Better Sleep. Better Focus. Better Health: A Program to Improve Sleep Quality of High School Students

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A Rationale for Better Sleep. Better Focus. Better Health: A Program to Improve Sleep Quality of High School Students

Insufficient sleep is a public health epidemic that has affected people of different ages all over the world. Insufficient sleep can include factors such as the amount and quality of sleep. According to the Sleep Foundation, teenagers (ages 13-18) should get between 8-10 hours of sleep per 24 hours, and adults (ages 18-60) should get 7 or more hours of sleep per night (Summer & Vyas, 2022). Although this is the recommended amount, it can fluctuate depending on the needs of the individual person.

The NIH published the article, "Why Sleep Matters - The Economic Costs of Insufficient Sleep." This article goes into detail about how sleep deprivation can lead to "lost GDP and lower labour productivity" (Hafner et al., 2017). The authors of this article note that different lifestyle, health, personal, socio-demographic, workplace psychosocial, and job factors are linked to sleep deprivation (Hafner et al., 2017). They are as follows: BMI, smoking, sugary drinks, physical activity, mental health, financial concerns, unpaid care, children, gender, marital status, lack of choice, unrealistic time pressures, irregular hours, and commuting (Hafner et al., 2017). These are things that some people struggle with every day. For example, the study in this article found that commuters can sleep on average around 9-17 minutes less than people who do not commute (Hafner et al., 2017). While this does not seem like a lot, it can add up over time (a 9-minute loss per night can lead to about 54 hours of lost sleep per year). On *www.census.gov*, it gives a percentage of 67.8 percent for the amount of workers who commuted on their own (United States Census Bureau, n.d.). That is 67.8 percent of workers lacking possibly more than 54 hours of sleep per year.

The U.S. economic costs of sleep deprivation can be detrimental. For one, since insufficient sleep is linked to many of the leading causes of death in the U.S. people are technically more likely to die due to lack of sleep, which furthermore leads to lower workers (Hafner et al., 2017). Also, sleep deprivation leads to illnesses, so workers might not even show up to work like they should be, or they might have performance levels not up to par with their company's standards - this leads to an "efficiency loss" (Hafner et al., 2017). The 3rd economic contributor is related to how it affects the younger population in developing necessary life skills (Hafner et al., 2017).

Speaking of the younger generation in the U.S. today, the priority population of this intervention is high school students (grades 8-12). This population was chosen specifically because of the data that has been collected showing the intense lack of sleep in younger Americans, and how much it affects them currently, as well as in the future. For example, a report by Gunderson et al. noted a conclusion in a study which "found that adolescents who slept less than 8 hours a night were approximately 3 times more likely to attempt suicide than those who slept 9 or more hours" (Gunderson et al., 2023). Also, in 2019, only about 22% of U.S. adolescents got the recommended amount of sleep (Gunderson et al., 2023). A statistic reported by *www.sleepfoundation.org* says that only 28% of high school students are getting sufficient sleep (Suni, 2023). These facts/statistics, as well as many others, highlight the importance of the need for intervention because insufficient sleep causes negative health and performance outcomes for high school students.

To this problem, the solution of an educational intervention plan, "A Program to Improve Sleep Quality of High School Students," is proposed. The overarching goal of this educational program is to improve not only the quality of sleep of high school students, but also the number of hours of sleep they get. The individual goals of the program are to provide high school students with resources and increase knowledge surrounding healthy sleep behaviors, improve healthy sleeping patterns/habits, and create a safe space for students to share their experiences surrounding mental health. The educational program will be conducted using slideshows with information such as sleep scheduling, effects of poor sleep, sleeping routines, etc. The slideshows will be presented by various people each session, including a sleep therapist, as well as Clemson CI students. One reason Clemson students are being used to assist us with this program is because people often relate more to other people closer to their age, so the high school students might be more willing to listen. Before the start of the program, surveys will be distributed to gather basic information about the students such as race and age, as well as to get an understanding of how much the students know about sleep and their habits. At the end of the program, another survey will be distributed to measure how effective the program was.

Decision makers often value many things such as community engagement, cost effectiveness, measurable health outcomes, and public health impact. This is why this particular program will be attractive to decision makers. "Better Sleep. Better Focus. Better Health: A Program to Improve Sleep Quality of High School Students," is one, going to focus on impacting

the high school community in Oconee County, SC. The goal is to improve the overall quality of sleep in high school students. This will not only improve their health, but it also might improve their performance in school, giving the community a measurable outcome in this area. Also, many partnerships will be used in the funding of this program, which will provide measurable health outcomes in a cost-effective manner.

This intervention will work because of the manner in which it is conducted. Educational interventions have proven to be successful in many different studies. Two studies that specifically mention the importance and effectiveness of educational intervention programs are "Education Improves Public Health and Promotes Health Equity" (Hahn & Truman, 2015) and "Structural Interventions to Reduce and Eliminate Health Disparities" (Brown et al., 2019). These studies highlight the link between health and education, and describe how they lead to depleting health disparities, which is what this study is aiming to do.

Healthy People 2030

The Healthy People Initiative is the set of the United States' main goals and objectives for improving health and well-being throughout the nation. They were first created in 1979 by the Surgeon General at that time, Julius Richmond. During his time as Surgeon General, he released a report titled "Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention". In 1980 the Office for Disease Prevention and Health Promotion (ODPHP) issued Healthy People 1990. This first set of goals included 10-year objectives for enhancing the nation's health by focusing on decreasing deaths throughout the lifespan and increasing older adult independence. Since its inception, there have been four sets of distinct Healthy People Initiatives (1990, 2000, 2010, 2020). The nation is currently on the track of the Healthy People 2030 goals and objectives. This new set launched in August 2020 and features new goals that build upon the knowledge learned from the previous four decades. Healthy People 2030 focuses on achieving health equity, social determinants of health, health literacy, and well-being (*History of Healthy People*, n.d.).

The Healthy People framework is divided into sections by topic. These topics include Health Conditions, Health Behaviors, Populations, Settings and Systems, and Social Determinants of Health. Better Sleep. Better Focus. Better Health comprises the topics of Sleep, Adolescents, and Child and Adolescent Development. The most relevant Healthy People objective to this program is objective SH-04 Increase the Proportion of High School Students Who Get Enough Sleep. The most recent data (2019) available on the objective's page states that the current prevalence of high school students who are getting enough sleep is 22.1%. This is alarming because the baseline percent, from 2017, was 25.4%. For this reason, the overall objective is labeled with the status of "Getting worse". The short summary, also provided on the objective main page, mentions that insufficient sleep in high school students is linked to an increased risk of mental health issues, alcohol and drug use, motor vehicle crashes, and sports-related injuries. Students who do not get adequate amounts of sleep are also subject to getting worse grades. These issues also have their own objectives attached to them, including "increase the number of children and adolescents with serious emotional disturbance who get treatment", "eliminate cigarette smoking initiation in adolescents and young adults", and "increase the proportion of adults who get enough sleep". Interventions that could aid in this issue, as mentioned by Healthy People, include teaching students about the importance of sleep

(*Increase the proportion of high school students who get enough sleep - SH‑04*, n.d.). By using the Healthy People framework planners have designed a program that will ultimately help in the increase of high school students who get adequate amounts of sleep at night.

Predisposing, Enabling, and Reinforcing Factors

Predisposing, Enabling, and Reinforcing factors are key parts of the first half of the PRECEDE-PROCEED model for developing health promotion programs. PRECEDE stands for predisposing, reinforcing, and enabling constructs in educational/ecological diagnosis and evaluation. This part of the model consists of assessments that provide planners with information about intervention and evaluation strategies. Predisposing factors include knowledge, beliefs, attitudes, and perceptions needed before a behavior. They can dictate a person's willingness to change their behavior and can be done so using direct communication, such as teaching. Reinforcing factors are received for engaging in a certain behavior and can be positive or negative. These rewards usually come from the individual's family, friends, peers, or other influential people in their lives that can sway them to engage or disengage from certain behaviors. Enabling factors are needed to engage in a behavior and include the availability of resources, the environment in which the behavior takes place, and problem-solving skills (McKenzie et al., 2023).

There is a plethora of factors that dictate whether a high school student gets the right amount of sleep or not. Predisposing factors to getting enough sleep in high school students involve many different things ranging from knowledge of good sleep habits and hygiene to attitudes about sleep. The literature on this subject finds that students within the age range of high school are not knowledgeable about basic sleep information, such as the recommended hours a person should get and what sleep does for the body (Vandendriessche, 2022). They also are not well versed in the long-term effects of poor sleep hygiene and quality. Another important predisposition to mention surrounding sleep in adolescents is hormonal changes. During puberty hormonal levels fluctuate, leading to a decrease in melatonin production, a change in the circadian rhythm, and an increase in sleep onset (Hagenauer, 2009). This means that adolescents are predisposed to staying up later simply due to their age.

Some negative enabling factors that result in poor sleep, mentioned in Vandendriessche, 2022, are school workload, after-school activities, school start time, and technology use among others. Students often mention that their school workload is very demanding and therefore leads to them staying up to finish homework. This is also paired with the fact that the average school start time is about 8:00 am, which means if students are staying up to do homework they also have to be up early the following day for school ("The average school start times in every U.S.

state", n.d.). Additionally, students who participate in after-school activities such as athletics or clubs generally arrive home later, thus setting back their time to eat dinner, start homework, and ultimately, go to sleep. This combination of factors all leads to a sleep-deprived student with a lot on their plate. It is important to note that worrying was also a common factor as to why students could not obtain adequate sleep. Lastly, technology use before sleep is a big reason why students cannot achieve the recommended amount of sleep. Many students experience the fear of missing out, or FOMO, if they do not stay connected with what is happening on social media or watch the latest episode of a show instead of going to sleep (Vandendriessche, 2022; Godsell & White, 2019). On the other hand, some positive enabling factors were parental rules and increased physical activity throughout the day. Some students shared that their parents made them leave their electronics downstairs at bedtime, and although they were apprehensive at first, their sleep quantity has benefitted from this.

Reinforcing factors surrounding sleep are similar to the enabling factors in many ways. To reiterate, reinforcing factors are those that are received for engaging in a behavior or not and can be positive or negative. For example, staying up on social media or watching a show allows for positive reinforcement among classmates and peers, but negative reinforcements such as daytime tiredness and lack of focus. Other negative reinforcements of sleep include bad grades as a result of poor sleeping habits. On the other hand, better grades are considered a positive reinforcement for positive sleeping habits. Parental rules also serve as positive reinforcements for sleep because they generally allow for increased sleep quality and quantity (Vandendriessche, 2022; Godsell & White, 2019). Understanding these predisposing, enabling, and reinforcing factors of sleep for high school students is helpful and useful to the development of our intervention program. It is important to know what students know about sleep, what encourages and discourages them from sleeping adequate amounts, and the rewards or punishments they face as a result of their habits.

Social-Ecological Model

The Social-Ecological Model (SEM) is a behavior change theory based on the work of psychologist Urie Bronfrenbrenner. This model gained traction in the health promotion field during the 80s when there was a rise in the use of systems approaches for interventions (McKenzie et al., 2023). The SEM is known by many different names including the socioecological approach or the ecological perspective. The main concept of this model is that human behavior is shaped by different levels of influence (McKenzie et al., 2023). These levels vary greatly on the depth of the model used but generally include versions of intrapersonal, interpersonal, community, and societal levels of influence. For the purposes of this intervention, individual, interpersonal, organizational, community, and policy levels will be discussed.

