, R. H., & Greeson, J. (2010, October 22).

Developing mindfulness in college students through movement-based courses:

Effects on self-regulatory self-efficacy, mood, stress, and sleep quality. *Journal of*

*American College Health, 58*, 433-442.

Chaput, J. P., McNeil, J., Despres, J. P., Bouchard, C., & Tremblay, A. (2013, October

5). Short sleep duration as a risk factor for the development of the metabolic

syndrome in adults. *Preventative Medicine, 57*, 872-877.

<http://dx.doi.org/10.1016/j.yjpm.2013.09.022>

- Conley, C. S., Travers, L. V., & Bryant, F. B. (2013, February/March). Promoting psychosocial adjustment and stress management in first-year college students: The benefits of engagement in a psychosocial wellness seminar. *Journal of American College Health, 61*, 75-86.
- Gaultney, J. F. (2010, September/October). The prevalence of sleep disorders in college students: Impact on academic performance. *Journal of American College Health, 59*(2), 91-97. <http://dx.doi.org/10.1080/07448481.2010.483708>
- Gradisar, M., Wolfson, A., Harvey, A., Hale, L., Rosenburg, R., & Czeisler, C. (2013). The sleep and technology use of Americans: findings from the National Sleep Foundation's 2011 Sleep in America poll. *Journal of Clinical Sleep Medicine, 9*, 1291-1299. <http://dx.doi.org/10.5664/jcsm.3272>
- Harvard Medical School of Sleep Medicine. (n.d.). <https://sleep.med.harvard.edu/research>
- Johns, M. (1991). A new method for measuring daytime sleepiness: The Epworth Sleepiness Scale. *Sleep, 14*, 50-55.
- Kloss, J. D., Nash, C. O., Horsey, S. E., & Taylor, D. J. (2010). The delivery of behavioral sleep medicine to college students. *Journal of Adolescent Health, 48*, 553-561.
- Lowry, M., Dean, K., & Manders, K. (2010). The link between sleep quantity and academic performance for the college student. *Sentience: The University of Minnesota undergraduate journal of psychology, 16*-19.
- Macan, T. H., Shahani, C., Dipboye, R. L., & Phillips, A. P. (1990, December). College students' time management: Correlations with academic performance and stress.

*Journal of Educational Psychology*, 82, 760-768. <http://dx.doi.org/10.1037/0022-0663.82.4.760>

Merikanto, I., Lahti, T., Puusnikka, R., & Partonen, T. (2013). Late bedtimes weaken school performance and predispose adolescents to health hazards. *Sleep Medicine*, 14, 1105-1111. <http://dx.doi.org/01.1016/j.sleep.2013.06.009>

Mukherjee, S., Patel, S., Kales, S., Ayas, N., Strohl, K., Gozal, D., et al. (2015, June 15). An Official American Thoracic Society Statement: The importance of healthy sleep; recommendations and future priorities. *American Journal of Respiratory and Critical Care Medicine*, 191(12), 1450-8.

National Student Clearinghouse Research Center. (2015). *Current Term Enrollment Estimates - Fall 2015*

National Sleep Foundation. (2005). *2005 sleep in America poll: Summary of findings*. Retrieved from <http://sleepfoundation.org/>

Orzech, K. M., Salafsky, D. B., & Hamilton, L. A. (2011, August-October). The state of sleep among college students at a large public university. *Journal of American College Health*, 59(7), 612-619. <http://dx.doi.org/10.1080/07448481.2010.520051>

Robinson, L. (n.d.). A summary of diffusion of innovations. Retrieved December 2, 2014, from [http://www.enablingchange.com.au/Summary\\_Diffusion\\_Theory.pdf](http://www.enablingchange.com.au/Summary_Diffusion_Theory.pdf)

Quan, S. F., Anderson, J. L., & Hodge, G. K. (2013, February 1). Use of a supplementary internet based education program improves sleep literacy in college psychology students. *Journal of Clinical Sleep Medicine*, 9(2), 155-160.

- Rewgestein, Q., Natarajan, V., Pavlova, M., Kawasaki, S., Gleason, R., & Koff, E. (2010, March 30). Sleep debt and depression in female college students. *Psychiatry Research*, 176(1), 34-9. <http://dx.doi.org/10.1016/j.psychres.2008.11.006>
- Ridner, S. L., Newton, K., Staten, R., Crawford, T., & Hall, L. (2016). Predictors of well-being among college students. *Journal of American College Health*, 116-24.
- Rogers, E. M. Diffusion of innovations. (2003). (5th ed.). New York: Free Press.
- Sandelowskin, M. (2000). Focus on research methods: What ever happened to qualitative description? *Research in Nursing & Health*, 334-340.
- Taylor, D. J., Gardner, C. E., Bramoweth, A. D., Williams, J. M., Roane, B. M., Grieser, E. A., & Tatum, J. I. (2011, April 11). Insomnia and mental health in college students. *Behavioral Sleep Medicine*, 107-116.  
<http://dx.doi.org/10.1080/15402002.2001.557992>
- Taylor, D. J., Vathauer, K. E., Bramoweth, A. D., Ruggero, C., & Roane, B. (2013, February 12). The role of sleep in predicting college academic performance: Is it a unique predictor? *Behavioral Sleep Medicine*, 11(3), 159-172.  
<http://dx.doi.org/10.1080/15402002.2011.602776>
- Taylor, D. J., Zimmerman, M. R., Gardner, C. E., Williams, J. M., Grieser, E. A., & Tatum, J. I. (2014, May). A pilot randomized controlled trial of the effects of cognitive-behavioral therapy for insomnia on sleep and daytime functioning in college students. *Behavior Therapy*, 45, 376-89.
- Todd, J., & Mullan, B. (2012, June 7). The role of self-regulation in predicting sleep hygiene in university students. *Psychology, Health & Medicine*, 275-288.  
<http://dx.doi.org/10.1080/13548506.2012.701756>

- Todd, J., & Mullan, B. (2014, June 29). The role of self-monitoring and response inhibition in improving sleep behaviours. *International Journal of Behavioral Medicine, 21* (3), 470-7.
- Trockel, M., Manber, R., Chang, V., Thurston, A., & Taylor, C. B. (2011, June 15). An e-mail delivered CBT for sleep-health program for college students: Effects on sleep quality and depression symptoms. *Journal of Clinical Sleep Medicine, 7* (3), 276-81.
- Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and the thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing and Health Sciences, 398-405*.
- Wilder-Smith, A., Mustafa, F., Earnest, A., Gen, L., & Macary, P. (2013). Impact of partial sleep deprivation on immune markers. *Sleep Medicine, 1031-1034*.  
<http://dx.doi.org/10.1016/j.sleep.2013.07.001>