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A Quality Improvement Project: Implementing a Sleep Disturbance Screening Questionnaire in a Primary Care Clinic

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A QUALITY IMPROVEMENT PROJECT: IMPLEMENTING A SLEEP DISTURBANCE SCREENING QUESTIONNAIRE IN A PRIMARY CARE CLINIC

by

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ABSTRACT

At present time, it is estimated that 50-70 million Americans suffer from some form of sleep disturbance (disrupted sleep) and subsequently, sleep disorders (formal diagnosis) (Hanson & Huecker, 2022), which has a direct correlation between sleep disorders and many existing common comorbid conditions. Patients commonly report experiencing excessive daytime sleepiness, inability to focus or concentrate, generalized fatigue, decreased libido, and lability of emotions. As a person ages, there is an increasing trend in the reduction of quality and quantity of sleep. Due to Americans living longer, the number of Americans living with sleep disturbance has significantly ballooned in recent decades. Sleep disturbance screening is often overlooked, or downplayed, during routine healthcare encounters, and as such, there must be an increase in awareness and a renewed focus on addressing this vast need (Hanson & Huecker, 2022). With Americans increasingly suffering from poor quality of sleep, primary care providers (PCP) are in a unique position to screen for sleep disturbance and are poised to reverse the growing trend of poor screening and lack of sleep specialist referral. Senthilvel, Auckley, and Dasarathy (2011) concluded that despite patients reporting common sleep disturbance symptoms, they are not intentionally screened for by PCPs. They also concluded that sleep quality and potential sleep disturbance can be effectively identified by using a screening questionnaire. One would naturally conclude this would lead to an increase in referrals to sleep specialists, accurately identifying sleep disorder diagnosis, and ultimately appropriate interventions.

A sleep disturbance screening questionnaire was implemented to screen for sleep disturbance in the adult population (18+) of a primary care clinic during new patient

intake and annual physical visits. Evidence-based practice (EBP) was researched to select a sleep disturbance screening questionnaire appropriate for this project. The patient feedback from the screening questionnaire helped to better identify patients who need a referral to a sleep specialist for a sleep study, diagnosis, and subsequent intervention. The goal of this project was to improve the identification of patients who suffer from sleep disturbance, to subsequently increase referrals to a sleep specialist, and to increase the number of sleep studies and subsequent interventions.

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DEDICATION

To my Lord and Savior, Jesus Christ – For through Him all things are possible.

To my wife, Tonya, and our daughters, Brickleigh, Bella, and Bridgette – Your incredible love, consistent devotion, persistent encouragement, and unwavering support cannot be measured. Thank you for walking through this journey with me. I love you all very much.

To my parents, John and Mary – Your persistent love, encouragement, and support through the years have helped to form me into who I am today. I love you.

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LIST OF ABBREVIATIONS

AACN	American Association of Colleges of Nursing
AD	Alzheimer's Dementia
APP	Advanced Practice Provider
APRN	Advanced Practice Registered Nurse
ASV	Adaptive Servo-Ventilation
BiPAP	Bi-Level Positive Airway Pressure
CHF	Congestive Heart Failure
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CNS	Central Nervous System
CPAP	Continuous Positive Airway Pressure
CSA	Central Sleep Apnea
DBAS	Dysfunctional Beliefs and Attitudes About Sleep
DNP	Doctor of Nursing Practice
EBP	Evidence-Based Practice
EDS	Excessive Daytime Sleepiness
EHR	Electronic Health Record
FFS	Flinders Fatigue Scale
FTD	Frontotemporal Lobar Dementia
GSAQ	Global Sleep Assessment Questionnaire
HSD	Holland Sleep Disorders
ICC	Intra-Class Correlation Coefficient

IRB	Institutional Review Board
ISI	Insomnia Severity Index
LBD	Lewy Body Dementia
MHG	Memorial Health Gulfport
OSA	Obstructive Sleep Apnea
PCC	Primary Care Clinics
PCP	Primary Care Provider
PICOT	Population Intervention Comparison Outcome Time
PLMD	Periodic Limb Movement Disorder
PSQI	Pittsburgh Sleep Quality Index
RBD	REM Sleep Behavior Disorder
REM	Rapid Eye Movement
RN	Registered Nurses
ROC	Research Oversight Committee
SCFM	Southern Coast Family Medicine Clinic
SCI	Sleep Condition Indicator
SHI	Sleep Hygiene Index
SNRI	Serotonin and Norepinephrine Reuptake Inhibitors
SSC	Sleep Symptom Checklist
SSRI	Selective Serotonin Reuptake Inhibitors
T2DM	Type 2 Diabetes Mellites

TST	Total Sleep Time
VaD	Vascular Dementia

CHAPTER I - INTRODUCTION

Chosen Topic

The decision to implement a sleep disturbance screening questionnaire in a primary care setting was personal for the researcher. The researcher and his spouse were both suffering from poor sleep quality and suspected that there was at least one sleep disorder at play, but neither was asked directly by their PCP during annual physical visits about the nature of their sleep quality, which led the researcher to inquire about needing a sleep study referral. Once referral and testing were accomplished, it was discovered that he suffered from severe obstructive sleep apnea (OSA) and periodic limb movement disorder (PLMD), and consequentially, his spouse suffered because of his frequent awakenings. Coming to an understanding that screening for sleep disturbance is not a routine practice for most PCPs, the researcher settled on conducting a quality improvement project that would better serve healthcare systems, local primary care clinics, PCPs, and their patients.

Problem Description

As people age, we all see a significant reduction in the quality of our sleep (Hale & Marshall, 2019; Li et al., 2018), but other mitigating factors can also influence a person's sleep hygiene like lifestyle choices, medications, and psychological conditions, amongst others. For these reasons, a sleep disturbance screening questionnaire implemented by primary care clinics would help to identify patients who need referral for a sleep study and possible interventions. Such interventions could include the prescription of a continuous positive airway pressure (CPAP) machine, lifestyle modifications, counseling for mental health and diet modification, and medication adjustments. By

addressing the causes of sleep disturbance with reasonable interventions, we will also see, therefore, existing comorbid conditions begin to improve the longer one addresses the underlying cause of sleep disorders (Hanson & Huecker, 2022).

PICOT Question

In adult primary care patients (P), how does the use of a sleep disturbance screening questionnaire, compared with not using one (I and C), influence sleep study referrals during annual physical appointments and new patient appointments over a four-week period (O and T)?

Available Knowledge

Key Word Search

The researcher utilized four different databases to obtain key data to support the justification for implementing a sleep hygiene screening questionnaire for the project including CINAHL, Cochrane Library, Google Scholar, and Medline. The keyword searches the researcher implemented for the research acquisition were *sleep screening* or *sleep questionnaire*. The researcher then added *adult* and *primary care setting* to further narrow the search. Additionally, the researcher wanted context on the six primary sleep disorders, so he used a keyword search by correlating *sleep disturbance* to 1) *insomnia*, 2) *hypersomnolence*, 3) *narcolepsy*, 4) *obstructive sleep apnea or OSA*, 5) *central sleep apnea or CSA*, and 6) *parasomnias*.