The individual level of the SEM includes individual characteristics that influence behavior such as knowledge, attitudes, beliefs, and personality traits (McKenzie et al., 2023). As mentioned above, high school students lack basic sleep knowledge, and this is a main concern that will be addressed by our intervention. Through our educational sessions, students will receive a basis of knowledge about what sleep is, why it is important, what constitutes good and bad sleep, etc. By the end of our intervention, students will be able to define sleep and good sleep hygiene practices. Our program will also focus on the positive and negative short and long-term effects of sleep which will help to develop and change the beliefs of the students who participate. This level is extremely important to the goal of this intervention because most high school students sleep alone in their rooms. It is important to target their attitudes, beliefs, and knowledge at this level so that they can make good choices surrounding sleep at bedtime. Aspects of the individual level that are needed to support our intervention include attitudes and personality traits. Before starting this program students will already have certain attitudes about sleep, but a positive mindset and willingness to change will also enhance the positive benefits these sessions will provide to these students.

The interpersonal level of the model relates to the role that families, friends, peers, and other important individuals have in terms of the health behavior of interest. The role that some of these relationships pose in terms of adequate amounts of sleep has also already been stated, but the main groups that will be focused on through our intervention will be families and friends/peers. Interpersonal relationships help in the creation of social identities and support, and these are important things to take into account when it comes to sleep. Families are a crucial

relationship to consider when it comes to sleep because they can either encourage or discourage the attainment of adequate sleep amounts. The example discussed previously of parental rules serving as positive reinforcing factors for adequate sleep is a good way to understand the role families play in their adolescent's sleep routines. Our intervention will address this form of relationship through activities such as PTA involvement, information sessions about the program, evaluation stage of the program, and the consent form to be signed before starting. Peers are also a key population that will be targeted throughout our intervention. Our educational sessions will feature discussions and information about lifestyles and sleep which will expand on topics such as technology use before sleep, FOMO, and other sleeping norms among high school students. The discussions and lessons will be aimed at reducing the negative correlation many teens have with going to bed early, In the Vandendriessche, 2022 article mentioned above, one of the female participants mentioned it would be embarrassing if she was talking to a peer on the phone then told them she had to go to bed and it was 9 pm. There is a certain glorified culture within this population to pull all-nighters either studying, watching TV/ playing video games, or on social media which will be discussed in our sessions. The support of these populations (families and friends/peers) will also be greatly needed for the success of this program because as the main concept of the SEM states, health behavior is shaped by different levels of influence within our lives.

Organizational factors include the "rules, regulations, policies, and informal structures that may constrain or promote recommended behaviors" (McKenzie et al., 2023). The organization our intervention is focused on will be the public school system. The priority population of our intervention is high school students and there are many rules, regulations, and policies within school systems that relate to the amount of sleep its students get. First and foremost, the support of the chosen high schools for this intervention will be crucial to the success of the program. Creating a positive relationship with principals and teachers will allow the program to be positively received by the school community and implemented seamlessly. In terms of factors that will be addressed by our intervention, school workload, allocation times for work during class, and after-school activities will be the main areas for concern of our intervention. This will be expanded on later in the plan, but before the inception of thisprogram, program planners will be working alongside the principal, teachers, and parents to introduce our initiative and gain interest. During this time period, they will provide the teachers with

information on how large amounts of school work can affect their students' sleeping habits. This will hopefully reduce the amount of schoolwork given to students, ultimately allowing them to sleep on time. They will also provide the principal with different ideas on how to allow for more work to be done during the school day instead of at home, such as longer free periods and designated "study hall" minutes during athletic practices and club meetings. Many regulations and policies will be outside the scope of our program, so through these small ways of adding more time throughout the school day to complete work, students will have more time outside of school, and can create better sleep routines they can stick to.

Similarly to the organizational factors, the support of the overall school community will be very important for the program to be successful. Our intervention will address the community by empowering it to make lasting and positive changes in regard to sleep quality and quantity. This will occur through every aspect of our program, from the initial suggestions to principals and teachers to the educational sessions and the evaluations. Program planners will make sure to include information about the importance of working as a community and community involvement throughout our marketing of the program, our information sessions, and the main educational sessions.

Local, state, and federal policies and laws that pertain to a certain health behavior encompass the policy factors of the SEM. Although our program is not aimed at changing school policies, the information given will serve as advocates for political changes that can help in the attainment of adequate sleep by high school students. For example, school start times have been highly debated as an intervention of low sleep quantity, and advocating for this change through our sessions will mobilize not only the students who participate but also the teachers, principals, and parents to demand change within their local governments. The Social Ecological Model serves as a way to understand the many levels at which health behavior can be influenced and highlight what can be done at each level in order to achieve a health goal. This model was used to better understand and organize the efforts of our program in such a way that will yield positive and beneficial results for everyone involved.

<div align="center">**Demographics and Psychosocial Characteristics**</div>

<div align="center">Demographics</div>

The demographic makeup of Oconee County differs by factors such as race, age, and income level. The median household income level is $52,842 and the per capita income is $32,986. Another key demographic rate is the percentage of persons in poverty which is 16.4%. There are a similar percentage of males vs. females in the county (50.6% vs. 49.4%, respectively). For the age difference, most people lie between the ages of 18-64 (52%). Also, the majority of Oconee County residents are white (84%), but the rest are distributed among different races such as Hispanic, Black/African American, and there are minimal percentages of American Indians/Alaska Natives, Asians, and Native Hawaiians/Pacific Islanders.

For the demographics of the specific high schools in Oconee County in this school, there are different statistics for each school, but overall, they are decently similar. For example, there is almost a completely even distribution of male vs. female students in each school. For school size, Walhalla High School is the largest, with a total of 1,154 students. After that, the next largest is Seneca High School, with 987 students, and then finally, West-Oak High School with 802 students. A similar pattern to the different race percentages of the county is followed in relation to those of the specific high schools. For example, in all three of the high schools, white is the most prevalent race among the students, which makes sense since that is the most prevalent race in the county overall.

- Demographics of Oconee County
  - Median household income in Oconee County (2017-2021):
    - $52,842
  - Per capita income in past 12 months (2017-2021):
    - $32,986
  - Percentage of persons in poverty:
    - 16.4%
  - Gender:
    - Female: 50.6%
    - Male: 49.4%
  - Age:
    - Under 5 years: 4.3%
    - Under 18 years: 18.9%
    - 18-64: 52%

-
    -
        - 65+ years: 24.8%
    - Race:
        - American Indian/Alaska Native: 0.4%
        - Asian: 0.8%
        - Black/African American: 7.5%
        - Hispanic: 6.0%
        - Native Hawaiian/Pacific Islander: 0-1%
        - White: 84%
        - Two or More Races: 2%
- <u>Demographics of Public High Schools in Oconee County:</u>
    - *Seneca High School*
        - Total students: 987
        - Race Distribution:
            - American Indian/Alaska Native: 2
            - Asian: 13
            - Black/African American: 202
            - Hispanic: 106
            - Native Hawaiian/Pacific Islander: 0
            - White: 595
            - Two or More Races: 69
        - Gender
            - Male: 498
            - Female: 489
    - *Walhalla High School*
        - Total students: 1154
        - Race Distribution:
            - American Indian/Alaska Native: 2
            - Asian: 7
            - Black/African American: 195
            - Hispanic: 195
            - Native Hawaiian/Pacific Islander: 2
            - White: 891
            - Two or More Races: 36
        - Gender
            - Male: 598
            - Female: 556
    - *West-Oak High School*
        - Total students: 802
        - Race Distribution:
            - American Indian/Alaska Native: 3

- Asian: 5
- Black/African American: 29
- Hispanic: 44
- Native Hawaiian/Pacific Islander: 0
- White: 699
- Two or More Races: 22
  - Gender
    - Male: 403
    - Female: 399

<u>Psychosocial Characteristics of High School Students</u>

The CDC mentions many psychosocial characteristics of adolescents between the ages of fifteen and seventeen. Some of these include showing more concern about the future, giving reasons for their choices, and feeling "sadness or depression, which can lead to poor grades at school" (Centers for Disease Control and Prevention, 2021). Other characteristics include showing less conflict and more independence from parents, caring and nurturing relationships, and learning "more defined work habits" (Centers for Disease Control and Prevention, 2021). With high school students, some of these characteristics have proven to be detrimental. For example, the second leading cause of death is suicide (Ivey-Stephenson et al., 2020). This tragedy is not independent of lack of sleep, which is furthermore noted by one of the CDC's recommendations to parents to improve these psychosocial characteristics: "make sure your child gets the recommended amount of sleep each night"(Centers for Disease Control and Prevention, 2021).

Priority Population Access Plan

The high schools that this educational intervention is geared towards are Seneca High school, Walhalla High school, and West-Oak High school. This intervention will begin by first gaining access to the different schools' communities. One way this will be done is by volunteering at the school in order to meet and get to know the staff 2 months in advance. This will include volunteering in the lunchroom, as well as during after school hours and tutoring. This will not only allow relationship building with the staff, but also the students. The students can gain trust through this, which allows them to strengthen the knowledge that the purpose is to help them. After building solid relationships with both the staff and students, the issue of lack of quality of sleep in adolescents backed up by research will be proposed to the school board, along with the Parent Teacher Association (PTA). The PTA is being involved because it is important to have support from the parents of the students being taught. In the meeting, information from the CDC, as well as other credible sources will be shown to them. A week later after they have had some time to consider the issue, the intervention program will be proposed.

Needs and Asset Assessment Strategies

Needs and asset assessment strategies will be carried out using focus group discussions (FGDs), surveys, and in-depth interviews (IDIs). IDIs will be conducted with the principal and vice/assistant principal (s) at each high school in Oconee County. This includes Walhalla, Seneca, and West-Oak High Schools. These interviews will be held during the pre-program stage where planners will be volunteering in the high schools and gaining interest from faculty, staff, and parents. The interview will be about 30 minutes and will focus on assessing the current needs and assets of the school at that point in time. Some topics of these interviews will include an overview of the school's students, the individual's view of the student body's work ethic, drive, and morale, the biggest challenges facing the school currently, areas where the school is thriving, and whether they think sleep is an issue among the students of the school.

It is important to obtain information from a variety of populations, so focus group discussions will be held with teachers and parents during this time as well. These discussions will last about 45 minutes and the focus will differ from teachers to parents. The teacher discussion will feature a diverse group of teachers from all grades and subjects. Topics will include how much work they give to their students, the structure of their classrooms, whether they think sleep is a problem in the school, current resources that are provided to students who need help, and current resources they provide for their own students. As for the parent FGD, topics will include how involved they think parents should be in their students' lives, what ways they are currently involved in their students' lives, what resources they provide them when they are struggling, and their perceptions of the sleep habits of teenagers.

During the beginning of the school year, a final FGD will be conducted with a diverse group of students from all grades. This discussion will be focused on the current sleeping habits, perceptions, and beliefs of the student body, what services they utilize when they are struggling, whether they think their workload is too much, and their willingness to participate in a program aimed at increasing sleep quality and quantity. During this discussion, program planners will also inquire about ideas the students have for the program and find a way in which they can implement them into the intervention plan. Discussion and interview guides can be found in Section VI: Resources and Materials.

