

7-24-2021

Provider Education to Improve Knowledge Regarding the Diagnosis and Treatment of Insomnia in Primary Care.

Roberto Carmona

Florida International University College of Nursing, rcarm007@fiu.edu

Follow this and additional works at: <https://digitalcommons.fiu.edu/cnhs-studentprojects>



Part of the [Medicine and Health Sciences Commons](#)

Recommended Citation

Carmona, Roberto, "Provider Education to Improve Knowledge Regarding the Diagnosis and Treatment of Insomnia in Primary Care." (2021). *Nicole Wertheim College of Nursing Student Projects*. 18.
<https://digitalcommons.fiu.edu/cnhs-studentprojects/18>

This work is brought to you for free and open access by the Nicole Wertheim College of Nursing and Health Sciences at FIU Digital Commons. It has been accepted for inclusion in Nicole Wertheim College of Nursing Student Projects by an authorized administrator of FIU Digital Commons. For more information, please contact dcc@fiu.edu.

Provider Education to Improve Knowledge Regarding the Diagnosis and Treatment of Insomnia
in Primary Care.

A Scholarly Project Presented to the Faculty of the Nicole Wertheim College of Nursing and
Health Sciences

Florida International University

In partial fulfillment of the requirements
For the Degree of Doctor of Nursing Practice

By
Roberto Carmona

Supervised By
Dr. Arturo Gonzalez

Approval Acknowledged: _____, DNP Program Director

Date: _____

Table of Contents

Abstract	4
Introduction.....	5
Problem Statement	7
Background	9
Scope of the Problem	11
Consequences of the Problem	12
Knowledge Gaps	14
Proposed Solution	15
Significance.....	16
Summary of the Literature	17
Need for Provider Education	18
Diagnosis and Management of Insomnia.....	19
Effectiveness of Staff Education.....	22
Summary and Gaps in Literature	24
Purpose, PICO Clinical Question, and Objectives.....	26
Purpose of the Project	26
PICO Clinical Question	26
Objectives	27
Definition of Terms.....	28
Underpinning and Theoretical Framework.....	29
Theory Overview	29
Clinical Fit	30
Theory Evaluation.....	31
Theory Operationalization	31
Theory Application	31
Theory Performance.....	32
Theory Relationship.....	32
Level of Congruence and Theory Tools	33
Methodology Overview	34
Setting and Participants.....	35
Description of Approach and Project Procedures	35
Protection of Human Subjects	38
Data Collection	39
Data Analysis	40
Results.....	40
Discussion.....	43
Discussion of Results.....	43
Implementation Discussion.....	44
What Went Right/Wrong	45
Influencing Factors	47

Monitoring	48
Project Maintenance.....	49
Limitations	50
Areas for Future Research	52
Recommendations.....	53
Interpretation of Findings	54
Changes in Patient Care/Healthcare.....	54
Transferability of Results.....	55
Cost Effectiveness.....	56
Recommendations Moving Forward.....	57
Plans for Dissemination	58
Internal Dissemination	58
External Dissemination.....	58
Implications for Advanced Nursing Practice	59
Conclusion	60
References.....	63
Appendix A: Literature Matrix	74
Appendix B: Facility Letter of Support	84
Appendix C: Recruitment Email Script	85
Appendix D: Informed Consent Form	86
Appendix E: Demographic Form.....	90
Appendix F: Modified ASKME Survey	91
Appendix G: IRB Approval Letter	93

Abstract

The management of insomnia in older adults is suboptimal and leads to systemic problems for patients as well as increased costs to provide care. Evaluations of staff knowledge regarding the treatment of insomnia consistently indicate that primary care providers lack an understanding of how to manage and assess this problem accurately and effectively in practice. To address this gap in provider knowledge a quality improvement project to increase healthcare provider knowledge at a primary care facility in Miami, Florida, was undertaken. The project, which utilized a quasi-experimental pre-/post-intervention assessment framework, was carried out at IMC Health between June and July of 2021. A total of 12 primary care providers working at the facility agreed to participate in an educational program that was provided through a YouTube video created by the project's co-investigator. Pre- and post-intervention assessments of provider knowledge were assessed using a modified version of the Assessment of Sleep Knowledge in Medical Education (ASKME) survey. A comparison of mean knowledge scores from the pre-intervention to the post-intervention demonstrated an increase from 49 to 98. A paired t-test was used to the results and demonstrated statistical significance at $p = 0.001$. The results support the use of a staff education to help improve knowledge of the management and treatment of insomnia in older adults. Based on the results, recommendations are made to expand the program to include more providers at diverse practice sites.

