Spring 5-27-2023

Better Sleep, Brighter Mornings: A Sleep Hygiene Protocol for Older Adults as a Quality-of-Life Enhancement

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BETTER SLEEP, BRIGHTER MORNINGS: A SLEEP HYGIENE PROTOCOL FOR OLDER ADULTS AS A QUALITY-OF-LIFE ENHANCEMENT

UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science Beyster Institute of Nursing

DOCTOR OF NURSING PRACTICE PORTFOLIO

by

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A portfolio presented to the

FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE
UNIVERSITY OF SAN DIEGO

In partial fulfillment of the
requirements for the degree

DOCTOR OF NURSING PRACTICE
May 2023

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Implementation of Sleep Hygiene and assessing for self-reported quality of sleep utilizing the Pittsburgh Sleep Quality Index

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Acknowledgements

To my partner Ben, your commitment to self-betterment and pursuit of knowledge are an inspiration. Thank you for always loving, supporting, and encouraging me even in the most challenging of times. To my parents, my biggest role models and the two hardest working people I know. Thank you for leading by example and showing me that a life dedicated to the service of others is the most noble to live. To my grandma, who instilled such a strong, unbreakable, and unquestionable belief in God and myself, I know I never walk alone.

Abstract

Purpose: The purpose of this evidence-based practice Doctor of Nursing Practice (DNP) project was to emphasize the importance of and educate patients on primary prevention techniques for sleep hygiene to use as a tool to enhance quality of life by increasing patient's self-reported sleep quality.

Background: Sleep patterns change as we age, however, aging itself is not necessarily a cause of sleep problems. Sleep is one of the most important activities for a person's health and overall well-being. A growing body of literature shows that not enough sleep and poor sleep quality is associated with hypertension, heart disease, stroke, diabetes, anxiety, and depression. In addition to physical manifestations of poor sleep, other life altering side effects including tiredness and fatigue play a role in daily quality of life perceptions. Hygiene practices have been recognized as a crucial aspect of promoting good sleep quality and preventing sleep disorders in older adults. This evidence-based project aimed to evaluate the impact of a sleep hygiene intervention on self-reported sleep quality in adults >55 years of age.

Methods*:* The Pittsburgh Sleep Quality Index (PSQI) was implemented and used to first assess patients' self-reported sleep quality and quantity of sleep, then patients were counseled one-on-one regarding recommended sleep hygiene practices and provided an educational handout. One month after implementation of the sleep hygiene teachings, the PSQI was administered again to assess for improvement.

Results: The results demonstrated that the sleep hygiene intervention significantly improved self-reported sleep quality in the patients who implemented the sleep hygiene practices. The average initial PSQI score was 7.5, while the average post-intervention score was 6.1; this represents a 22.9% decrease in the PSQI scoring. The findings are consistent with previous

research demonstrating the effectiveness of sleep hygiene interventions in improving sleep quality in older adults. The PSQI consists of 19 self-evaluated questions and 5 questions rated by a partner sleeping in the same bed (if available); however, only the self-rated questions are considered for the scoring. The 19 self-evaluated items are amalgamated to shape seven component scores, each with a point range of 0-3. A score of "0" signifies no issues, whereas a score of "3" represents severe difficulties in all cases. The seven component scores are added together to calculate one "global" score, which ranges from 0-21 points, where "0" implies no difficulty and "21" indicates severe issues in all areas.

Evaluation: This evidence-based project highlights the importance of promoting primary prevention in patients, in this case, sleep hygiene practices among older adults. The results may have significant implications for improving the health and self-reported well-being of older adults. Results may also inform the development of future sleep hygiene interventions for this population and the implementation of the PSQI in elderly care.

Keywords: Sleep hygiene, sleep quality, primary prevention

Implementation of Sleep Hygiene and Assessing for Self-Reported Quality of Sleep Utilizing the Pittsburgh Sleep Quality Index

Sleep is a basic human need, and it is one of the most crucial factors in maintaining good mental and physical health. Sleep hygiene practices have been recognized as a vital aspect of promoting good sleep quality and preventing sleep disorders in older adults. (Tel, Hatice 2012). Sleep patterns change as we age; however, aging itself is not or should not necessarily be a cause of sleep problems. Unfortunately, "a close correlation between age and sleep quality and quality of life of the elderly people, and sleep quality and quality of life decreases as the age of the elderly people increases" (Tel, Hatice 2012). Although sleep may be routinely assessed during primary care yearly visits, there is no current standardized screening tool that is consistently utilized to assess a patient's self-reported sleep quality, quantity, and overall perception of sleep. Poor sleep has detrimental effects comparable to those of major sleep disorders, but is often neglected. The high incidence and direct/indirect healthcare and welfare costs of sleep disorders and poor sleep currently constitute a major medical problem (Garbarino, et al., 2016). There are both direct and indirect healthcare costs to poor sleep and insomnia,

for example, insomnia has been associated with emergency room (ER) visits, days hospitalized, and provider visits, and insomnia severity has been linearly associated with health-care utilization. Annual medical costs among people with insomnia have been found to be 26% higher than non- insomnia controls, with estimated costs of hospitalization of people with insomnia and insomnia-related depression to be $36.6 Billion and $1.5 billion ($25 billion and $1 billion in 1998 USD) per year, respectively." (E.M Wickwire, et al., 2016).