Theoretical Constructs

The theoretical constructs used in this intervention plan are from the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM). The TPB and HBM are both theories. A theory is a set of qualitative and quantitative factors that contribute to describing why someone behaves the way they do. An example of this is why someone would choose to go to a certain college. It could be due to the weather in that area, distance from family, academics ratings, etc. Constructs are the factors that make up a theory. The TPB is a theory used to determine the relationship between people's attitudes and behaviors. The two constructs in the TPB used in this intervention plan are subjective norms and normative beliefs. The HBM evaluates how personal beliefs influence someone's behaviors. The constructs being used from the HBM include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

Subjective norms can be related to peer pressure. This construct considers how peer/social pressure is evaluated by individuals, and how it influences someone's behavior. Normative beliefs are explained in their name. It is essentially the belief of what is normal and accepted in society. This can, however, be influenced by people around you. For example, if someone was told all their life that 6 hours of sleep was normal, they most likely aren't going to be worried about needing to get more sleep because they don't know any better. In fact, it is likely that if they are receiving those 6 hours of sleep that they aren't even thinking about changing their sleep schedule. One way these constructs will be incorporated into this intervention plan is by distributing pre- and post-program surveys asking about their beliefs towards different sleeping habits and actions. For example, the following 4 true/false statements will be on the survey:

1. *My peers will make fun of me if I go to bed early instead of staying up late.*
2. *If I do not stay up late to finish my homework, I will get a bad grade.*
3. *It is normal to get less than 8 hours of sleep at night.*
4. *Caffeine can replace the need for a good night's sleep.*

By evaluating the answers received from this section of the survey, the students' subjective norms and normative beliefs can be better determined. For one, the statements will evaluate peer pressure, which is often extremely prevalent in high school. They will also give a better sense of how the students' academic life might be affecting their sleep.

In addition to these surveys, this intervention will also include breakout sessions as a safe space for students to talk about their feelings of the program, as well as their personal experiences with sleep behavior and mental health. It will also address these specific constructs in the lectures in order to teach students about how to avoid peer pressure, manage time, and deplete false beliefs about sleep.

Many constructs from the HBM will also be used in this intervention. As listed above, these include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. A key word in most of these constructs is "perceived". As suggested in the name, the Health Belief Model is all about perception of beliefs. Most of these constructs are self-explanatory in the sense that it is how someone perceives how severe something is, how beneficial it is, and how barriers might stop someone from behaving a certain way. The other two constructs included are cues to action and self-efficacy. Cues to action can be any sort of reminder or "push" to behave in a certain way. This can include posters, text messages, verbal reminders from friends and family, news announcements, etc. An example of this is a news announcement reminding people to wear masks when there were still many Covid restrictions. Self-efficacy can be described as the confidence one has in their own abilities to accomplish a task/behavior. Relating to the Covid example, if someone has asthma and has a harder time breathing with a mask, they might be less likely to wear one when going places because they perceive that they will have an asthma attack if they do wear one. In this way, they have low self-efficacy over this behavior. In this intervention, the pre- and post-program survey will also evaluate these constructs through different questions. Cues to action is one specific way we will be promoting the program and reminding people about sessions. We will be hanging up posters in the high schools in order to do this. This poster can be found in Section VI: Resources and Materials.

Model Intervention

A study done by the Keck School of Medicine of the University of Southern California called "An Educational Intervention to Improve the Sleep Behavior and Well-Being of High School Students", represents the model for this intervention (Colt & Reilly, 2019). The purpose of this study was to evaluate how effective an educational intervention program was at improving the knowledge of different sleep aspects, as well as depression, in high school students. While the purpose of this intervention plan is to improve the sleep quality and not necessarily just the knowledge of different sleep aspects, this model was chosen because it had the best outcome results in sleep quality (although that was not the purpose). It resulted in almost a full hour increase in students' sleep (Colt & Reilly, 2019). The program in this study included 24 subjects from Francisco Bravo Medical Magnet School and 3 after-school courses. Their lectures consisted of "sleep physiology and its importance, its impact on health, and methods to improve sleep hygiene and sleep behaviors" (Colt & Reilly, 2019). One important aspect of this study is that the lecture presentations were interactive and built off of the students' questions. This aspect will be incorporated into this intervention plan. The study also used pre- and post-intervention surveys which will be incorporated as well. A result from this model intervention that will be taken into consideration is that there was a decrease in the knowledge of the recommended hours of sleep among the students that participated. (Colt & Reilly, 2019) This point will be heavily emphasized in this intervention. One of the limitations of the study is sample size. This is not proposed to be an issue in this intervention, as the goal is to have at least 200 participants from each of the three high schools.

Another study, "The Teensleep study: the effectiveness of a school-based sleep education programme at improving early adolescent sleep", while not as effective in increasing sleep quality, had significant results in increasing the knowledge of sleep. (Illingworth et al., 2020) In this study, different 10th grade students in the U.K. participated in 10 lessons, and took pre- and post-intervention questionnaires. After the study was completed, the researchers evaluated the information to determine the impact and effectiveness of their program. Once again, there were not significant differences in actual sleep patterns, but there were significant differences in the amount of knowledge of sleep of the students. Due to this result, many of the same lesson topics from this study were used in the development of this intervention program.

An Educational Intervention to Improve the Sleep Behavior and Well-Being of High School Students - DOI: 10.22454/PRiMER.2019.871017

The Teensleep study: the effectiveness of a school-based sleep education programme at improving early adolescent sleep - DOI: 10.1016/j.sleepx.2019.100011

Section II: Generalization, Goals, and Objectives

Intervention Rationale

This intervention is an educational intervention to improve quality sleep in high school students. This intervention was chosen because of the many disparities in this area. As shown in Section 1, Subsection A of this plan, there is even a Healthy People 2030 objective that is focused towards this disparity. It is Objective SH-04, Increase the proportion of high school students who get enough sleep; unfortunately, this proportion is decreasing. (*Increase the proportion of high school students who get enough sleep - SH-04*, n.d.) Due to this, as well as many other studies showing the negative impacts of inefficient sleep, this was the topic chosen.

An educational intervention plan was chosen because they have shown to be very effective in other studies, and it was perceived to be the best option for this topic. Also mentioned in Section 1, Subsection A, "Education Improves Public Health and Promotes Health Equity" (Hahn & Truman, 2015) and "Structural Interventions to Reduce and Eliminate Health Disparities" (Brown et al., 2019) are two studies that determined that educational interventions are of great efficiency. By teaching students about good and bad qualities of sleep, sleep cycles, keeping a consistent sleep schedule, etc. they can improve their own habits, as well as their self-efficacy and knowledge about the behavior. This relates back to the constructs of the Theory of Planned Behavior (TPB) and Health Belief Model (HBM) talked about in Section 1, Subsection 3. By focusing on improving the knowledge behind these constructs (such as knowledge of perceived barriers and severity), it could effectively promote long term behavior changes in sleep patterns in the students.

The long-term aspect is another reason education was chosen as the main aspect of this intervention. Using the theoretical constructs talked about previously, educational interventions can be taken much further than other interventions. Each construct contributes to the way a person perceives a behavior and how much they know about it, which furthermore contributes to how they act upon the behavior due to those perceptions and knowledge. For example, if a person does not know how to keep a consistent and healthy sleep cycle, they are unlikely to think about whether or not they should improve theirs, since they don't know what constitutes a good or bad one. Education will teach them this, as well as the other healthy habits of sleep. Using the information gained from each session, students will further be able to determine what their current sleep habits are, and what they need to adjust and how to adjust them.

Intervention Mission, Goals, and Objectives

Program Mission: To give high school students resources to improve mental well-being by increasing sleep quality and quantity.

Program Goals:

- Provide resources and increase knowledge surrounding healthy sleep behaviors in high school students
- Improve healthy sleeping patterns/habits in high school students
- Create a safe space for students to share their experiences surrounding mental health

Program Objectives:

- After 16 monthly sessions, students will be able to identify positive and negative sleeping patterns.
- During the program, 50% of students will be consistently attending each session
- After the program, 100 students from each high school in Oconee County will be reached
- After the program, participating students will experience an increase in sleep quantity and quality
- After the program, 50% of students will see an improvement in their mental health status

Sequence of Intervention

        The Better Sleep. Better Focus. Better Health intervention program is divided into 16 educational sessions to be completed over the course of a single school year (about 8 months). The sessions begin with an introductory session on Wednesday, September 11th, where an overview is given of the program and the pre-program survey is conducted. After this session, the sequence is as follows:

Session 2 (9/25): What is Sleep?

Session 3 (10/16): Why is Sleep Important?

Session 4 (10/30): Good Sleep vs Bad Sleep

Session 5 (11/13): The Body Clock and Sleep Drive

Session 6 (12/4): Sleep Scheduling and Time Management

Session 7 (12/18): Lifestyle and Societal Facilitators/Barriers to Sleep

Session 8 (1/8): Light and Sleep

Session 9 (1/22): Mental Health and Sleep

Session 10 (2/5): Thoughts and Emotions at Bedtime

Session 11 (2/19): Managing the Racing Mind

Session 12 (3/5): Creating a Conducive Sleep Environment

Session 13 (3/26): A Sleep-Friendly Routine

Session 14 (4/9): Managing a Sleep Routine

Session 15 (4/23): Sleep Therapist Presentation

Session 16 (5/7): Final Session/ Post-program survey

        The final session includes a wrap-up of the program and information about the next steps and the evaluation of the program. The post survey will also be conducted during the last session. The sessions are divided and designed in this way to provide students with a basis of knowledge before taking action. The main goal of this program is to improve well-being through sleep therefore the sequence of the intervention provides knowledge surrounding sleep in general, mental health and sleep, and finally on creating a positive sleep routine and managing it. Each session builds upon itself and toward the intervention goals through the information and resources provided as well as creating a safe space for judgment-free dialogue at the end of each session. For example, during all of the sessions that deal with making a sleep schedule, managing the racing mind, creating a conducive sleep environment, etc resources and tips will be given to

the students in addition to information provided on the topic. The sequence of the intervention also coincides with the main theoretical constructs used for the development of this program. Perceived susceptibility, severity, and benefits are all touched on through the information in the first 4 sessions. Perceived barriers, subjective norms, and normative beliefs are focused on in Session 7: Lifestyle and Societal Facilitators/Barriers to Sleep as well as Session 9: Mental Health and Sleep. Lastly, cues to action and self-efficacy manifest in a variety of sessions, most notably in the last few where students learn to create/change their sleep routines, test them out, and manage them.