The CINAHL database search revealed 3,884 articles by using *sleep screening* or *sleep questionnaire*, and by adding *adult* and *primary care setting* the researcher narrowed the search to 838 articles. The researcher then followed up with *sleep disturbance* and *insomnia* revealing 682 articles, *sleep disturbance* and *hypersomnolence*

revealing 14 articles, *sleep disturbance* and *narcolepsy* revealing 23 articles, *sleep disturbance* and *obstructive sleep apnea or OSA* revealing 81 articles, *sleep disturbance* and *central sleep apnea syndrome or CSA* revealing zero articles, and *sleep disturbance* and *parasomnias* revealing 21 articles.

Utilizing the Cochrane Library database's advanced search feature revealed 13,808 articles by using *sleep screening* or *sleep questionnaire*, and by adding *adult* and *primary care setting* the researcher narrowed the search to 3,743 articles. The researcher then followed up with *sleep disturbance* and *insomnia* revealing three articles, *sleep disturbance* and *hypersomnolence* revealing zero article reviews, *sleep disturbance* and *narcolepsy* revealing three articles, *sleep disturbance* and *obstructive sleep apnea or OSA* revealing 80 articles, *sleep disturbance* and *central sleep apnea syndrome or CSA* revealing three articles, and *sleep disturbance* and *parasomnias* revealing 38 articles.

The Google Scholar search revealed 988,000 by using *sleep screening* or *sleep questionnaire*, and by adding *adult* and *primary care setting* the researcher narrowed the search to 218,000 articles. The researcher then followed up with *sleep disturbance* and *insomnia* revealing 62,600 articles, *sleep disturbance* and *hypersomnolence* revealing 2,550 articles, *sleep disturbance* and *narcolepsy* revealing 9,290 articles, *sleep disturbance* and *obstructive sleep apnea or OSA* revealing 24,300 articles, *sleep disturbance* and *central sleep apnea syndrome or CSA* revealing 14,800 articles, and *sleep disturbance* and *parasomnias* revealing 7,080 articles.

The last database, Medline, revealed 10,146 articles by using *sleep screening* or *sleep questionnaire*, and by adding *adult* and *primary care setting* the researcher narrowed the search to 2,078 articles. The researcher then followed up with *sleep*

disturbance and *insomnia* revealing 1,123 articles, *sleep disturbance* and *hypersomnolence* revealing 69 articles, *sleep disturbance* and *narcolepsy* revealing 53 articles, *sleep disturbance* and *obstructive sleep apnea or OSA* revealing 150 articles, *sleep disturbance* and *central sleep apnea syndrome or CSA* revealing three articles, and *sleep disturbance* and *parasomnias* revealing 54 articles.

Sleep Disturbance

Sleep quality is multi-faceted and when one or more parts that encompass one's sleep are disrupted, one sees a sleep disturbance occur (Irish et al., 2015). The increase in sleep disturbance has become a public health issue, but it is seldom addressed by PCPs unless a patient brings it to the forefront of the conversation. Unfortunately, most PCPs do not intentionally address this issue by being proactive during the visit. Papp, Penrod, and Strohl (2002) found that 90% of PCPs were either fair or poor at identifying sleep disturbance in their patients and did not believe that sleep disturbance was a high priority in health maintenance. When we examine how sleep quality diminishes over a lifetime, we begin to see how PCPs are likely not effectively screening for sleep disturbance. Total sleep time (TST) drops about eight minutes per decade in males and 10 minutes per decade in females, with a total of 10-12 minutes reduction of TST per decade of age in the adult population, TST reduction peaks at age 60, and sleep efficiency declines slowly after age 60 (Li et al., 2018). Circadian rhythm disturbance is primarily a disrupted sleep-wake cycle related to working varying shift hours, jet lag from crossing multiple time zones, and the natural aging process (Pagel & Parnes, 2001). These cycles are regulated by a person's internal circadian rhythm and influence one's metabolic activity, with

neurons of the hypothalamus influencing the arousal systems which determines if a person has quality sleep or experiences insomnia (Medic et al., 2017).

Sleep Disorders

According to Khoury and Doghramji (2015), there are six primary sleep disorders, including 1) insomnia, 2) hypersomnolence, 3) narcolepsy, 4) OSA, 5) CSA, and 6) parasomnia. There are two very telling signs that someone is experiencing a sleep disorder, 1) excessive daytime sleepiness (EDS; also known as excessive daytime somnolence) and 2) insomnia. Those who suffer from a sleep disorder often awaken not feeling rested, will find themselves becoming drowsy at inappropriate times, and often needing to take a nap in the afternoon, which can be revealed by a sleep disturbance screening questionnaire. Insomnia is the inability to fall asleep at appropriate times, which can also translate to the inability to remain asleep during the period of routine sleep and can also involve awakening early without being able to fall back to sleep (Khoury & Doghramji, 2015). Hypersomnolence is excessive sleepiness despite receiving adequate sleep of at least seven hours or lasting longer than nine hours. The duration of this condition must occur at least three times weekly lasting, at a minimum, three months in total length. Hypersomnolence is also often seen to be associated with stressful life situations but not associated with physiological dysfunctions related to prescription medications, illicit drug abuse, or alcohol abuse. Also, combined medical and mental diagnoses do not fully reveal the root cause of hypersomnolence (Khoury & Doghramji, 2015). Narcolepsy lasts a lifetime upon diagnosis with diagnosis typically being made by age 30 and it is usually idiopathic. There are five hallmark signs of narcolepsy: 1) cataplexy (sudden paralysis), 2) EDS, 3) hypnagogic or hypnopompic hallucinations

(colorful and scary dreams), 4) restless sleep, and 5) sleep paralysis (Khoury & Doghramji, 2015). OSA and CSA are described together due to their similarities and propensity to coexist, although there are inherent differences between them. OSA exhibits periods of arrested breathing and shallow breathing resulting from failing upper airway muscles and is often associated with obesity, whereas CSA where one has diminished inspiratory drive with a patent airway is often associated with neuromuscular disorders and heart failure (Khoury & Doghramji, 2015). Parasomnia can be alarming and can involve a nightmare disorder (awakening with fear), rapid eye movement (REM) sleep behavior disorder (RBD) (violent behavior), sleep bruxism (grinding of teeth), sleep terrors (screaming from fear during sleep), and sleepwalking.