It is important to focus on non-pharmacological approaches to patient care, especially focusing on nurse-led patient education regarding sleep hygiene as a quality-of-life

enhancer. "Global public health concern over sleep has increased demand for sleep promotion strategies accessible to the population." (Irish, et al., 2015).

Background and Significance

By utilizing the Pittsburgh Sleep Quality Index (PSQI), a self-rated questionnaire to measure sleep quality in a clinical population, a total of 10 patients were seen at an internal medicine office from September 2022 to October 2022. This Internal Medicine clinic there was a gap present for screening sleep habits for older adults, leaving out a great portion of primary care and prevention in this area. Patients were screened to assess for efficacy of sleep hygiene methods in self-reported quality of sleep. "Sleep hygiene is defined as a set of behavioral and environmental recommendations intended to promote healthy sleep, and was originally developed for use in the treatment of mild to moderate insomnia. During sleep hygiene education, patients learn about healthy sleep habits and are encouraged to follow a set of recommendations to improve their sleep" (Irish, et al., 2015).

The Centers for Disease Control has recently advocated for public health surveillance of sleeping difficulties, issuing a call to increase the awareness of sleep as a healthy behavior. According to the National Health Interview Survey (NCHS) (2020), in 2020, 14.5% of adults had trouble falling asleep most days or every day in the past 30 days." It is important to note the correlation between appropriate sleep patterns and duration and overall health and wellbeing. Multiple studies have illustrated that both short and long sleep durations are associated with comorbidities such as depression, poor cognition, obesity, type 2 diabetes, and cardiovascular disease, including hypertension, coronary heart disease, and stroke (Lubetkin & Jia, 2018). Sleep problems, such as lack of adequate sleep and inability to fall asleep, and its consequences, are monumental in determining the quality of life of the elderly. Adequate and restful sleep is

recognized as a crucial element for preserving mental well-being. Numerous studies, such as the mentioned below have revealed a high prevalence of anxiety and depression among older individuals. If left untreated, depression in the elderly can result in unfavorable consequences such as decline in cognitive abilities, physical ailments, disability, higher mortality rates, and increased healthcare utilization. “Sleep disturbances are regarded as secondary to depression due to depression's comorbidity with sleep disorders. However, recent evidence has indicated that sleep disturbances not only precede the occurrence of depression, but are also associated with increased risk for depression cross-sectionally and longitudinally” (Gulia & Kumar, 2018).

Purpose

The aim of this evidence-based project is to emphasize the importance of educating patients in primary care practice about sleep hygiene as a means of primary prevention to avoid sleep issues. The project involves utilizing the PSQI to assess if implementation of a sleep hygiene educational session, improves the self-reported quality of sleep among patients aged over 55 years at follow up.

Evidence-Based Practice Model

The Iowa Model was utilized as the framework for this project, from formulating a clinical question to evaluating the evidence. The project plan process involved identifying an area of need, conducting a literature review and appraisal, and applying for IRB approval to conduct the initial PSQI and patient education, as well as the post-intervention PSQI one month later after initially meeting with patients.

The project was conducted at an internal medicine private practice, where patients over the age of 55 years old, not currently undergoing pharmacological insomnia treatment, were selected.

Methods

The project plan process involved identifying an area of need, conducting a literature review and appraisal, and applying for IRB approval to conduct the initial PSQI and patient education, as well as the post-intervention PSQI one month later after initially meeting with patients. PSQI is a widely used tool for assessing sleep quality and identifying sleep-related problems. In this case, ten patients who underwent a sleep hygiene education intervention had their initial PSQI scores recorded, and then were educated on healthy sleep habits and behaviors. After one month, the patients' PSQI scores were re-evaluated and compared to their initial scores. The results demonstrated that utilizing the PSQI and implementing sleep hygiene education interventions had a positive impact on the patients' sleep quality, as evidenced by the reduction in their PSQI scores. The project was initiated in August 2022 by conducting a literature review based on previously identifying an area of need in a geriatric population. IRB approval was received November 2023. And soon after data collection with the follow up one month after was completed.