Session Goals and Objectives

<u>**Session 1 (9/11):**</u> <u>Introduction to Program/Pre-program Survey</u>

Goal: To introduce the Better Sleep. Better Focus. Better Health. program and conduct the pre-program survey

Objectives:

- Describe the Better Sleep. Better Focus. Better Health. program
- Summarize the mission, goals, and objectives of the Better Sleep. Better Focus. Better Health program
- Explain how program sessions are laid out and attendance is taken
- Evaluate their current understanding of basic sleep knowledge

<u>**Session 2 (9/25):**</u> <u>What is Sleep?</u>

Goal: To understand what sleep is physiologically and what happens when we sleep

Objectives:

- Define Sleep and other related terms
- Explain what sleep is physiologically
- Recognize the different phases of sleep

<u>**Session 3 (10/16):**</u> <u>Why is Sleep Important?</u>

Goal: To understand the importance of sleep and why we need it to function properly

Objectives:

- Explain the importance of sleep
- Describe the importance of sleep for teens specifically
- Summarize why sleep is needed for proper bodily functions

<u>**Session 4 (10/30):**</u> <u>Good Sleep vs Bad Sleep</u>

Goal: To understand the elements of good and bad sleeping habits as well as differentiating between the two

Objectives:

- Distinguish between good and bad sleeping habits
- Identify the effects of good and bad sleep

- Compare elements of good and bad sleep

Session 5 (11/13): The Body Clock and Sleep Drive

Goal: to introduce the concept of the body clock and understand what controls when we sleep

Objectives:

- Explain what controls when we sleep and how that changes with age
- Define the concepts of "early bird" and "night owl"
- Identify what sort of sleep personality they are and compare with that of their classmates

Session 6 (12/4): Sleep Scheduling and Time Management

Goal: To improve knowledge of time management skills and introduce the conept of sleep scheduling

Objectives:

- Identify useful time management tips and skills
- Describe the concept of sleep scheduling
- Produce an attainable and manageable sleep schedule

Session 7 (12/18): Lifestyle and Societal Facilitators/Barriers to Sleep

Goal: To increase knowledge surrounding lifestyle and societal facilitators/barriers that can influence sleep

Objectives:

- Define facilitators and barriers
- Discuss facilitators and barriers within their own lives
- Identify ways to combat barriers to sleep

Session 8 (1/8): Light and Sleep

Goal: To identify the ways in which light can impact sleep, especially technology

Objectives:

- Identify the ways that light affects sleep
- Describe how technology specifically can affect sleep
- Develop alternative ways to go to sleep other than using electronics

Session 9 (1/22): Mental Health and Sleep

Goal: To understand the connection between mental health and sleep

Objectives:

- Explain how mental health and sleep are connected
- Recognize signs of poor mental health status
- Identify resources that are available to students who are struggling with these issues

Session 10 (2/5): Thoughts and Emotions at Bedtime

Goal: To understand the concept of winding down before bedtime and how to do breathing exercises

Objectives:

- Practice breathing exercises that are helpful for sleeping
- Identify the thoughts and emotions that keep one up at night and how to manage those
- Explain how thoughts and emotions can interfere with sleep

Session 11 (2/19): Managing the Racing Mind

Goal: To understand how the racing mind can affect sleep and how to manage it during bedtime

Objectives:

- Identify strategies to manage a racing mind
- Restructure unhelpful thoughts during bedtime
- Reduce unhelpful thoughts during bedtime
- Practice progressive muscle relaxation

Session 12 (3/5): Creating a Conducive Sleep Environment

Goal: To introduce ways to create a conducive sleep environment

Objectives:

- Identify the sleep-friendliness of their bedrooms
- Identify an environment that is conducive to sleep
- Recognize an environment that is not conducive to sleep

Session 13 (3/26): A Sleep-Friendly Routine

Goal: To introduce the elements of a sleep-friendly routine

Objectives:

- Identify elements of a sleep-friendly sleep environment
- Describe ways students can change their rooms to be more sleep-friendly
- Define what a sleep-friendly routine is

Session 14 (4/9): Managing a Sleep Routine

Goal: To understand how to manage a sleep routine

Objectives:

- Recognize ways to alter a sleep routine for the better
- Explain what happens when a sleep routine gets disturbed
- Identify management tips for maintaining a good sleep routine

Session 15 (4/23): Sleep Therapist Presentation

Goal: To introduce the profession of sleep therapy and understand what the job entails

Objectives:

- Describe what a sleep therapist is and does
- Explain the importance of sleep therapy
- Describe the importance of good sleeping habits early in life

Session 16 (5/7): Final Session/ Post-program Survey

Goal: To conclude the session and conduct the post-program survey

Objectives:

- Evaluate the Better Sleep. Better Focus. Better Health program
- Recognize the importance of the Better Sleep. Better Focus. Better Health program
- Evaluate basic knowledge of sleep practices

Section III: Intervention Strategies

Brief Strategy Rundown

This program features 16 educational sessions held over the course of a single academic school year. The material covered is detailed below in the Session Guide. All course material is written at a 6th-grade reading level and features age-appropriate content such as how technology use affects sleep, peer pressure, parental pressure, etc. Each session will be held after school for an hour and will feature content lessons as well as discussion time. Sessions will begin with an overview of the day as well as a recap of the previous session where the CI students will answer questions. The welcome/introduction will be followed by class content and then discussion time. Sessions will end with a quick review of the day's activities and homework allocation. Homework will not be allocated for every session, but where it is necessary. The session plan overviews are to be filled out by the session leaders prior to the day of the session and will serve as a guide for that day. Leaders can include notes, reminders for themselves or students, and any other information not included on the slides they will need for the day. The full intervention plan with the session overviews, guides, and schedules is included below. The first two session powerpoints can be located in Section VI: Resources and Materials under the appendix.

Choosing Appropriate Strategies

A lecture-based method was chosen due to research found on the effects of active vs. passive learning. A study from Harvard went into depth about the feelings from students about the types of learning styles, as well as the data they found of the actual grade difference. Although their results came mainly from college students, this intervention plan was developed based on the information. Most of the students preferred traditional passive lecture learning methods rather than those that included engagement. (Deslauriers et al., 2019) Some students said the reason for that preference is that when it is an active learning environment, they feel forced to do the "active part" of the learning. This can include group projects, answering questions out loud in class, etc. Taking this into consideration, we will use the traditional lecture style. However, we will also include some games, taking into consideration the fact that these students are somewhat younger than the majority of students in the Harvard study. These games will be on Kahoot, and while the students will be required to participate during the lectures at the allotted time, they will have prizes attached to them as incentives. Using the Kahoot allows students to actively learn, but they will not be forced to answer questions out loud or work with other students. So, overall, the lectures will be a combination of passive and active learning.

An article from the American Family Physician journal notes that "for optimal comprehension and compliance, patient education material should be written at a sixth-grade or lower reading level, preferably including pictures and illustrations" (Safeer & Keenan, 2005). Although this article is referring to patients receiving information from their physicians, it can also be applied to this situation. The key word in the quote is "education". Although the participants are not patients, and most of the lecturers are not physicians, the program is still using an educational-based approach, which is why a 6th grade reading level is being used. Colors and graphics will also be used in the presentations, so that they are more attractive to the participants.

Another strategy that will be incorporated in the program is encouraging students to ask questions. Part of the reason for this is because it is a way to measure how much they are thinking about the material, and if they are really taking it to heart. For example, if a student just asks about something that is written in the presentation, they might not have actually been paying close attention. However, if they ask a question based on something that was verbally noted by the professor, it is a good indicator that they are actively paying attention and thinking about the

material. It can also be a good indicator that they want to learn the material. All of these things can be evaluated at the end of the program to determine if there were any patterns within these strategies.

Choosing Creative Strategies

In the previous section, it explained the purpose of having the Kahoot games. Having the games is a good strategy, but having prizes associated with them is a creative strategy that can incentivise participation in the program. Most of the time, if someone knows something is a competition, they will work harder to win. This is because humans are competitive by nature. Using this knowledge, if prizes are incorporated into the program, the intended outcome will be that the participants will pay more attention to the material because they know that they have the opportunity to gain something other than just knowledge.

Breakout groups are another one of the creative strategies that was incorporated in the study. These breakout groups will allow participants to share their own questions and experiences surrounding sleep. However, it also gives them an opportunity to discuss how their mental health might be affected by sleep. The groups will provide a safe space for students with the intention that they will feel safe to share their thoughts. If the program did not have these, then students would have to share their questions out loud in front of all of the participants, which could be nerve wracking for more introverted students, especially if there is a large number of students in the room.

Session Lead-in and Closures

<u>Lead-in</u>

Sessions will be led in by the session leaders welcoming everyone to the day's session, answering questions from the last class, and going over the session overview. There will be a dropbox for questions placed by the exit/entrance of the room and one or two will be picked to answer out loud during the first 10 minutes of the session. After this, the session overview should be stated. This features the session goals and objectives and should last for about 5 mins after the welcome and Q&A portion.

<u>Closures</u>

Sessions will close with the session leaders reviewing the days content on the "What did we learn today?" slide of the Powerpoint presentation. After this, they should give out homework if there is any for that day, thank students for coming to the session, remind them about the next session date, and encourage them to leave questions in the dropbox.

Better Sleep. Better Focus. Better Health. Session Overview

Session 1 (9/11): Introduction to Program/ Pre-program Survey

Introduction to the program (who program planners are, program mission and goals, how sessions are laid out/ what they entail) as well as the pre-program survey.

Homework: Ask students to brainstorm questions, what they want to learn through the sessions, and/or ideas they have for the program.

Session 2 (9/25): What is Sleep?

What is sleep physiologically, what happens when we sleep, the sleep cycle, define terms such as circadian rhythm and sleep-wake homeostasis. Discuss ideas and questions from the last session.

Session 3 (10/16): Why is Sleep Important?

Why do we need sleep? Talk about the importance sleep has in their lives.

Session 4 (10/30): Good Sleep vs Bad Sleep

The difference between good and bad sleeping habits and patterns. Talk about the effects of both. Do good vs bad sleep Kahoot (winning team earns a prize).

Session 5 (11/13): The Body Clock and Sleep Drive

What controls when we sleep and how that changes with age. Discussion about whether students are night owls or early birds.

Session 6 (12/4): Sleep Scheduling and Time Management

Provide tips on how to schedule sleep and basic time management skills.

Homework: Have students make a sleep schedule that is attainable and manageable for them.

Session 7 (12/18): Lifestyle/ Societal Facilitators/Barriers to Sleep

Talk about lifestyle factors that can influence sleep as well as societal facilitators and barriers to sleep. Discuss homework from last session as well as discussion about social norms and sleep.

Session 8 (1/8): Light and Sleep

Talk about how light can impact sleep. How can technology and blue light affect sleep? Provide alternatives to electronics before bedtime.

Homework: Task students with turning their electronics off at 9 pm and engaging in nonelectronic activities before bedtime. Ask them to write a small summary of what they did and how they felt the following day.

Session 9 (1/22): Mental Health and Sleep

Talk about how mental health and sleep are connected. Discuss how the students' mental health and well-being change with their sleep.

Session 10 (2/5): Thoughts and Emotions at Bedtime

Talk about thoughts and emotions that might interfere with sleep. Practice breathing exercises

Homework: Task students with trying the breathing exercises learned in class one night before bed. Have students write a small summary of the experience.

Session 11 (2/19): Managing the Racing Mind

Provide information on how to manage the racing mind at bedtime. Recognize and work on restructuring unhelpful thoughts. Practice progressive muscle relaxation.

Homework: Task students with trying progressive muscle relaxation one night before bed. Have them document their experience.

Session 12 (3/5): Creating a Conducive Sleep Environment

Discussion about the sleep-friendliness of their bedroom. How to make their bedroom more sleep-friendly.

Homework: Have students take inventory of their rooms currently and make a list of sleep-friendly and non-sleep-friendly elements within their rooms.

Session 13 (3/26): A Sleep-Friendly Routine

Talk about a good sleep-friendly routine. Discuss ways they can change their routines to be more sleep-friendly. Do sleep-friendly Kahoot.

Homework: Task students with going to bed early one night within the next week. Tell them to try and do what they can to ensure they get to bed early that night. Have them write about their experience the following day.

Session 14 (4/9): Managing a Sleep Routine
Talk about how to change their sleep routine to best serve them. Talk about what happens when their sleep routine gets disturbed.

Session 15 (4/23): Sleep Therapist Presentation
Sleep therapist presentation about what they do, how they got into the job, the importance of sleep as well as their job, and the importance of good sleeping habits early in life. Allow for questions at the end. Allow for the raffle draw at the end as well.