A significant number of medications used in the treatment of medical and psychological disorders can influence one's sleep hygiene precipitating a sleep disturbance, as such, they can influence the central nervous system's (CNS) hypothalamus, trigger PLMD, inhibit atonia, induce nightmares, create REM parasomnias, perpetuate OSA, and the like (Foral et al., 2011). In recent decades, there has been a significant increase in the prescription of antidepressants, particularly selective serotonin reuptake inhibitors (SSRI), and serotonin and norepinephrine reuptake inhibitors (SNRI), which is concerning (Luo et al., 2020). PLMD is commonly associated with psychiatric disorders and the associated antidepressants used to treat these disorders (Kolla et al., 2018). Moreover, it has been discovered that PLMD is related to disorders of the central nervous system, which antidepressants do interact with directly, and PLMD has also been found to correlate as a potential predictor for Parkinson's disease (Bugalho et al., 2021). Closely related to PLMD is RBD. In RBD, one loses the REM-associated

atonia which translates into frequent physical movements of all limbs that directly correlate with their dreams (Ferini-Strambi & Zucconi, 2000). RBD can be idiopathic but is often associated with CNS diseases like brain lesions, thalamic dysfunction, and lesions of the brainstem. Also, like PLMD, RBD is found to be a possible predicting indicator of Parkinson's dementia and other neuro-degenerative associated dementias like Alzheimer's dementia (AD), frontotemporal lobar dementia (FTD), Lewy body dementia (LBD), and vascular dementia (VaD) (Ferini-Strambi & Zucconi, 2000).

Sleep Disorders and Comorbidities

Establishing which comes first, sleep disorders or comorbidities, has become the bane of the research conducted by sleep specialist investigators for quite some time with most agreeing that it is likely that they develop concomitantly (Bonsignore et al., 2019). Sleep disorders, particularly OSA, have an association with hypertension with mounting evidence being demonstrated, but no direct link has been established. Also, there is a lacking number of studies to demonstrate that CPAP therapy directly impacts the treatment or prevention of hypertension, but evidence does exist that shows that it does improve cardiovascular disease (Van Ryswyk et al., 2018). This evidence demonstrates that CPAP therapy reduces the morbidity and mortality of people living with cardiovascular disease, specifically ischemic heart disease (heart attacks) and cerebrovascular accidents (strokes) (McNicholas, 2007). Anxiety and depression have been linked to insomnia, which is predictive of EDS (Alvaro et al., 2013). People with Type 2 Diabetes Mellites (T2DM) and obesity have an increased risk of having sleep disorders, particularly OSA, insomnia, and PLMD because of T2DM's impact on the central nervous system (Khandelwal et al., 2017).

Treatment of Sleep Disorders

The treatments used for the various forms of sleep disorders are tailored to the specific needs of the patient based on the diagnosis. Insomnia is often treated with sedatives, hypnotics, antihistamines, and antidepressants (Pagel & Parnes, 2001). Medications that affect the CNS, like SSRIs and SNRIs, can be dose-adjusted or discontinued in favor of a different drug class (Foral et al., 2011; Luo et al., 2020). At the same time, insomnia and hypersomnia can be caused by unaddressed underlying depression with sleep quality improved with the use of antidepressants (Nutt et al., 2008). Hypersomnolence is treated with lifestyle modifications, sleep hygiene, scheduled naps, caffeine consumption, stimulants, antidepressants, and off-label use of certain antibiotics (Adenuga & Attarian, 2014). Narcolepsy is routinely treated with stimulants, like amphetamines, and medications that inhibit dopamine reuptake, like antidepressants (Scammell, 2015). One of the most frequently diagnosed sleep disorders is OSA, which is commonly treated with CPAP therapy, lifestyle modifications, and weight loss (Khoury & Doghramji, 2015). CPAP therapy used for even short periods provides a significant health benefit to patients (Jullian-Desayes et al., 2015; Phillips et al., 2013). Similarly, CSA is also treated with CPAP therapy, but also supplemental oxygen and bi-level positive airway pressure (BiPAP) for congestive heart failure (CHF) related CSA, adaptive servo-ventilation (ASV) therapy, and reduction of CNS depressing medications (Aurora et al., 2012). Common medications used to treat parasomnia include benzodiazepines, antidepressants, and antipsychotics (Bollu et al., 2018). That said, parasomnia is generally treated with sleep hygiene, behavioral interventions, and cognitive-behavioral interventions due to the general intolerance of stated medications

long-term (Galbiati et al., 2015). Circadian rhythm-related disturbance is commonly treated with wake-sleep cycle modification, shift work schedule adjustments, and lifestyle changes, like eliminating, reducing, or adjusting the timing of alcohol and caffeine consumption (Pagel & Parnes, 2001). Also, hypnotics and sedatives are beneficial during altering shift work hours.

Sleep Disturbance Screening Questionnaires

Evidence has been revealed that people who have sleep disorders, who have been screened and diagnosed, and given proper interventions have improved sleep quality, greater daytime functioning, and improved ability to further address their associated comorbidities (Mastin et al., 2006). To adequately screen patients for their sleep quality status, one must utilize a sleep disturbance screening questionnaire. There are several frequently used screening questionnaires available including the Berlin questionnaire, the Dysfunctional Beliefs and Attitudes about Sleep (DBAS) scale, the Flinders Fatigue Scale (FFS), the Global Sleep Assessment Questionnaire (GSAQ), the Holland Sleep Disorders (HSD) questionnaire, the Insomnia Severity Index (ISI), the Pittsburgh Sleep Quality Index (PSQI), the Sleep-50, the Sleep Condition Indicator (SCI), the Sleep Hygiene Index (SHI), and the Sleep Symptom Checklist (SSC), just to name a few.

After an extensive review of EBP literature, we have selected the GSAQ to be used in this project due to it being brief in nature, simplistic in its design, and appropriate for a primary care setting (Klingman et al., 2017; Roth et al., 2002). Permission to use the GSAQ has not been obtained. The GSAQ is a single-page questionnaire, it collects pertinent information of the patient profile, it is simply structured for patient replies, and has an easy method to link symptoms with specific sleep disorders. There are, however,

two noted limitations of the GSAQ 1) narcolepsy and circadian rhythm disorders are not screened for, and 2) its reliability, regarding its structure and construct validity, as it is not as formulated as other screening questionnaires are (Klingman et al., 2017). That said, circadian rhythm disturbance based on time of day can be inferred from the data provided in the patient profile on the questionnaire and narcolepsy is a rare disorder with a slim consequence of not being included. In scoring the GSAQ, there is a total score capacity of 15-60 points. "Never" receives one point, "Sometimes" receives two points, "Usually" receives three points, and "Always" receives four points". A referral to a sleep specialist is warranted for a score of greater than 30. The provider may also exercise practice discretion for a referral should a patient answer "Usually" or "Always" to any single answer, but with sleep disturbance one usually sees multiple concomitantly "Usually" and or "Always" responses. The reliability of the GSAQ was determined by using the intra-class correlation coefficient (ICC) by comparing two separate groups who completed the questionnaire (Roth et al., 2002). GSAQ creators determined that a correlation of at least 0.70 was sufficient (Roth et al., 2002).