Keywords: insomnia, older adult, primary care, staff education

Provider Education to Improve Knowledge Regarding the Diagnosis and Treatment of Insomnia in Primary Care

Sleep is an important and often neglected component of human health. Poor sleep resulting from insomnia is associated with numerous health problems (Stone & Xiao, 2018). More specifically, scholars note that insomnia is associated with increased stress response which can lead to inflammation and a myriad of chronic physical and mental health conditions including cardiovascular disease, type 2 diabetes, and depression (Javaheri & Redline, 2017). The case is particularly grave for older adults whose prevalence of insomnia is higher than in younger adults (Patel et al., 2018). Epidemiological data indicate that as many as 65% of adults 65 years of age and over will experience symptoms of insomnia (Matheson & Hainer, 2017). Insomnia in older adults is often compounded by age-related changes, such as an increased number of nocturnal awakenings along with a decline in restorative REM (rapid-eye movement) sleep (McCrae et al., 2018). Additionally, as many as 90% of older adults who experience insomnia have a comorbid health condition that can disrupt the normal sleep cycle (McCrae et al., 2018).

Most patients who develop insomnia seek treatment from their primary care providers (PCPs) (Grandner & Chakravorty, 2017). Unfortunately, evidence indicates that most primary care providers lack sufficient knowledge to accurately diagnose and treat this condition (Grandner & Chakravorty, 2017). Ulmer et al. (2017) assert that even though many patients report symptoms of insomnia to their PCPs, providers often focus on the root cause of the problem rather than providing direct treatment for this condition. When treatment for insomnia is provided, it focuses heavily on the use of a stepped approach utilizing patient sleep hygiene education followed by pharmacotherapy (Ulmer et al., 2017). Unfortunately, current methods

used by PCPs to treat insomnia do not follow evidence-based recommendations for care and as a result, most patients do not receive the support or care needed to improve their sleep (Ulmer et al., 2017). Over time, this can cause an increase in patient dissatisfaction with care and a decline in overall motivation to have the problem addressed (Ulmer et al., 2017).

Current practice for the treatment of insomnia in primary care must be juxtaposed against the availability of evidence-based guidelines and clear recommendations for treating insomnia. A review of recent evidence regarding the treatment of insomnia indicates that the American Academy of Sleep Medicine (AASM) has endorsed the use of standardized assessment tools and polysomnography to diagnose insomnia (Sateia et al., 2017). Following diagnosis, the AASM recommends the use of short-term pharmacological therapy coupled with cognitive-behavioral therapy for insomnia (CBT-I) as the principal approach to long-term management of this disorder (Sateia et al., 2017). Unfortunately, evidence does demonstrate that most healthcare providers lack knowledge of treatment guidelines and further, often do not provide CBT-I or refer patients for this treatment (Sun et al., 2021). For patients struggling with insomnia, this gap in practice can have a deleterious impact both on the treatment of insomnia as well as the overall health, well-being, and quality of life for the patient (Sandlund et al., 2017).

Based on this evidence, it becomes clear that there is a true gap between the care provided by PCPs for the diagnosis and treatment of insomnia and what is recommended through the current evidence. Because this practice gap has extensive implications for patient health, there is an impetus to consider what can be done to improve the clinical care provided to patients experiencing insomnia. A cursory overview of the current literature on this topic clearly indicates that provider education is effective for increasing provider knowledge of evidence-based treatments for insomnia (Koffel & Hagedorn, 2020; Taylor et al., 2021; Torrens et al., 2021).

Current research indicates that when education is presented to healthcare providers, knowledge increases with the potential to improve patient care (Koffel & Hagedorn, 2020; Taylor et al., 2021; Torrens et al., 2021). While longitudinal outcomes evaluating the impact of this training on patients has not been extensively reported in the literature, evidence from other types of provider education programs does suggest that by providing this support, clinical practice improves along with patient outcomes and overall satisfaction with care (Moghei et al., 2019; Sany et al., 2018).

Synthesis of this evidence suggests that provider training regarding evidence-based treatment for insomnia suggests that this intervention can improve knowledge with the potential to markedly improve patient care and patient health outcomes. Therefore, the proposed quality improvement project aims to implement an online evidence-based educational intervention for primary care providers regarding the diagnosis and management of insomnia in older adults. The primary aim of the project is to determine whether the implementation of this educational intervention will increase PCP knowledge of the diagnosis and treatment of the condition. This document includes a proposal for the project, including the problem and its significance, a summary of available literature on the topic, the purpose and objectives of the project, the theoretical framework to be applied, the methodology, hypothetical results, and a discussion of potential implications of the project for advanced practice nursing.

Problem Statement

Insomnia is one of the most common conditions in the population, and current statistics indicate that this condition accounts for more than 5.5 million primary care visits each year (Matheson & Hainer, 2017). Insomnia is defined by the AASM as “the subjective perception of difficulty with sleep initiation, duration, consolidation, or quality that occurs despite adequate

opportunity for sleep, and that results in some form of daytime impairment” (Sateia et al., 2017). Insomnia has been linked to a broad range of physical and mental health issues that can have a significant impact on both the physical and mental health of the patient (Javaheri & Redline, 2017). Insomnia is more prevalent in older adults with evidence indicating that as many 65% of those 65 years of age and older experiencing this condition (Matheson & Hainer, 2017). In comparison, current evidence suggests that between 12 and 20% of younger adults experience insomnia (Patel et al., 2018). As the number of older adults in the United States and globally expands, there are concerns that insomnia will become a silent epidemic among the elderly (Patel et al., 2018).