Session 16 (5/7): Final Session/ Post-program Survey
Wrap up the program and talk about the evaluation stage. Conduct post-program surveys and announce raffle winners.

Better Sleep. Better Focus. Better Health. Blank Session Plan

Session #: Topic: Date:	Session Goal: Session Objectives:
Materials:	Set-up:

Welcome/Questions from Last Session:	Time: 10 mins

Session Overview:	Time: 5 mins

Content Lesson:	Time: 25 mins

Breakout Discussion:	Time: 15 mins

Review of day/Homework Allocation:	Time: 5 mins

Post-Session Evaluation (to be filled out by session leaders):

Better Sleep. Better Focus. Better Health. Session Plan Overview

Session #: Topic: Date:	Session Goal: Session Objectives:
Materials: ● *List all session materials here*	**Set-up:** ● *Food, projector, and presentation set up should be conducted every session, 30 mins before students arrive*

Welcome/Questions from Last Session: **Time: 10 mins**
- *Greet students as they come in*
- *Tell them they can grab some food and take their seats. Mention the session will start shortly*
- *Pick 1 or 2 questions from the question box to discuss as group*

Session Overview: **Time: 5 mins**
- *Notes about the session overview can go here*
- *State goal and objective of the session*

Content Lesson: **Time: 25 mins**
- *Teach through session powerpoint*
- *Allow for questions and comments about topic*

Breakout Discussion: **Time: 15 mins**
- *Count students off into groups*
- *Keep powerpoint on discussion question slides*
- *Have students discuss for the full amount of time*
- *Remind students that thoughts will be shared after discussion*

Review of day/Homework Allocation: **Time: 5 mins**
- *Go over review slide at end of powerpoint*
- *Review homework requirements if there are any*
- *Allow for any questions*

Post-Session Evaluation (to be filled out by session leaders):
- *This section should be filled out immediately after each session with input from all leaders present during session*

Better Sleep. Better Focus. Better Health. Session Schedule

Session 1 (9/11): Introduction to Program/ Pre-program Survey

Session 2 (9/25): What is Sleep?

Session 3 (10/16): Why is Sleep Important?

Session 4 (10/30): Good Sleep vs Bad Sleep

Session 5 (11/13): The Body Clock and Sleep Drive

Session 6 (12/4): Sleep Scheduling and Time Management

Session 7 (12/18): Lifestyle and Societal Facilitators/Barriers to Sleep

Session 8 (1/8): Light and Sleep

Session 9 (1/22): Mental Health and Sleep

Session 10 (2/5): Thoughts and Emotions at Bedtime

Session 11 (2/19): Managing the Racing Mind

Session 12 (3/5): Creating a Conducive Sleep Environment

Session 13 (3/26): A Sleep-Friendly Routine

Session 14 (4/9): Managing a Sleep Routine

Session 15 (4/23): Sleep Therapist Presentation

Session 16 (5/7): Final Session/ Post-program Survey

Section IV: Evaluation Plan

Process Evaluation

A process evaluation is one that looks back on the implementation of a program to see if the protocols were followed, how successful the program was in recruiting and reaching members, how many people participated, and other factors that may have competed or confounded with the program (McKenzie et al., 2023). There are three main elements of process evaluations: fidelity, dose, and context. Fidelity is the concept of whether the program was implemented how it was intended to or per protocols laid out prior to the program's start. This element of process evaluation will be measured through the evaluation section of the Session Plans (located in Section III: Intervention Strategies) and a Post-Session Checklist, which is located below this section. Session leaders are to follow the protocols set forth by program planners, and the checklist will serve as a means to ensure the correct implementation of the program. The form can be filled out manually after each session or simply looked over as a guide to aid in writing the session evaluation section of the Session Plan. This section is to be completed by the session leaders immediately following every session with input from each leader present during the session.

The second element of process evaluation is called dose. This concept involves the measurement of program reach and includes how many products and services were delivered to the priority population (McKenzie et al., 2023). Dose will be measured within this program through attendance-taking during every session. Session leaders will be in charge of passing around the Session Sign-In Sheet, which can be located under this section. Retention rate will also be measured through Pre- and Post-Program Survey score comparisons. Lastly, context evaluates the presence of confounding variables or other events that could potentially affect participation and results of the program (McKenzie et al., 2023). This final concept will also be measured through the Session Plan evaluation section.

Using a combination of evaluation methods will ensure that the program is thoroughly evaluated to enhance future program outcomes. Having session leaders be at the forefront of the process evaluation will allow for an inexpensive and familiar option for the program planners, seeing as the session leaders will be tasked with the main implementation of the sessions. As mentioned above, the Post-Session Checklist and Session Sign-In Sheet can be found under this section. The Post-Program Survey is located in Section VI: Resources and Materials.

Better Sleep. Better Focus. Better Health Post-Session Checklist

Directions: Ensure that this form is looked over at the end of every session, with all session leaders present. Filling it out is strongly encouraged but not required.

Before the Session:

Did you…

- ☐ Set up all materials 30 minutes prior to the start of the session
- ☐ Set up all food items 30 minutes prior to the start of the session
- ☐ Set up all utensils and napkins 30 minutes prior to the start of the session
- ☐ Set up the projector and presentation 30 mins prior to the start of the session
- ☐ Greet students as they entered
- ☐ Engaged with students while waiting for the session to begin

During the Session:

Did you…

- ☐ Utilize all lead-in and closure protocols
- ☐ Utilize the Session Plan to stay on track
- ☐ Make and maintain eye contact with the students
- ☐ Complete the presentation
- ☐ Provide time for questions

After the Session:

Did you…

- ☐ Complete the evaluation section of the Session Plan
- ☐ Clean the room
- ☐ Fully shut down the projector

Better Sleep. Better Focus. Better Health Session Sign-In Sheet

Session Leader Names: _____   **Session #:** _____   **Date:** _____

NAME	STUDENT ID #	GRADE	FIRST SESSION? Y/N

Impact Evaluation

  Impact evaluations measure changes in behavior, knowledge, attitudes, etc as a result of the intervention (McKenzie et al., 2023). The three main evaluation methods that will be used to measure impact will be sleep journals, take-home surveys for parents, a similar survey for educators, and the Post-Program Survey. Periodically through the course of this program students will be asked to complete a task and document their experience on paper. For example, towards the end of the program, during session 13, students are tasked with going to sleep early one night in the following week and documenting their experiences. This source of qualitative information will provide program planners with key information about program effectiveness at that point in time and will be beneficial to the evaluation of the program outcomes later. These journals will aid in the achievement of the program objectives as they will provide insight into the amount of students the program is reaching and helping.

  The two mid-program surveys will be for the parents and teachers of participating students. This short survey will ask parents and teachers about the impact the program has had thus far in the lives of their children/students. The surveys will be distributed to parents through their child who is participating in the program during session 8. Teachers will receive the surveys in their inbox during the same week as that session. All parents and teachers will be asked to turn the forms back in by the next session. Lastly, the impact of the program will be measured through specific questions mentioned in the Post-program Survey that will shed light on the change in behavior, attitude, and knowledge of the participants. The mid-program surveys can be found under this section and the Post-Program Survey is located in Section VI: Resources and Materials.

Mid-Program Survey for Parents/Guardians

Directions: The following questions are about your child's involvement in the Better Sleep. Better Focus. Better Health. Program. This survey should take you about 10 minutes. Please answer all questions to the best of your ability. If you do not know the answer to a question please write "I'm not sure". When you are finished please give this form to your child to bring to their next session. Thank you!

What is your first and last name?

_____

What is your race/ethnicity?

- ☐ White/Non-Hispanic
- ☐ Hispanic/Latinx/Spanish
- ☐ Black or African American
- ☐ Asian or Asian Indian
- ☐ Middle Eastern or North African
- ☐ Native Hawaiian or other Pacific Islander
- ☐ Other: _____
- ☐ 2 or more

What is the first and last name of the child you have in the Better Sleep. Better Focus. Better Health. Program?

_____

What is the grade of the child you have in the Better Sleep. Better Focus. Better Health. Program?

- ☐ 9th
- ☐ 10th
- ☐ 11th
- ☐ 12th

Which High School does your child attend?

☐ Seneca High School
☐ Walhalla High School
☐ West-Oak High School

How involved would you say you are in your child's academic life on a scale of 1-10?

☐ 1 - Not involved
☐ 2
☐ 3
☐ 4
☐ 5 - Moderately involved
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10 - Very involved

On a scale of 1-10, how much do you think the Better Sleep. Better Focus. Better Health Program has benefitted your child thus far?

☐ 1 - Not at all
☐ 2
☐ 3
☐ 4
☐ 5 - Moderately benefitted
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10 - Greatly benefitted

Are there any specific rules you have for your child in terms of sleeping? (Ex. I ask them to leave their phones downstairs when they go to bed, My kids have a bedtime of 9 pm on weekdays, etc)

Please quickly describe your child's sleeping habits before they joined this program (My child went to bed very late, my child used technology before bed, etc):

Please quickly describe your child's mental health status before they joined this program (Ex. My child seemed very overwhelmed most days, My child seemed depressed, My child worried a lot about having enough time for things in their life, etc):

Please describe any changes you have seen in your child's sleeping habits, if any, since they have started this program:

Please describe any changes you have seen in your child's mental health, if any, since they have started this program:

END OF SURVEY
THANK YOU!

Mid-Program Survey for Teachers

Directions: The following questions are about your student's involvement in the Better Sleep. Better Focus. Better Health. Program. This survey should take you about 10 minutes. Please answer all questions to the best of your ability. If you do not know the answer to a question please write "I'm not sure". When you are finished please turn in this form to the front office. Thank you!

What is your first and last name?

_____

Which High School do you currently teach at?

- ☐ Seneca High School
- ☐ Walhalla High School
- ☐ West-Oak High School

What subject(s) do you currently teach?

_____

What grades do you currently teach?

- ☐ 9th
- ☐ 10th
- ☐ 11th
- ☐ 12th

Please tell us a little about the workload you give to your students (Ex. My class is centered around 5 unit tests, My class is centered around weekly quizzes and daily homework, etc):
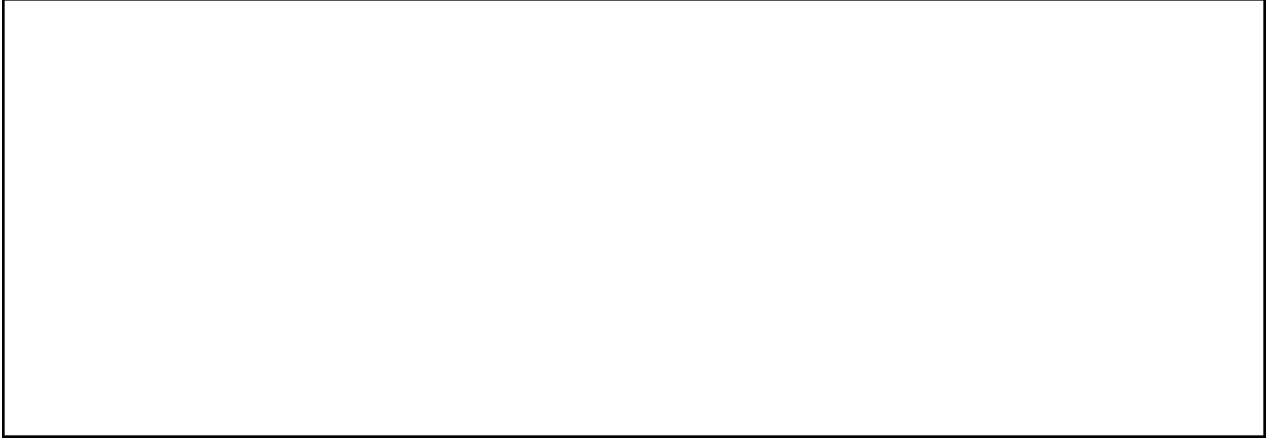
Please describe the work ethic of your students before the start of the program:

Please describe any changes in performance, attitude, alertness in class, etc of your students, if any, after the start of the program:

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On a scale of 1-10, how much do you think the Better Sleep. Better Focus. Better Health Program has benefitted your students thus far?