Rationale

After reviewing multiple nursing theories from multiple sources (Butts & Rich, 2015; Zaccagnini & White, 2017), the researcher found that Imogene King's interacting systems framework and middle-range theory of goal attainment appropriately fits with the goal of this quality improvement project. King's systems framework and theory closely fit with that of the researcher's approach to practice in a nearly seamless manner. This theory is a broad generalized system theory that focuses on the whole person in addition to the interrelationship of the issues found within systems. King searched for the

central core of what makes nursing unique from other forms of healthcare providers settling on human nurses caring for human patients. The relationship dynamic enables the provider to guide and care for the patient from illness to health via human relationships within a scope of mutual understanding and goals. This relationship is described as a "transactional process" where goals are set and the methods to achieve the goals are implemented together leading to a perpetually circular feedback cycle within the relationship throughout the process duration. Implementation of a sleep hygiene screening questionnaire, about King's systems framework, creates a relationship for the provider to be intentional in investigating a common, yet often overlooked, situation that many patients suffer from. This quality improvement project was chosen due to the underscreening of sleep disturbance by PCPs relying on patients to voluntarily give vague complaints that may or may not lead to sleep study referral. The researcher wanted to create an intentionally reliable process by which PCPs and patients can jointly address potential windfalls of sleep disturbance, ultimately fulfilling King's theory by creating a transactional process.

DNP Essentials

Differentiating a practice doctorate from a research doctorate requires a designated set of criteria unique to the degree and associated practice for the advanced practice registered nurse (APRN). As such, in 2004 the American Association of Colleges of Nursing (AACN) began to create The Essentials of Doctoral Education for Advanced Nursing Practice, which provides the framework for the Doctor of Nursing Practice (DNP) degree and the core standards of how to apply evidence-based practice

for DNP degree holders (American Association of Colleges of Nursing [AACN], 2006). The eight essentials are as follows:

1. Scientific Underpinnings for Practice
2. Organizational and Systems Leadership for Quality; Improvement and Systems Thinking
3. Clinical Scholarship and Analytical Methods for Evidence-Based Practice
4. Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care
5. Health Care Policy for Advocacy in Health Care
6. Interprofessional Collaboration for Improving Patient and Population Health Outcomes
7. Clinical Prevention and Population Health for Improving the Nation's Health
8. Advanced Nursing Practice

Implementing all eight of the essentials into a short-term quality improvement project is challenging. This quality improvement project can effectively incorporate all the DNP Essentials. These essentials undergird the foundation of this project focusing on the improvement of patients' outcomes related to accurate screening for sleep disturbance, and ultimately timely sleep disorder diagnosis and treatment intervention implementation.

Essential I, Scientific Underpinnings for Practice, highlights the need for utilizing scientific-based evidence to scrutinize and improve how health care is delivered to society leading to the improvement of patient outcomes (AACN, 2006). Essential I is

aligned with this quality improvement project due to the utilization of scientific-based evidence as the framework upon which it is being created. Essential II, Organizational and Systems Leadership for Quality Improvement and Systems Thinking gives focus on whole organizations and the associated leadership, which is necessary for DNP graduates to make the greatest impact in healthcare and the lives of the patients that they serve (AACN, 2006). Quality improvement across a healthcare system is necessary for success and sustainability, which is only accomplished by utilizing scientific-based best practices. Essential II aligns well with this project due to the goal of having the tentative host healthcare system implement a sleep disturbance screening questionnaire at all their primary care clinics (PCC), which demonstrates leadership, system-wide quality improvement, and improved patient outcomes.

Essential III, Clinical Scholarship and Analytical Methods for Evidence-Based Practice relates scholarship, integration of knowledge, and their application into practice (AACN, 2006). This is incorporated by utilizing a large body of research demonstrating the quality of scholarship in this quality improvement project. DNP graduates must be able to process research into practical applications in their daily practice. By implementing a screening questionnaire, this project is utilizing evidence-based practice supported by the associated research and will disseminate knowledge to the tentative host PCC, their providers and staff, and their patients.

Essential IV, Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care promotes the use of information technology systems to improve patient care, healthcare leadership, and provider practice efficiency (AACN, 2006). This quality improvement project utilizes research databases

for the gathering of data from associated topic literature. Also, the researcher will use the electronic health record (EHR) at SCFM in the retrospective study to gain knowledge of how many sleep specialist referrals were made in the four weeks before the project intervention implementation.

Essential V, Health Care Policy for Advocacy in Health Care, gives structure to the health care industry, participating organizations, and provider practice (AACN, 2006). DNP graduates must advocate for sound policy that supports health care across all sections of society for a truly diverse and equitable solution to our healthcare needs. Essential V aligns with this project by supporting a potential positive policy change within the tentative host healthcare system by providing a process for improving patient screening, diagnosis, treatments, and healthcare outcomes (AACN, 2006).

Essential VI, Interprofessional Collaboration for Improving Patient and Population Health Outcomes, and Essential VII, Clinical Prevention and Population Health for Improving the Nation's Health both necessitate addressing public health issues in DNP practice by improving patient health outcomes through interdisciplinary collaboration and clinical prevention to improve health outcomes for our nation's population (AACN, 2006). This includes competently holistically addressing patients and healthcare issues from the highest possible nursing science standards. Essential VIII, Advanced Nursing Practice, places focus on the essential practice competencies of DNP graduates with these standards being universal and central to every DNP program that adheres to the eight essentials (AACN, 2006). This includes competently holistically addressing patients and healthcare issues from the highest possible nursing science standards. Through Essential VIII this project will demonstrate and support advanced

nursing practice through the increasing of knowledge for all persons involved, focusing the practice specialization by the researcher, and mastering the knowledge of the DNP program by the researcher.

Specific Aims

The specific purpose of this project was to demonstrate the benefits of utilizing a sleep disturbance screening questionnaire to the host organization's administration, the host organization's research committee, the host clinic's healthcare providers and staff, and the patients and their families. The researcher wanted to see the host organization adopt a sleep disturbance screening questionnaire into routine practice at all their PCCs. By doing so the tentative host healthcare system's primary care patients would have a greater possibility of having sleep disorders diagnosed and properly treated. As a result, Gulfport, MS should see a statistical improvement in the reduction of comorbidities.

Summary

As stated, a large swath of the American public suffers from some form of sleep disturbance that is commonly correlated with disease comorbidities. Additionally, there are several associated mitigating factors that influence sleep disturbance including lifestyle choices, medications, and psychological conditions. Sleep quality worsens with age further necessitating the need for early identification, diagnosis, and intervention. Unfortunately, most PCPs avoid discussing this issue due to a lack of education about sleep or believing that sleep disturbance is not a high-priority issue, which has led to a general apathy within the PCP community. Sleep disturbance has become a public health issue, and PCPs must embrace being at the tip of the spear in combating this issue by implementing sleep disturbance screening into their routine practice.

CHAPTER II - METHODS

Project Plan

The researcher implemented a sleep disturbance screening questionnaire into the daily practice of a local PCC to screen patients for sleep disturbance during their annual physical appointments and new patient appointments. With this came the hope of implementing the sleep disturbance screening questionnaire in all PCCs system-wide of the host healthcare organization. By doing so the researcher believed that the host organization would stand out amongst its peers by being proactive in addressing a growing health issue in the United States.