Data Collection

The project was conducted at an internal medicine private practice. Ten patients over the age of 55 years old and not currently being treated with pharmacological insomnia management were selected. Inclusion criteria included geriatric patient and not currently undergoing any pharmacological treatment with sleeping medications or sedatives. Ten patients >55 years of age who had scheduled Medicare annual health visits with no preexisting sleep disorders or currently taking prescribed or over-the-counter sleeping aids were selected and the PSQI was administered in office. The PSQI consists of 19 individual items, creating 7 components that produce one global score, and takes 5–10 minutes to complete. After this, they were provided with a sleep

hygiene handout created through tips from the Centers for Disease Control (CDC). Afterwards, patients also agreed to be called by phone one month after the initial encounter to conduct a second PSQI and evaluate for changes.

Results

The PSQI can be an effective tool in identifying sleep problems and guiding interventions to improve sleep quality. The results of the PSQI intervention showed that sleep quality improved in the post-intervention group, as evidenced by a decrease in the mean PSQI score from 7.7 to 6.5. The post-intervention group had a narrower range of scores (2) compared to the pre-intervention group (4), indicating a more consistent improvement in sleep quality across the participants. Additionally, the interquartile range (IQR) for the post-intervention group (1) was smaller than that of the pre-intervention group (1.75), indicating a reduction in the variability of sleep quality scores after the intervention. These findings suggest that the PSQI intervention could be an effective tool for improving sleep quality in patients and may be of interest to primary care providers interested in promoting better patient outcomes. An analysis of the PSQI scores of 10 patients who underwent a PSQI intervention showed that the mean PSQI score for the pre-intervention group was 7.7, whereas the mean score for the post-intervention group was 6.5, indicating a significant improvement in sleep quality after the intervention. The standard deviation of the pre-intervention group was 1.42, and that of the post-intervention group was 0.69, suggesting that the post-intervention group was less variable than the pre-intervention group, indicating a greater consistency of improvement across the participants. The median score for the pre-intervention group was 8, whereas the median score for the post-intervention group was 6.5. This suggests that the PSQI intervention had a positive impact on sleep quality, as indicated by a reduction in both the mean and median PSQI scores.

The mean pretest and post-test PSQI scores were compared, with the vertical bars and diamonds representing the initial PSQI pre-scores (average close to eight) and the post-PSQI scores (closer to six). The lower the number on the PSQI score, the better quality or self-reported quality of sleep that patients communicated. The distribution of individual PSQI scores for all ten patients were also analyzed, with different colors representing individual scores. The table shows the pre- and post-PSQI scores for ten patients who underwent a sleep intervention protocol.

This sleep intervention study collected pre- and post-intervention data on participants' sleep quality using the PSQI instrument, and the summary statistics were analyzed. The mean PSQI score for participants decreased from 7.5 pre-intervention to 6.1 post-intervention. The variance in PSQI scores also decreased from 2.06 pre-intervention to 0.54 post-intervention. The Pearson correlation coefficient between pre- and post-intervention scores was moderate at 0.47, suggesting a positive relationship between the two measures. The t-test results indicated a significant difference in mean PSQI scores pre- and post-intervention ($t=3.5$, $p=0.003$), with a hypothesized mean difference of 0. Based on the two-tailed test, the probability of obtaining a t-value this extreme or more in favor of the alternative hypothesis is less than 1%, suggesting strong evidence for the effectiveness of the sleep intervention. These findings suggest that the sleep intervention was successful in improving participants' sleep quality and could be a useful tool for improving sleep outcomes in similar populations.