- ☐ 1 - Not at all
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 - Moderately benefitted
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 - Greatly benefitted

Do you see a difference between your students who are participating in the program versus those who are not? Please answer with 'Yes' or 'No', and why.

END OF SURVEY

THANK YOU!

Outcome Evaluation

Outcome evaluations are changes in morbidity, mortality, or disability due to the intervention (McKenzie et al., 2023). This form of evaluation, along with impact evaluation, is categorized as summative evaluation. Summative evaluations measure a program's effectiveness. The Better Sleep. Better Focus. Better Health Program will use a nonexperimental design approach to measure program outcomes. A Pretest-Posttest design will be used in order to determine the effectiveness of the program and achievement of the program goals. Program goals are stated in Section II: Generalization, Goals, and Objectives. The Pre-and Post-Program Surveys will feature the same questions to increase the validity of the tool. The wait time between tests will be an academic school year, which should be enough time for students to be able to retain the information and score highly. The Post-Program Survey will provide insight into the quantitative data of the program outcomes. This is where aspects such as hours of sleep will be measured to see if the program goals were actually met by the implementation of the program.

An experimental or quasi-experimental design may have been useful for this intervention but program planners have decided not to include a control group in their evaluation of the programThe full Pre-and Post-Program Surveys will be found in Section VI: Resources and Materials.

Section V: Resources Plan

CI with Clemson University

The Better Sleep. Better Focus. Better Health. program will be partnering with a health professor at Clemson University in the creation of a Creative Inquiry (CI) to gain interested volunteers for the implementation of the program. A Creative Inquiry is a semester-long project that undergraduate students can join to develop their skills outside the classroom. There is usually an emphasis on undergraduate research but other opportunities include service learning, outreach, global engagement, and entrepreneurship (*Creative inquiry for undergraduate students*, n.d.). The CI will be marketed towards Health Science, Language and International Health, and other related majors who would have an interest in the implementation of a health promotion program. The course will be 2 credit hours and will be conducted on Mondays and Wednesdays for an hour and fifteen minutes. Although there will not be a maximum amount of students needed for the CI, the minimum should be 6.

During the beginning of the course, students will be walked through the curriculum by the program planners to ensure accurate implementation of the program in the high schools. The time commitment of the CI will be the twice-a-month sessions at the high school, but depending on enrollment into the CI, students may only need to teach one session a month. With a higher enrollment students will be split into two groups to alternate when they would need to attend the school and teach a session. Students will be in charge of content instruction, discussion facilitation, as well as food distribution during the session. Each session should have at least 2 students minimum so as to not allow for one person to have to do everything on their own. Completion of the CI will equate to that of an internship and students will have the opportunity to re-enroll during the next semester. Due to the semester schedule of Clemson University students will not be obligated to continue the CI from fall to spring, but will be highly encouraged to do so to ensure that time is not wasted on teaching new students the curriculum during the spring semester.

Space, Equipment, and Supply Needs

Given that this is an educational program, there are not too many resources needed to implement it. The few things needed include a space to present the lectures in and equipment to display the lectures. After some research, it was determined that all three high schools (Seneca High, Walhalla High, and West-Oak High Schools) have an auditorium, which will be where the lectures are presented. It has also been determined that the schools will allow for the connection of our computers with the projectors in order to display the lecture slideshows on Google Slides. Other resources will include pens, paper, etc. to fill out surveys and write out questions to turn in at the end of the sessions. To evaluate the program at the end, the data from the posttests will be used and compared to the pretests in order to determine the effectiveness of the program. Personal computers will be used to average out the data to compare.

Projected Budget

Figure 1: Projected Budget Sheet

Item	Price	Number of Items	Total Projected Price	Location			Anticipated Price	Actual Price
Forks (500 count)	$8.98	10	$89.90	Sam's Club			$89.90	$0
Knives (600 count)	$13.78	8	$110.24	Sam's Club			$110.24	$0
Spoons (600 count)	$13.98	8	$111.84	Sam's Club			$111.84	$0
Cups (264 count)	$12.48	19	$237.12	Sam's Club			$237.12	$0
Plates (250 count)	$16.48	20	$329.60	Sam's Club			$329.60	$0
Napkins (3000 count)	$18.98	2	$37.96	Sam's Club			$37.96	$0
Noise Machine	$19.99	9	$179.91	Amazon			$179.91	$179.91
Mattress Topper	$44.00	3	$132.00	Walmart			$132.00	$132.00
Eye Sleeping Masks (30 count)	$13.99	15	$209.85	Amazon			$209.85	$209.85
Pens (240 count)	$28.97	2	$57.94	Amazon			$57.94	$57.94
Paper (2500 sheets)	$25.27	2	$50.54	Walmart			$50.54	$50.54
Chick-Fil-A Catoring (300 Chicken Sandwiches)	$1,455.00	16	$23,280.00	Chik-Fil-A			$23,280.00	$23,280.00
							Total	
								$23,910.24

Figure 1 shows the projected budget sheet for this intervention. To the left, the price, number of items, and location of item is listed. The number of items for each was determined by calculating the amount needed if 100 students from each school attended each of the 16 sessions (as stated in our program objectives). To the right, there are two columns labeled "anticipated price" and "actual price". The actual price column is displaying which items are going to be paid for through partnerships. This intervention plan is partnering with Sam's Club, which will pay for the food utensil needs, and in turn, their store will be promoted at the beginning and end of the intervention. Chick-Fil-A chicken sandwiches will be catered for each session at each school. This came out to a total of $23,280.00. This is the most expensive item in the budget. Also included with the sandwiches are the option of gluten free buns. The budget does not include drinks because the drinks will be provided by the schools.

The three incentives we have for this intervention program are noise machines, mattress toppers, and eye sleeping masks. As shown in the budget sheet, there are three mattress toppers available, one for each school which will be given away in a raffle at the end of the program. There are nine noise machines, three for each school, which will be given away at the end of some of the games. Finally, 15, 30 count packages of sleeping masks will be ordered. These sleeping masks will be distributed during the second session of the program.

The paper is for printing out the surveys (printer provided by schools), as well as for the students to write down questions at the end of sessions. There were enough pens bought for each school to have 100 (with a few extra), and students will be asked to return the pens at the end of each session. The pens will be reused in each session.

The last thing needed that will not be included in the budget is a sleep therapist. In the 15th session of this program, a sleep therapist will be speaking. For hiring this lecturer, this program will have a partnership with AnMed Health Medical Center where they have sleep specialists. This medical center is on Tiger Boulevard in Clemson, SC, so it will be local for the specialist presenting. The AnMed foundation often contributes to different programs and events, and this will include this program.

Source of Funds

As said in the previous section, Sam's Club will be providing the funds for the food utensils, and AnMed will be providing a sleep specialist for the lecturer in the 15th session. For the rest of the funds in the budget, a grant proposal will be written to Clemson University as a partnership with the Division of Student Affairs in connection with the proposed CI program (grant proposal on next page).

Grant Proposal

Names: Jenna Gooding and Candace Osei

Contact Information:

- Jenna Gooding:

    - jmgoodi@g.clemson.edu

    - 704-495-0422

- Candace Osei:

    - cosei@g.clemson.edu

    - 571-388-9762

Grant Title: Development of a Program to Improve Sleep Quality of High School Students

Amount Requested: $23,910.24

Proposed Start Date: September 11, 2024

Duration: 2024/2025 Academic Year

Executive Summary

The purpose of this grant proposal is to receive the necessary funding to implement the intervention plan from Better Sleep. Better Focus. Better Health: A Program to Improve Sleep Quality of High School Students. The mission of this program is to give high school students resources to improve mental well-being by increasing sleep quality and quantity. This program and mission were chosen to develop because of the public health crisis that is insufficient sleep. To be specific, factors such as lifestyle, health, personal, socio-demographic, workplace psychosocial, and job factors are linked to sleep deprivation (Hafner et al., 2017). Seeing how much sleep quality can affect physical, mental, and social aspects of health, this intervention plan was created. The goals of the program are as follows:

- Provide resources and increase knowledge surrounding healthy sleep behaviors in high school students

- Improve healthy sleeping patterns/habits in high school students

- Create a safe space for students to share their experiences surrounding mental health

    Through these goals, high school students from three high schools (Seneca High School, Walhalla High School, and West-Oak High School) in Oconee County, SC, should have the efficient knowledge needed to identify positive and negative sleeping patterns, as well as to

create their own healthy sleep schedules and maintain these schedules long-term. This is one expected impact of this program. Another expected impact of this program is that 50% of students that participate in this program will see an improvement in their mental health status. Furthermore, if this program proves successful, it could be distributed to other schools and counties across the globe. It is plausible that the program will be successful based on other successful educational programs aimed at reducing this health disparity. Two studies that had successful results in one form or another are as follows, and our program will be based off of them:

- An Educational Intervention to Improve the Sleep Behavior and Well-Being of High School Students - DOI: 10.22454/PRiMER.2019.871017
- The Teensleep study: the effectiveness of a school-based sleep education programme at improving early adolescent sleep - DOI: 10.1016/j.sleepx.2019.100011

Program Goals: Activities and Expected Outcomes

In this program, the goals listed in the executive summary will be achieved through lecture presentations, games, and discussion breakout sessions. The different presentations include topics such as the definition of sleep, REM cycles, maintaining a healthy sleep cycle, and many more. This is going to cover the outcome of them having more knowledge about sleep than they started the program with. For the games, the platform, Kahoot, will be used. Games are being used as a fun way to present and quiz students on information. The expected outcome of this is that they gain more knowledge, but also that they remember the learned information better since it is presented in a fun way. During the breakout sessions led by Clemson students, the high school students will be able to share their questions and personal experiences surrounding sleep. The expected outcome of the breakout groups is that it allows students to have a more personal, safe space to share their thoughts, rather than in front of the entire group. They can also use these sessions to talk about their mental health, and how sleep might be affecting that.

Budget and Other Sources of Funding

Item	Price	Number of Items	Total Projected Price	Location			Anticipated Price	Actual Price
Forks (500 count)	$8.98	10	$89.90	Sam's Club			$89.90	$0
Knives (600 count)	$13.78	8	$110.24	Sam's Club			$110.24	$0
Spoons (600 count)	$13.98	8	$111.84	Sam's Club			$111.84	$0
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Napkins (3000 count)	$18.98	2	$37.96	Sam's Club			$37.96	$0
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Pens (240 count)	$28.97	2	$57.94	Amazon			$57.94	$57.94
Paper (2500 sheets)	$25.27	2	$50.54	Walmart			$50.54	$50.54
Chick-Fil-A Catoring (300 Chicken Sandwiches)	$1,455.00	16	$23,280.00	Chik-Fil-A			$23,280.00	$23,280.00
							Total	
								$23,910.24

The projected budget above represents prices and number of items needed, funds already covered, and the total funds still needed. The funds still needed include the incentives/prizes for participating in the program, pens and paper for the surveys and questions, and food that will be provided at every session. The other source of funding is coming from a pre-approved partnership with Sam's Club. Through this partnership, Sam's Club will be providing the food utensils needed, and in turn, the promotion of their store.