Context

The researcher implemented the GSAQ sleep disturbance screening questionnaire at a PCC associated with Memorial Health Gulfport (MHG) in Gulfport, MS. MHG has eight PCCs, and the tentative host PCC, Southern Coast Family Medicine (SCFM) Clinic, sees an estimated 10,000 patients per year taking patients as young as 12 years old. They are staffed by two physicians, several advanced practice providers (APP), several registered nurses (RN), phlebotomists, and several other ancillary staff. Additionally, MHG's Advanced Practice Director gave verbal acceptance and a written letter of support (Appendix A) for hosting the project pending project proposal approval by the MHG Research Oversight Committee (ROC). The researcher presented the project proposal to the MHG ROC on the second Tuesday of June 2023. One of the physicians at SCFM is the researcher's practice collaborating physician. He too gave verbal support of this project and expressed an eager interest in seeing the project's outcome and potential impact on SCFM's patient population. Upon approval by MHG's ROC, an application

was made to The University of Southern Mississippi's Institutional Review Board (IRB) which in turn approved the project (Protocol #23-0365, Appendix B).

There were ample staff to support such a project requiring intrateam cooperation. As demonstrated, SCFM has a robust patient body to ensure that there are ample potential participants to fill out the screening questionnaire for their physical appointments. SCFM is centrally located on the Mississippi Gulf Coast, which has a growing population (World Population Review [WPR], 2023) and should continue to attract new patients to the clinic for the foreseeable future.

Intervention

A retrospective study of patient records was conducted to determine the number of sleep specialist referrals made during the four weeks before implementation of the project intervention. The researcher determined that SCFM averaged six referrals to a sleep specialist every four weeks. As stated, the population of focus was patients 18 years old and older who were coming to the clinic for annual physical appointments and new patient appointments. The sleep disturbance screening questionnaire was a paper product given to the patient upon their arrival at check-in with the receptionist to be filled out before the provider interview. The SCFM providers and staff were given training on the GSAQ before the implementation of the project intervention. The RN, or other assigned ancillary staff, provided instructions on how to fill out the questionnaire. As such, the provider discussed the feedback given, per the screening questionnaire, with the patient and determined whether the patient needed a referral to a sleep specialist. After each appointment, a screening questionnaire was filled out, it was placed in a locked box kept at SCFM for colocation of all completed screening questionnaires. If so inclined, SCFM

would scan a copy into the patient's chart. The researcher conducted this intervention for four weeks spanning June through July 2023.

Study of the Intervention

There were only two possible outcomes from this performance improvement project. The sleep disturbance screening questionnaire would either increase the identification of sleep disturbance and subsequently increase the number of sleep specialist referrals, or the number of referrals would not increase due to no increase in the identification of sleep disturbance. Upon completion of the four weeks, the screening questionnaires that were filled out would be reviewed to tabulate the total number of sleep specialist referrals made during that period. This collective total would be compared to the total number of sleep specialist referrals made during the four weeks immediately preceding the implementation of the GSAQ. Comparing the number of referrals would reveal whether the screening questionnaire was successful in helping SCFM's providers identify patients with sleep disturbance necessitating sleep specialist referral. Utilizing quantitative metrics, the researcher would deem the sleep disturbance questionnaire implementation to be successful with an increase of at least 10% from the prior four-week period before implementation of the GSAQ. After the data was evaluated, the researcher would provide an executive summary of the project implementation to MHG's Graduate Medical Education Team.

Summary

MHG's ROC and Chief of Advance Practice fully supported this project. The GSAQ sleep disturbance screening questionnaire was implemented into the daily practice of a local PCC to screen patients for sleep disturbance during their annual physical

appointments and new patient appointments. SCFM averaged six sleep specialist referrals every four weeks before the project implementation. After completion of the four-week project implementation, success would be determined if there was a 10% increase in sleep specialist referrals compared to the four weeks before implementation of the GSAQ.

CHAPTER III - RESULTS

Project Timeline

Upon approval of the project by the oversight committee, project implementation began with the creation and organization of the sleep disturbance screening packet that the SCFM staff would give to the participating patients. Creating these packets took approximately two days to complete on Saturday, June 10, 2023, and Sunday, June 11, 2023, with a total of four pages per packet and 60 packets in total. The packets included the sleep questionnaire script (Appendix C), which is a simplified set of instructions read to the patient by the staff member. Additionally, the packet included a consent to participate form (Appendix D) that detailed the purpose, procedures, risks, benefits, voluntary participation and withdrawal, confidentiality, contact persons, and how to obtain a copy of the consent to participate form. Lastly, the packet contained the one-page GSAQ sleep disturbance questionnaire (Appendix E).

An in-service for the SCFM staff was held on Monday, June 19, 2023, where the researcher gave comprehensive details about the project background, implementation procedures, and how to utilize the sleep disturbance screening packets. Project implementation began that same day with completion on Friday, July 14, 2023, spanning a gross total of 26 days. During that period, SCFM was closed for six days on weekends and for one day on July 4, 2023, for the Independence Day holiday observance, for a net total of 19 days.

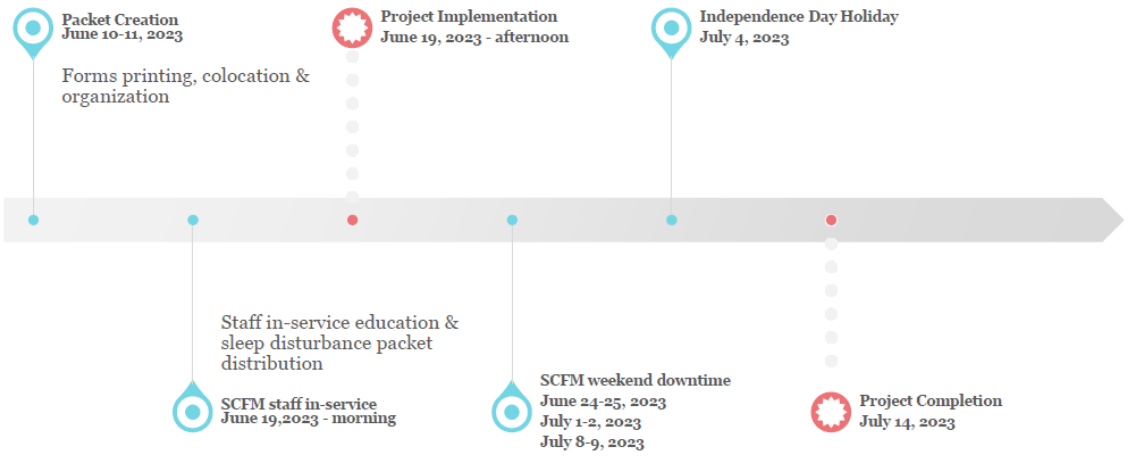

Figure 1. Implementation Timeline.

(Hamby, 2023)

Measures and Outcomes

In total, 24 of the 60 sleep disturbance screening packets were completed with 18 sleep specialist referrals being made. Of the 24 participants, 16 were male and 8 were female. The participants' ages ranged from 23 years old to 79 years old with an average age of 51 years old, and a median age of 63 years old. Of the 18 participants that received sleep specialist referrals, 14 were male and four were female with ages ranging from 36 years old to 71 years old, an average age of 48 years old, and a median age of 56 years old. SCFM providers made 18 sleep specialist referrals during the four-week project implementation, which translates to a 200% increase when compared to the average of six referrals over four weeks as determined by the retrospective chart review.