Tables

Table 1

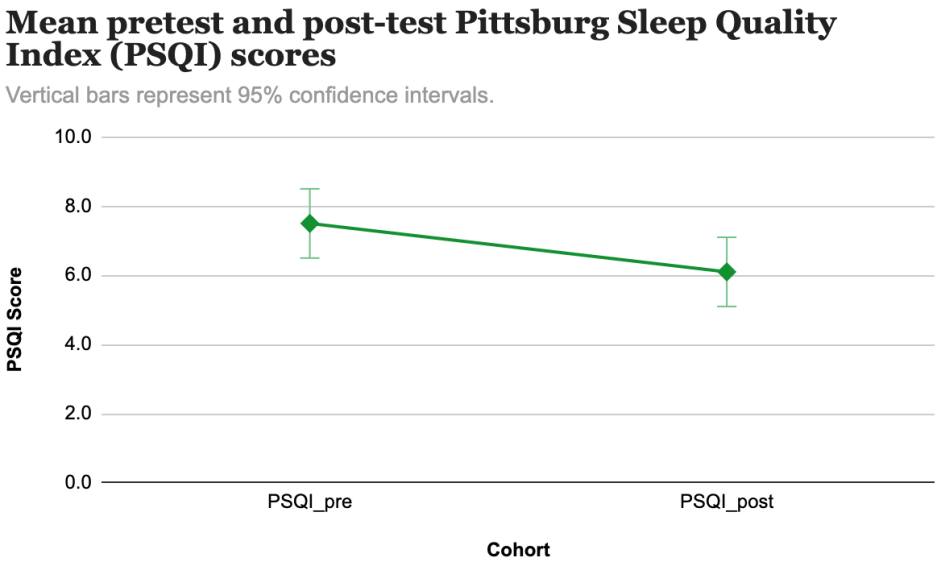
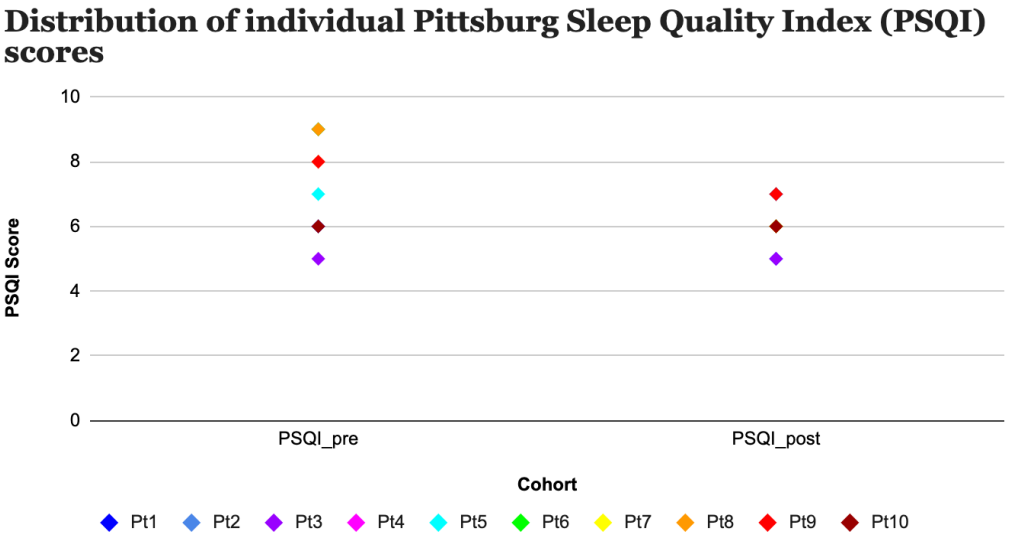


Table 2



Cost Benefit Analysis

The program cost took into account the projected DNP salary, printing supplies, and time spent with the patient, and for every dollar spent in this project, there was a $3.80 cost saving per patient. The ROI yielded 280% in a program size of 10 patients. The DNP salary was included in these calculations given that direct patient care in this DNP-led education sessions are normally not accounted for in usual consult times.

For financial benefits, healthcare costs associated with the decreased chronic condition exacerbations caused by lack of proper sleep were considered, in the United States indirect costs such as emergency room visits, hospitalized days, primary care provider visits which in direct medical expenditures is estimated to be a yearly total of $2124 (Wickwire, et al., 2016).

This evidence-based project aimed to look at non-pharmacological treatments of sleep interventions in older adults, thus; expenditures for pharmacological treatments were not calculated. Given the increased risk of side effects of pharmacologic agents, and the relative paucity of the performance of many pharmacologic agents on older persons, nonpharmacologic treatment approaches are more strongly recommended. (Lubetkin & Jia, 2018).

Protection of Human Subjects

To ensure confidentiality and anonymity, patient information was not disclosed in this survey, which was conducted both in-office and over the phone. Each patient was informed, prior to agreeing to participate, that all their information would be kept confidential.

Limitations

During the implementation of the program, some limitations were encountered. The primary constraint was the small sample size. Because it was conducted at a very busy Internal Medicine clinic with scheduled Medicare Visit patients, the sample size was dependent on

previously scheduled patients. Other limitations included patient's willingness to participate in an education session that did not include pharmacological therapy but rather lifestyle modifications that required self-accountability, this was mentioned by a couple of the screened patients.

Implications for Clinical Practice

The promotion of primary health prevention, in this case, sleep hygiene practices among older adults, can be an area of focus for future projects and change in practice. The results of this project may have significant implications for improving the health and self-reported well-being of older adults. Overall, these findings demonstrate the potential efficacy of the PSQI intervention for improving sleep quality in patients and may be of interest to clinicians and researchers seeking to promote better sleep health outcomes such as reduction of chronic disease exacerbation, self-reported quality of sleep, as well as decreased anxiety and depression.

Conclusion

This intervention consisting of sleep hygiene education seems to be practical and efficient in increasing patient's self-reported sleep quality and effective in implementing this measure as a preventative tool in primary care. "As a relatively inexpensive lifestyle intervention, sleep hygiene education could serve as a first-line intervention in a stepped-care model for adults who want to improve their sleep but are not likely to qualify for, or seek, more substantial clinical treatment. " (Irish, et al., 2015). The findings suggested that the intervention could potentially have a considerable impact on enhancing the health and self-reported well-being of elderly individuals.

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