The Team

The team of this intervention includes the creators, Jenna Gooding and Candace Osei, the stakeholders, the principals of the high schools and the members of the parent-teacher association, and the lecturers including Clemson students, a sleep psychologist, as well as the creators.

Section VI: Resources and Materials

Subsection A: Appendix

Subsection B: Reference List

Subsection C: PDFs of Key Journal Articles

Appendix

In-depth Interview Guide for Principal and Vice/Assistant Principal
Research Question: What are the views and perceptions of current needs and assets of the school principal and vice/assistant principal?

Preamble to set the scene of In-depth Interview	Introduce yourself and provide an explanation for why you are conducting the survey: *"Good [time of day]! My name is [interviewer name] and I am a program planner for the Better Sleep. Better Focus. Better Health intervention program. I am here to ask you some questions about the needs and assets of your school to better understand the community here. This interview should last about 30 minutes, do you have any questions before we begin?"*
Begin the IDI using the topic guide below:	
Question type	**Example Questions**
Opening	Can you introduce yourself and share how long you have been an administrator as well as how you got into the profession?
Introductory	How would you describe the work ethic of the students of this school?
Transition	What sorts of challenges are your students facing currently?
Key questions	- Do you see lack of sleep as a problem within this community? - Do you see mental health issues as a problem within this community? - What current resources are available for students who are struggling with these issues?
Ending	How important do you think it is to address these issues within the school?
Final	*(summarize the information given and restate the purpose of the interview)* Is there anything else you wanted to talk about today but we didn't?
Wrap up the IDI and thank the participant for their time and active participation. Remind them who they can contact if they have questions about the program.	

Focus Group Discussion Guide: Teachers

Research Question: What are the perceptions of teachers at Walhalla, Seneca, and West-Oak High School in regard to current needs and assets the school has in terms of sleep? What is the current workload teachers are giving to their students at these schools?

Preamble to set scene of Focus Group Discussion	Introduce yourself and provide an explanation for why you are conducting the discussion: *"Good [time of day]! My name is [interviewer name] and I am a program planner for the Better Sleep. Better Focus. Better Health intervention program. I am here to ask you all some questions about the needs and assets of your school to better understand the community here as well as to understand the workload of the students in the school. This discussion should last about 45 minutes, does anyone have any questions before we begin?"*
Begin the FGD using the topic guide below:	
Question type	**Example Questions**
Opening	● Can you introduce yourself and share how long you have been an educator as well as how you got into the profession?
Introductory	● How are your classes designed in terms of class structure and homework allocation?
Transition	● What sorts of challenges are your students currently facing?
Key questions	● Do you see lack of sleep as a problem plaguing your students? ● Do you see mental health as a problem plaguing your students? ● What resources do you provide to your students who are struggling with these issues?
Ending	● Do you think school workload contributes to the prevalence of these issues? ● In you opinion what area is best to help students with combating these issues?
Final	● *(summarize the information given and restate the purpose of the interview)* Is there anything else you all wanted to talk about today but we didn't?

Wrap up the FGD and thank participants for their time and active participation. Remind them who they can contact if they have questions about the program.

Focus Group Discussion Guide: Parents

Research Question: What are the current perceptions of the needs and assets of parents of high school students in regard to sleep?

Preamble to set scene of Focus Group Discussion	Introduce yourself and provide an explanation for why you are conducting the discussion: *"Good [time of day]! My name is [interviewer name] and I am a program planner for the Better Sleep. Better Focus. Better Health intervention program. I am here to ask you all some questions about the needs and assets of your high school-age children to better understand your role as parents in their lives. This discussion should last about 45 minutes, does anyone have any questions before we begin?"*
Begin the FGD using the topic guide below:	
Question type	**Example Questions**
Opening	● Can you introduce yourself and share a little about the student you have here?
Introductory	● How involved do you think a parent should be in their child's school life?
Transition	● What challenges are currently facing your high school-age children?
Key questions	● Do you see lack of sleep as a problem in your child and other high school-age children? ● Do you see mental health issues as a problem in today's generation or with your own child? ● What resources do you provide/would you provide if your child was struggling with these issues?
Ending	● What role do you think a parent plays in the combatting of these issues in high school-age children?
Final	● *(summarize the information given and restate the purpose of the interview)* Is there anything else you all wanted to talk about today but we didn't?
Wrap up the FGD and thank participants for their time and active participation. Remind them who they can contact if they have questions about the program.	

Focus Group Discussion Guide: Students

Research Question: What are high school students' current perceptions about the needs and assets of their school in regard to sleep?

Preamble to set scene of Focus Group Discussion	Introduce yourself and provide an explanation for why you are conducting the discussion: *"Good [time of day]! My name is [interviewer name] and I am a program planner for the Better Sleep. Better Focus. Better Health intervention program. I am here to ask you all some questions about the needs and assets provided to you through your school as well as your perceptions about sleep practices in your generation. This discussion should last about 45 minutes, does anyone have any questions before we begin?"*
Begin the FGD using the topic guide below:	
Question type **Example Questions**	
Opening	● Can you introduce yourself, what grade you are in, and one extracurricular you are involved in?
Introductory	● How would you describe the workload you are given at school?
Transition	● What challenges (other than workload) do you currently face as a student?
Key questions	● What are your current sleeping habits? ● Do you think mental health issues are a problem within your generation? ● What resources do you/would you utilize if you were struggling with these issues?
Ending	● Out of everything we talked about today, what is the biggest barrier to you getting enough sleep at night? ● Would you participate in a sleep education program after school to help you learn about healthy sleep habits and improve your sleep quality/quantity?
Final	● *(summarize the information given and restate the purpose of the interview)* Is there anything else you all wanted to talk about today but we didn't?
Wrap up the FGD and thank participants for their time and active participation. Remind them who they can contact if they have questions about the program.	

Pre-Program Survey of Sleep Patterns among High School Students

Better Sleep. Better Focus. Better Health.

Purpose: The purpose of this survey is to evaluate your perceptions, beliefs, and habits surrounding sleep and mental health in order to improve mental wellbeing by increasing sleep quality and quantity.

Confidentiality Statement: The answers to the questions on this survey are confidential and will only be used by researchers. Names will not be associated with the responses.

Instructions: Please answer the following questions according to the instructions above each section.

Models used to construct this survey include the Health Belief Model and the Theory of Planned Behavior.

Section 1: The following 8 questions will ask how much you agree with a certain statement. Choose one answer from the 5-point scale ranging from strongly disagree (1) to strongly agree (5). If you do not have an opinion on the question asked, select neutral (3).

1. **Sleep can affect my physical health.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

2. **Sleep can affect my mental health.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

3. **Getting more sleep at night will improve my grades.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

4. **Getting more sleep at night will make me more alert in class.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

5. **My sleep environment makes it difficult for me to get quality sleep at night.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

6. **My schoolwork stops me from getting enough sleep at night.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

7. **If I receive weekly reminders about getting more sleep, I will be more likely to take action.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

8. **If I see a poster with information about how to improve sleep, I will be more likely to put the information to use.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

Section 2: The following 2 questions will ask how severe you believe the following statements are. Choose one answer from the 5-point scale ranging from not at all severe (1) to very severe (5), with (3) being neutral.

1. **Lack of sleep will impact my mental health in the future.**
   - ☐ (1) Not severe
   - ☐ (2)
   - ☐ (3) Neutral
   - ☐ (4)
   - ☐ (5) Very severe

2. **My sleep problems affect my ability to concentrate**
   - ☐ (1) Not severe
   - ☐ (2)
   - ☐ (3) Neutral
   - ☐ (4)
   - ☐ (5) Very severe

Section 3: The following 6 questions will be true or false statements. Choose the best answer based on your beliefs.

1. **I feel confident that I have the ability to improve my sleep quality.**
   - ☐ True
   - ☐ False

2. **I believe that I can apply better sleep practices to my life.**
   - ☐ True
   - ☐ False

3. **My peers will make fun of me if I go to bed early instead of staying up late.**
   - ☐ True
   - ☐ False

4. **If I do not stay up late to finish my homework, I will get a bad grade.**
   - ☐ True
   - ☐ False

5. **It is normal to get less than 8 hours of sleep at night.**
   - ☐ True
   - ☐ False

6. **Caffeine can replace the need for a good night's sleep.**
   - ☐ True
   - ☐ False

Section 4: The following 5 questions are multiple choice. Choose the answer that best describes you.

1. **How many hours of sleep do you get each night?**
   - ☐ 6 hours or less
   - ☐ 7-8 hours
   - ☐ 9-10 hours
   - ☐ 11 hours or more

2. **How often do you think you get quality sleep?**
   - ☐ Never
   - ☐ Sometimes
   - ☐ Always
   - ☐ Not sure

3. **Do you ever think about how you can improve your sleep?**
   - ☐ Never
   - ☐ Sometimes
   - ☐ Always

4. **Do you use any sleep supplements at night to fall asleep (i.e., melatonin, ZzzQuil)?**
   - ☐ Never
   - ☐ Sometimes
   - ☐ Always

5. **Do you have a history of sleep talking and/or sleep walking?**
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

Section 5: The following 4 questions are multiple choice. Choose the answer that best describes you.

6. **What grade are you in?**
   - ☐ Freshman
   - ☐ Sophomore
   - ☐ Junior
   - ☐ Senior

7. **Which of the following best describes you?**
   - ☐ White/Non-hispanic
   - ☐ Hispanic/Latinx/Spanish
   - ☐ Black or African American
   - ☐ Asian or Asian Indian
   - ☐ Middle Eastern or North African
   - ☐ Native Hawaiian or other Pacific Islander
   - ☐ Other: _____
   - ☐ 2 or more

8. **Which of the following best describes you?**
   - ☐ Woman
   - ☐ Man
   - ☐ Non-binary
   - ☐ Not Listed: _____

9. Your grades in school are *mostly*:

☐ A's
☐ A's and B's
☐ C
☐ C's and D's
☐ D's
☐ D's and F's
☐ F's

END OF SURVEY

When finished, place the survey in the box at the front of the classroom.

Post- Program Survey of Sleep Patterns among High School Students

Better Sleep. Better Focus. Better Health.

Purpose: The purpose of this survey is to evaluate your newly developed perceptions, beliefs, and habits surrounding sleep and mental health in order to improve mental wellbeing by increasing sleep quality and quantity, as well as your opinions over this program.

Confidentiality Statement: The answers to the questions on this survey are confidential and will only be used by researchers. Names will not be associated with the responses.

Instructions: Please answer the following questions according to the instructions above each section.

Models used to construct this survey include the Health Belief Model and the Theory of Planned Behavior.

Section 1: The following 8 questions will ask how much you agree with a certain statement. Choose one answer from the 5-point scale ranging from strongly disagree (1) to strongly agree (5). If you do not have an opinion on the question asked, select neutral (3).