Table 1

Participation and Referral

	Male	Female	Total
Participant questionnaires:	16	8	24
Sleep specialist referrals:	14	4	18

Participant age ranges:	23 - 79
Participant average age:	51
Participant median age:	63
Referral age ranges:	36 - 71
Referral average age:	48
Referral median age:	56

Retroactive sleep specialist referrals:	6 per 4 weeks
Project sleep specialist referrals:	18 per 4 weeks
Referal comparison:	200% increase

Summary

A total of 60 sleep disturbance screening packets were created with 24 packets being completed and 18 necessitating sleep specialist referrals. The project was implemented for a gross total of 26 days and a net total of 19 days between June 19, 2023, and July 14, 2023. When comparing the total number of sleep specialist referrals made because of the four-week project implementation to the four-week average of sleep specialist referrals made before the project was implemented, the researcher discovered a 200% increase in sleep specialist referrals.

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CHAPTER IV - DISCUSSION

Summary

A 200% increase in sleep specialist referrals is a significant finding that supports the position that PCPs are the key to addressing America's sleep disturbance health issue. This project's findings highlight the need for PCPs to be educated on the value and importance of sleep and demonstrate that a simple one-page questionnaire is sufficient to aid them in that effort. The project succeeded in creating a simple yet reliable way to bridge the knowledge gap of PCPs regarding sleep disturbance screening and creating a transactional process that supports King's theory. The key strength of this project was its simplicity, its ease of implementation, and the immense impact that it made on the lives of those who lived with disturbed sleep and were referred to a sleep specialist for potential treatment. Undeniably, the project succeeded in its aim to demonstrate the benefits of utilizing a sleep disturbance screening questionnaire to the staff of SCFM, MHG, the patients, and their families. The researcher highly anticipates that system-wide implementation for MHG's PCCs will take place. Additionally, given time, SCFM and MHG will see a reduction of comorbidities because of their increased screening for sleep disturbance and making more sleep specialist referrals.

Interpretation

The implementation of a sleep disturbance screening questionnaire promotes the provider-patient relationship, directly addresses a public health crisis, improves comorbid states of disease, and ethically improves generated revenue from sleep specialist referrals. Ibáñez, Silva, and Cauli (2018) found that subjective testing methods, like a sleep disturbance screening questionnaire, produce a sensitivity of 73 to 97% in determining

whether a person may have disturbed sleep. Senthilvel, Auckley, and Dasarathy (2011) also found that sleep disturbance questionnaires, that were validated, can effectively identify patients experiencing disturbed sleep who would benefit from a sleep specialist referral. As previously stated, Americans are facing a public health crisis regarding disturbed sleep and the associated sleep disorders. This project impacts healthcare systems, healthcare providers, and patients by revealing the overwhelming benefits of implementing a one-page sleep disturbance screening questionnaire into a PCC's pre-visit health screening process.

Limitations

As revealed in the project's logic model (Appendix F), the project's inputs, outputs, and anticipated outcomes support the ability to reproduce this project in other PCCs as they are readily available in other clinics. Based on the project's broad potential for patient participation, this project has credible internal validity that supports high generalizability to a wider patient population that meets the participation requirements and a likelihood to be reproduced successfully by future scholarly projects. Also, this project lacks confounding and has limited bias in the requirements for participation further supporting internal validity. Again, the project's simple design, implementation process, screening process, and data analysis also lend credence to reliable internal validity and minimize limitations. As stated, participation in this project was voluntary and offered across the board to all patients who met the minimum criteria without the reporting of any declination by potential participants. As such, this project's findings are consistent with the outcomes of other studies that point to the benefits of utilizing a sleep disturbance screening questionnaire in the primary care setting.

Conclusions

Implementation of a sleep disturbance screening questionnaire into a PCC is useful in its support of proactive clinical practice for early identification, diagnosis, and treatment of patients who suffer from poor sleep quality. This doctoral project demonstrates sustainability in its low cost to implement and ease of replication by future studies of similar topics; additionally, this study is positioned to advocate for broader implementation of pre-visit health screening questionnaires across entire health systems. As the literature reveals, PCPs tend to be overwhelmingly uneducated in the importance of sleep disturbance screening, sleep hygiene, and the associated impact on comorbidities. With that said, this project has reaching potential for spurning widespread PCP education about sleep disturbance and may motivate academia to retool their curricula by adding a course on the subject matter. The next steps to be taken will include providing MHG's Advanced Practice Director and Graduate Medical Education Team with an executive summary to aid in the decision-making as to whether system-wide implementation of a sleep disturbance screening questionnaire will occur.

APPENDIX A - MHG Letter of Support

Memorial HEALTH SYSTEM

February 20, 2023

RE: Letter of Support for David Hamby, MSN, APRN, FNP-BC, AG/ACNP-BC

Attn: Facility Nursing Research Council Application Process- DNP Student

Nursing Research Council Chair and Committee,

This letter is in reference to David Hamby, MSN, APRN, who is applying to the MHG Research Oversight Committee for application and approval of his Clinical Doctoral Project. The focus of his evidence-based project is *Raising Awareness of Sleep Hygiene Screening in the Primary Care Setting as a Method to Improve Patient Outcomes.* The site is Southern Coast Family Medicine at 394 Courthouse Road, Gulfport, MS.

I have discussed this topic with David Hamby and support and recommend the need for increased screening for sleep apnea and other sleep disorders in the primary care setting. I understand that this project will begin in the Summer Semester and end prior to the end of December, 2023. After data analysis, David will present his findings to our Graduate Medical Education Team.

I understand that following approval by the MHG Research Oversight Committee, he will seek approval from The University of Southern Mississippi Institutional Review Board (IRB) for final approval of his Clinical Doctoral Project proposal. At present, I understand that David Hamby is a full-time DNP student in the Doctor of Nursing Practice Program at the University of Southern Mississippi, Hattiesburg campus.

I am the Advanced Practice Director at Memorial Health System, Gulfport. I am offering this letter of support of the doctoral student, David Hamby, in his doctoral project as titled above and look forward to hearing his findings.
I understand that participation by the Family Practice team members is completely anonymous and voluntary. There is no compensation for their participation.
I understand the planned dates are Summer and Fall semester, after USM IRB approval is received.
I understand that letter of support will be included in the University of Southern Mississippi Institutional Review Board (IRB) application.

His Chair contact information is Dr. Lawanda Baskin, PhD, email lawanda.baskin@usm.edu and cell 601-260-0073

As Director of Advanced Practice Providers at this proposed site, I would like fully support David Hamby to achieve his academic endeavor in this clinical practice project. I look forward to hearing the results of this study and the implications on clinical practice.

If there is any other information you should need, please do not hesitate to contact me.

Sincerely,

Anne C. Musgrove, MSN, APRN, WHNP, FNP-BC, MHA(s)
Advanced Practice Director

WeAreMemorial.com 4500 13th Street | P.O. Box 1810 | Gulfport, MS 39502-1810 | P: (228) 867-4000

APPENDIX B - IRB Letter of Approval

Office *of*
Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5116 • HATTIESBURG, MS | 601.266.6756 | WWW.USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI using the Incident form available in InfoEd.
- The period of approval is twelve months. If a project will exceed twelve months, a request should be submitted to ORI using the Renewal form available in InfoEd prior to the expiration date.

PROTOCOL NUMBER:	23-0365
PROJECT TITLE:	A QUALITY IMPROVEMENT PROJECT: IMPLEMENTING A SLEEP DISTURBANCE SCREENING QUESTIONNAIRE IN A PRIMARY CARE CLINIC
SCHOOL/PROGRAM	Leadership & Advanced Nursing
RESEARCHERS:	PI: David Hamby Investigators: Hamby, David Elder~Baskin, LaWanda Wallace~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	24-May-2023 to 23-May-2024

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX C - GSAQ Script

Sleep Questionnaire Script

The global sleep assessment questionnaire (GSAQ) is a self-administered screening tool for sleep disorders designed for use by clinicians in primary care clinics. It is a one-page questionnaire with 11 total questions that screens your sleep habits over the previous four weeks. Each question has 4 possible answers with question 10 having 5 possible subcomponents and 4 possible answers. Answer each question honestly to the best of your ability and knowledge. Once completed, return the questionnaire to a clinic staff member prior to your visit with your health care provider today.

APPENDIX D - Consent to Participate Form

Title: "A Quality Improvement Project: Implementing a Sleep Disturbance Screening Questionnaire in a Primary Care Clinic"

Researcher: David E. Hamby, MSN, APRN, FNP-BC, AGACNP-BC

Host Site: Memorial Health Gulfport – Southern Coast Family Medicine

I. Purpose: You are invited to participate in a quality improvement project for a doctoral student at The University of Southern Mississippi. The purpose of this project is to demonstrate the necessity of screening patients in a primary care clinic setting for sleep disturbances (poor quality sleep). You are invited to participate because you are currently an existing patient receiving an annual physical examination or you are a new patient establishing a relationship with a new provider at Southern Coast Family Medicine. Participation is completely voluntary, uncompensated, and will require no more than 10 minutes of your time today.

II. Procedures: Requirements necessitate that you be at least 18 years old, possess the ability to read & speak English, and to be a current or newly established patient of Southern Coast Family Medicine. If you decide to participate, you will be given a one-page questionnaire with a total of 11 questions about your quality of sleep over the past four weeks. Responses to all questions are voluntary. Memorial Health Gulfport's Research Oversight Committee (MHG ROC) and The University of Southern Mississippi's Institutional Review Board (USM IRB Protocol #23-0365) have given approval for this project.

III. Risks: There is the possibility that participation in this study may cause you to experience some stress or anxiety when answering the questions; you do not have to answer any questions you do not want to answer. Should you feel that you have experienced any stress or anxiety and need immediate assistance, please call the National Mental Health Hotline (866-903-3787).

IV. Benefits: Participation in this study will allow the researcher and your provider to gain insight into your sleep quality, which will help guide MHG to possibly implement this questionnaire at all their primary care clinics, and you may be referred to a sleep specialist if it is deemed that you have disturbed sleep (poor sleep quality).

V. Voluntary Participation and Withdrawal: Again, your participation in this project is voluntary. You are not required to participate in this project. If you decide to participate but then decide not to participate, you may withdraw at any time. You may also skip questions or stop participating at any time. Whatever you decide, you will not lose any benefits to which you are otherwise entitled.

VI. Confidentiality: We will keep your records private to the extent allowed by law. David Hamby will have access to the information that you provide. De-identified information in aggregate may also be shared with those who make sure the study is done correctly (USM IRB and MHG ROC). We will only use your initials on this consent form to correlate it to your name on the questionnaire that you complete. In addition, measures will be taken to assure confidentiality of the information you provide, including data that will be stored on servers that are protected by MHG's electronic health record (EHR) system with HIPAA compliance. No information collected by the survey will in any way identify you when we present this project or publish its results. The findings will be summarized and reported in aggregate (group form). You will never be identified personally. Upon publication of the results, all paper copies will be shredded and disposed of accordingly.

VII. Contact Persons: Contact David Hamby at david.hamby@usm.edu or 228-214-3300 if you have comments, questions, or concerns about this study. You may also call if you think you have been harmed by the study. Additionally, you may contact the USM Institutional Review Board at 601-266-5966 or IRB@usm.edu if you want to speak with someone who is not part of the study team. You may discuss questions or concerns, offer input, obtain information, or provide suggestions about the study.

VIII. Copy of Consent Form to Participant: If you would like a copy of this consent form, please contact David Hamby at david.hamby@usm.edu.

If you are willing to volunteer for this project, please initial the '**I am 18 years of age or older and consent to participate in this study'** space below. By initialing this you are acknowledging that you are at least 18 years old, possess the ability to read & speak English, and to be a current or newly established patient of Southern Coast Family Medicine. You are agreeing to complete the one-page questionnaire with a total of 11 questions about your quality of sleep over the past four weeks and you are acknowledging that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

_____ I am 18 years of age or older and consent to participate in this study.

_____ I do not consent; I do not wish to participate.

APPENDIX E - GSAQ Sleep Disturbance Screening Questionnaire

GLOBAL SLEEP ASSESSMENT QUESTIONNAIRE

Patient Initials: ___ ___ ___ Date: ___/___/___ Age:_____ Sex: ☐ Male ☐ Female Height: _____ Weight: _____	Employment Status: ☐ Day shift ☐ Night shift ☐ Rotating shift ☐ Retired ☐ Unemployed ☐ Employed Full-time ☐ Employed Part-time ☐ Homemaker (Please check all that apply.)

Over the past month, have you had a major or stressful event that you feel affected your sleep? If so, please describe:
_____

INSTRUCTIONS: Please answer the questions below by writing on the line provided or by checking the box that best describes you. Please select only one answer for each question.

During the **PAST 4 WEEKS**, how often . . .

(Check one box on each line.)

		Never	Sometimes	Usually	Always
1	Did you have difficulty falling asleep, staying asleep, or feeling poorly rested in the morning?	☐	☐	☐	☐
2.	Did you fall asleep unintentionally or have to fight to stay awake during the day?	☐	☐	☐	☐
3.	Did sleep difficulties or daytime sleepiness interfere with your daily activities?	☐	☐	☐	☐
4.	Did work or other activities prevent you from getting enough sleep?	☐	☐	☐	☐
5.	Did you snore loudly?	☐	☐	☐	☐
6.	Did you hold your breath, have breathing pauses, or stop breathing in your sleep?	☐	☐	☐	☐
7.	Did you have restless or "crawling" feelings in your legs at night that went away if you moved your legs?	☐	☐	☐	☐
8.	Did you have repeated rhythmic leg jerks or leg twitches during your sleep?	☐	☐	☐	☐
9.	Did you have nightmares, or did you scream, walk, punch, or kick in your sleep?	☐	☐	☐	☐
10.	Did the following things disturb your sleep:				
	a. Pain	☐	☐	☐	☐
	b. Other physical problems.....	☐	☐	☐	☐
	c. Worries.....	☐	☐	☐	☐
	d. Medications	☐	☐	☐	☐
	e. Other:	☐	☐	☐	☐
	_____ (Please specify)				
11	Did you feel sad or anxious?	☐	☐	☐	☐