1. **Sleep can affect my physical health.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

2. **Sleep can affect my mental health.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

3. **Getting more sleep at night will improve my grades.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

4. **Getting more sleep at night will make me more alert in class.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

5. **My sleep environment makes it difficult for me to get quality sleep at night.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

6. **My schoolwork stops me from getting enough sleep at night.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

7. **If I receive weekly reminders about getting more sleep, I will be more likely to take action.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

8. **If I see a poster with information about how to improve sleep, I will be more likely to put the information to use.**
   - ☐ (1) Strongly disagree
   - ☐ (2) Disagree
   - ☐ (3) Neutral
   - ☐ (4) Agree
   - ☐ (5) Strongly agree

Section 2: The following 2 questions will ask how severe you believe the following statements are. Choose one answer from the 5-point scale ranging from not at all severe (1) to very severe (5), with (3) being neutral.

1. **Lack of sleep will impact my mental health in the future.**
   - ☐ (1) Not severe
   - ☐ (2)
   - ☐ (3) Neutral
   - ☐ (4)
   - ☐ (5) Very severe

2. **My sleep problems affect my ability to concentrate**
   - ☐ (1) Not severe
   - ☐ (2)
   - ☐ (3) Neutral
   - ☐ (4)
   - ☐ (5) Very severe

Section 3: The following 6 questions will be true or false statements. Choose the best answer based on your beliefs.

1. **I feel confident that I have the ability to improve my sleep quality.**
   - ☐ True
   - ☐ False

2. **I believe that I can apply better sleep practices to my life.**
   - ☐ True
   - ☐ False

3. My peers will make fun of me if I go to bed early instead of staying up late.
- ☐ True
- ☐ False

4. If I do not stay up late to finish my homework, I will get a bad grade.
- ☐ True
- ☐ False

5. It is normal to get less than 8 hours of sleep at night.
- ☐ True
- ☐ False

6. Caffeine can replace the need for a good night's sleep.
- ☐ True
- ☐ False

Section 4: The following 5 questions are multiple choice. Choose the answer that best describes you.

1. How many hours of sleep do you get each night?
- ☐ 6 hours or less
- ☐ 7-8 hours
- ☐ 9-10 hours
- ☐ 11 hours or more

2. How often do you think you get quality sleep?
- ☐ Never
- ☐ Sometimes
- ☐ Always
- ☐ Not sure

3. Do you ever think about how you can improve your sleep?
- ☐ Never
- ☐ Sometimes
- ☐ Always

4. **Do you use any sleep supplements at night to fall asleep (i.e., melatonin, ZzzQuil)?**
   - ☐ Never
   - ☐ Sometimes
   - ☐ Always

5. **Do you have a history of sleep talking and/or sleep walking?**
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

Section 5: The following 4 questions are multiple choice. Choose the answer that best describes you.

1. **Do you feel like this program was useful to you in any way?**
   - ☐ Not useful at all
   - ☐ Somewhat useful
   - ☐ Very useful
   - ☐ Neutral

2. **Would you recommend this program to your peers?**
   - ☐ Not useful at all
   - ☐ Somewhat useful
   - ☐ Very useful
   - ☐ Neutral

3. **Do you think you could improve your sleep without this program?**
   - ☐ Yes
   - ☐ No
   - ☐ Maybe
   - ☐ Not sure

4. **How confident are you that you can create and manage an efficient sleep schedule long term?**
   - ☐ Not at all confident
   - ☐ Somewhat confident
   - ☐ Very confident
   - ☐ Not sure

Section 6: The following 4 questions are multiple choice. Choose the answer that best describes you.

1. **What grade are you in?**
   - ☐ Freshman
   - ☐ Sophomore
   - ☐ Junior
   - ☐ Senior

5. **Which of the following best describes you?**
   - ☐ White/Non-hispanic
   - ☐ Hispanic/Latinx/Spanish
   - ☐ Black or African American
   - ☐ Asian or Asian Indian
   - ☐ Middle Eastern or North African
   - ☐ Native Hawaiian or other Pacific Islander
   - ☐ Other: _____
   - ☐ 2 or more

6. **Which of the following best describes you?**
   - ☐ Woman
   - ☐ Man
   - ☐ Non-binary
   - ☐ Not Listed: _____

7. **Your grades in school are *mostly*:**
   - ☐ A's
   - ☐ A's and B's
   - ☐ C
   - ☐ C's and D's
   - ☐ D's
   - ☐ D's and F's
   - ☐ F's

END OF SURVEY

When finished, place the survey in the box at the front of the classroom.

Program Goals and Objectives

Goals:

- Provide resources and increase knowledge surrounding healthy sleep behaviors in high school students
- Improve healthy sleeping patterns/habits in high school students
- Create a safe space for students to share their experiences surrounding mental health

Objectives:

- After 8 monthly sessions, students will be able to identify positive and negative sleeping patterns
- After program, 200 students from each high school in (county) will be reached
- During program 50% of students will be consistently be attending each session

What's the plan?

- Every two weeks, we will have a meeting during lunch to teach you about sleep (what it is, how it affects you, and how to improve your own sleep)
- We will play games and have breakout sessions to have open conversations about mental health
- Food will be provided, with gluten free options, as well as other allergy considerate options
- There will be prizes given away at the end of each month

Session Schedule

9/11/24 - 5/7/25

Session 1 (9/11): Introduction to Program/ Pre-program Survey

Session 2 (9/25): What is Sleep?

Session 3 (10/16): Why is Sleep Important?

Session 4 (10/30): Good Sleep vs Bad Sleep

Session 5 (11/13): The Body Clock and Sleep Drive

Session 6 (12/4): Sleep Scheduling and Time Management

Session 7 (12/18): Lifestyle and Societal Facilitators/Barriers to Sleep

Session 8 (1/8): Light and Sleep

Session 9 (1/22): Mental Health and Sleep

Session 10 (2/5): Thoughts and Emotions at Bedtime

Session 11 (2/19): Managing the Racing Mind

Session 12 (3/5): Creating a Conducive Sleep Environment

Session 13 (3/26): A Sleep-Friendly Routine

Session 14 (4/9): Managing a Sleep Routine

Session 15 (4/23): Sleep Therapist Presentation

Session 16 (5/7): Final Session/ Post-program Survey

Questions?

Pre-program Survey

Session #2 Presentation

What is Sleep?

"A condition of body and mind that typically recurs for several hours every night, in which the eyes are closed, the postural muscles relaxed, the activity of the brain altered, and the consciousness of the surroundings practically suspended"

In other words...

Sleep is a regular body process that allows your brain to recharge

Anatomy of Sleep

- Various different structures are involved in the sleep process:
  - Hypothalamus: contains control center for sleep and arousal
  - Brain stem: communicates with the hypothalamus to manage transitions of wakefulness and sleepiness
  - Thalamus: relays information to cerebral cortex and in charge of dream making
  - Pineal gland: tasked with melatonin production which aids in sleep
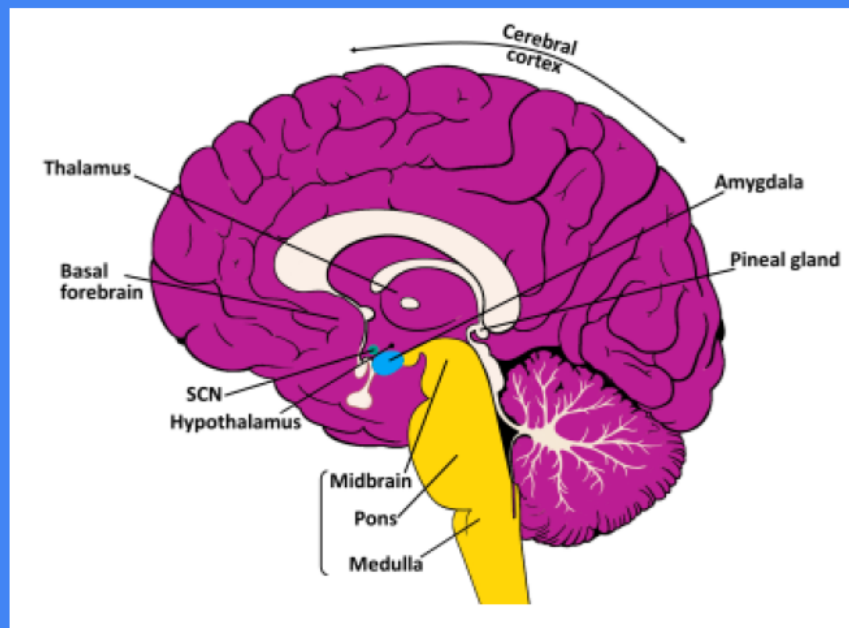
Stages of Sleep

Two basic stages:

- Rapid eye movement (REM) sleep and non-REM sleep
- Stage 1 non-REM: marks the transition from wakefulness to sleep

Stages of Sleep

- Stage 2 non-REM: A period of light sleep before entering deeper sleep
  - Your heart rate and breathing regulate
  - Body temperature drops
- Stage 3 non-REM: Period of deep sleep, happens in longer periods during the first half of the night

Stages of Sleep

REM sleep:

- Occurs for the first time 90 mins after falling asleep
- Eyes move quickly from side to side but your eyelids remain closed
- Stage where dreams occur

How Much Sleep do you Need?

- Need for sleep changes as you age
- Babies can sleep from 16-18 hrs a day
- School-age children and teens need about 9.5 hours per night
- Most adults need 7-9 hrs per night

Average Sleep Hours
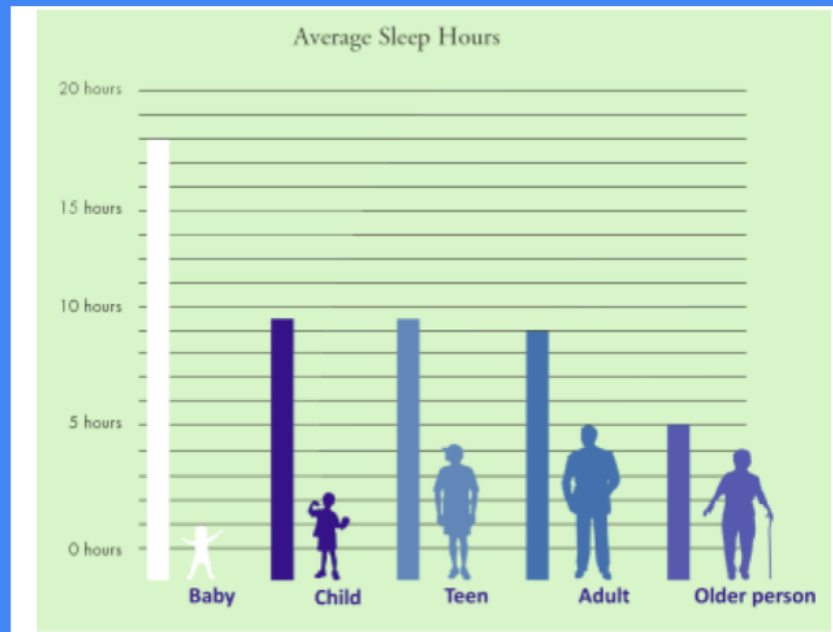
Dreaming

- We spend about 2 hours each night dreaming
- The true purpose of our dreams are unknown

Breakout Discussion

- Define sleep and its stages in your own words
- What do you think the true purpose of our dreams are?
- What point (s) from the presentation today surprised you?

What did we learn today?

- Sleep is an important and regular body process that allows the brain to rest
- Various different bodily structures contribute to the sleeping process
- There are two stages of sleep: REM and non-REM sleep
- Teens need about 9.5 hours of sleep a night
- The true purpose of our dreams is unknown

No Homework today, Have a good one!
Next Session: 10/16

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