This questionnaire was developed through a grant from Pharmacia Corporation

SLEEP DISTURBANCE SCREENING QUESTIONNAIRE LOGIC MODEL

NAME OF PROGRAM/PROJECT:
A Quality Improvement Project: Implementing a Sleep Disturbance Screening Questionnaire in a Primary Care Clinic

SITUATION:
Disturbed sleep is a public health issue that affects many people and healthcare providers must prioritize screening processes

PRIORITIES:
Educate providers, implement sleep hygiene screening, educate patients, improve sleep hygiene & improve comorbidity outcomes

INPUTS	OUTPUTS		OUTCOMES		
	Activities	Participants	Short-term	Medium-term	Long-term
1) Time. Investment in research, tool creation, clinic education, screening tool implementation, data results & report generation 2) Money. There will be a minimal financial burden for creating & printing the screening tool in bulk 3) Human capital. Involving clinic staff to help facilitate the screening tool implementation will require training & education for it to be done properly	1) Utilize sleep hygiene research/EBP to inform decision making 2) Accurately identify risk factors for sleep disturbances 3) Adopt or create sleep disturbance screening tool 4) Contract with local clinic team for screening tool implementation 5) In-service for providers/staff on sleep screening tool necessity 6) Use sleep disturbance EBP for implementation & evaluation process 7) Integrate whole team approach to screening implementation 8) Provide screening questionnaire to patients prior to provider interview 9) Increase referrals to sleep specialist for testing & treatment 10) System wide implementation of screening questionnaire	Receptionist(s) Patient Care Tech(s) Nurse(s) Provider(s) (physicians, NPs, PAs) Patient(s) Patient family member(s) Administration	Identify sleep disturbance risk factors, existing research & EBP, and existing screening questionnaires Screening questionnaire will be selected by student & approved by project committee Seek host institution administration support & present proposal to the host institution's Research Oversight Committee for approval Completed project proposal will be reviewed by project committee (8 weeks)	Present proposal before academic institution IRB for approval Once ROC & IRB have given approval, an intra-office in-service at host primary care clinic will be held Sleep hygiene screening questionnaire will start to be given to patients upon arrival as part of their annual physical & new patient pre visit screening process Achieve 100% referral to sleep specialist per screening questionnaire positive response starting within 2 weeks of implementation as part of pre visit screening process (6 weeks)	By completion of the project, the health system will receive a completed project packet, including executive summary, appropriate for permanent local & system wide implementation based on data and team feedback (8 weeks)

ASSUMPTIONS	EXTERNAL FACTORS
1. Sleep disturbances can worsen comorbidities 2. Patients lack knowledge of sleep disturbances 3. Healthcare providers under screen for sleep disturbances 4. Improving one's sleep quality can improve comorbidities 5. Screening for sleep disturbances will improve comorbidities	1. Systems acknowledging importance of sleep disturbances screening 2. Systems review of routine sleep disturbances screening practices 3. Provider education about sleep disturbances screening importance 4. Implementation of sleep disturbances screening questionnaire 5. Patient education about sleep disturbance screening importance

IMPACT:
1) Implementation of a sleep disturbance screening questionnaire will result in increased sleep specialist referrals, increased sleep studies, increased CPAP prescriptions or other interventions, improved sleep, aid in lifestyle changes, and improved comorbidities 2) This will impact patients, their bed partners, and their family members 3) Initial impact should be seen within weeks (referrals) & months (interventions) following screening questionnaire implementation

APPENDIX G - Executive Summary

To: Memorial Health Gulfport Graduate Medical Education Team

About: Sleep Disturbance Screening Questionnaire Doctoral Project

This document provides a succinct overview of the implemented project and the subsequent findings. Should Memorial Health Gulfport's leadership decide to implement a sleep disturbance screening questionnaire into routine practice at all primary care clinic locations across the system, this document should be the only supporting document necessary to support such a change. Included in this document is the topic background, the implementation process, and the results along with the associated data table.

Topic Background

Presently, it is estimated that 50-70 million Americans suffer from some form of sleep disturbance (disrupted sleep) and subsequently, sleep disorders (formal diagnosis). which has a direct correlation between sleep disorders and many existing common comorbid conditions. This coupling effect significantly reduces the quality of life and the progressing state of chronic disease. While investigating sleep disturbance, it was discovered that primary care providers (PCP) do not routinely screen for these issues. Additionally, upwards of 90% of PCPs believe that they are either fair or poor at identifying sleep disturbance in their patients and do not believe that sleep disturbance is a high priority in health maintenance. This knowledge prompted the creation of the performance improvement project for my Doctor of Nursing Practice (DNP) degree by implementing a sleep disturbance screening questionnaire into the pre-visit health screening process at the Southern Coast Family Medicine (SCFM) clinic.

Implementation Process

An in-service for the SCFM staff was held on Monday, June 19, 2023, where this student gave comprehensive details about the project background, implementation procedures, and how to utilize the sleep disturbance screening packets. Project implementation began that same day with completion on Friday, July 14, 2023, spanning a gross total of 26 days. During that period, SCFM was closed for six days on weekends and for one day on July 4, 2023, for the Independence Day holiday observance, for a net total of 19 days. A total of 60 sleep disturbance screening packets were given to the SCFM staff which included a 1-page sleep questionnaire script for instructions, a 2-page consent to participate form, and the 1-page Global Sleep Assessment Questionnaire (GSAQ), for a total of four pages.

Results

During my retrospective research, this researcher etermined that SCFM averaged six sleep specialist referrals over four weeks before the project implementation. These referrals were made without the use of any formal screening process for sleep disturbance during annual physical and new patient visits. A total of 24 sleep disturbance screening questionnaires were completed in their entirety that met the necessary criteria for participation. Of the 24 patients who completed the questionnaire, 18 met the triggering criteria for a referral to a sleep specialist. In comparison, it was found that the use of the questionnaire was responsible for a 200% increase in sleep specialist referrals over the four-week project.

The increase in sleep disturbance screening will inevitably increase sleep specialist referrals. These referrals will have a positive impact on your patients'

comorbidities by increasing the diagnosis of sleep disorders and the subsequent treatments. Improving comorbidity outcomes will lead to a better quality of life. It is recommended that Memorial Health Gulfport's leadership consider implementing a sleep disturbance screening questionnaire as routine practice for pre-visit health screening before all annual physicals and new patient visits.

Please do not hesitate to contact me with any further inquiries about this project. Thank you for your unwavering support of this project.

All my best,

David E. Hamby, MSN, APRN, FNP-BC, AGACNP-BC, DNP(s)

Table A1.

Participation and Referral

	Male	Female	Total
Participant questionnaires:	16	8	24
Sleep specialist referrals:	14	4	18

Participant age ranges:	23 - 79
Participant average age:	51
Participant median age:	63
Referral age ranges:	36 - 71
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Retroactive sleep specialist referrals:	6 per 4 weeks
Project sleep specialist referrals:	18 per 4 weeks
Referal comparison:	200% increase

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