While the problem of insomnia is concerning in and of itself, what is perhaps more distressing is that most primary care providers lack the knowledge and training to provide effective care for insomnia, especially in older adults (Miner et al., 2018). Evidence indicates that as many as 90% of older adults with insomnia have a comorbid health issue that could contribute to the onset of insomnia (McCrae et al., 2018). Consequently, primary care providers often focus on addressing comorbidities in an effort to manage the root cause of the problem (Ulmer et al., 2017). When treatment for insomnia is provided, it often involves sleep hygiene education for the patient and short-term pharmacological intervention (Ulmer et al., 2017). This practice persists despite evidence-based recommendations for the limited use of pharmacotherapeutics and the use of CBT-I as the gold standard for the treatment of this disorder (Reynolds & Ebben, 2017; Sateia et al., 2017). Interestingly, a recent study by Ulmer et al. (2017) on primary care provider perceptions of insomnia demonstrated that PCPs would like more education and training in the management of insomnia.

The inability of primary care providers to deliver evidence-based care for patients struggling with insomnia can create notable challenges for older adults. In those older adults struggling with insomnia, evidence indicates a 23% increase in the risk for depression (Patel et al., 2018). A concomitant increase in anxiety disorders has also been associated with insomnia in older adults (Patel et al., 2018). Insomnia in older adults has also been linked with an increased risk of hypertension, cerebrovascular events, myocardial infarction, and cognitive impairment (Miner et al., 2018). In older adults who are not as capable of acquiring restorative sleep due to insomnia, poor sleep can exacerbate underlying health conditions, leading to a higher rate of mortality (Miner et al., 2018). Consequently, the ability of primary care providers to accurately diagnose and effectively treat insomnia is imperative for improving the health, well-being, and quality of life of older adults.

Background

Although current evidence indicates that insomnia is a common complaint seen in primary care, understanding of this disorder has evolved remarkably over the course of the last several decades (Patel et al., 2018). Insomnia is currently defined by the American Psychiatric Association ([APA], 2013), in the latest version of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, as a sleep disturbance that results in significant distress and/or functional impairment for the patient. Symptoms of insomnia must be present for at least three months for at least three nights per week and include: difficulty initiating sleep, difficulty maintaining sleep—including frequent awakenings and difficulty returning to sleep following awakening—and early awakening in the morning (APA, 2013). The disturbances in sleep must result in some impairment in important areas of functioning: i.e., social, academic, occupational,

etc. (APA, 2013). Additionally, sleep disturbances cannot be caused by another sleep-wake disorder, substance use, or a coexisting physical or mental health disorder (APA, 2013).

While the current diagnostic criteria for insomnia provided by the APA indicates that the condition is well delineated, Patel et al. (2018) argue that the current criteria provided by the APA in the latest version of the *DSM* have evolved since the previous iteration of the manual. Specifically, Patel and coauthors argue that in the previous version of the *DSM*, the APA classified insomnia as a disorder defined by “nonrestorative sleep” that occurred over a period of one month. In the most recent version of the *DSM* this term has been replaced with defining characteristics such as the inability to initiate sleep as well as noting the presence of a three-month duration of symptoms (Patel et al., 2018). This contrasts with the AASM’s *International Classification of Sleep Disorders*, Third Edition (*ICSD-3*), which specifies that insomnia can be acute or chronic and must include both nighttime and daytime elements (Avidan & Neubauer, 2017).

The evolution of the understanding of insomnia and its definition have changed the way that scholars have investigated the topic, resulting in a wealth of evidence-based recommendations for improving patient care (Matheson & Hainer, 2017). However, uptake of this knowledge and information has been protracted in primary care with many providers focusing on outdated evidence to deliver care (Ulmer et al., 2017). This problem persists despite an increased need for patient treatment. Low provider knowledge is one of the main reasons identified for improper management of insomnia (Grandner & Chakravorty, 2017). There is a lack of awareness among many healthcare providers about the available pharmacological and non-pharmacological interventions that can be used in the treatment of insomnia (Koffel et al., 2019). Also, some healthcare providers do not understand the best combination of interventions

to use or simply ignore set guidelines. This can result in poor outcomes among patients and negative side effects when the wrong interventions are used (Grandner & Chakravorty, 2017).

Compared to younger individuals, older adults exhibit many age-related sleep changes that contribute to insomnia (Suzuki et al., 2017). They also often use multiple medications for comorbidities which can further contribute to insomnia (Raglan et al., 2019). It is essential that the prevalence of these potential causes of insomnia is understood by primary care providers for better diagnosis. Understanding the presentation of other sleep disorders can also help primary care providers to make an accurate diagnosis and use appropriate management strategies (Reynolds & Cone, 2018). This is not always the case, since primary care providers are often unaware or untrained on effective management strategies that should be applied for the treatment of insomnia (Grandner & Chakravorty, 2017).

There are numerous management strategies for insomnia, but their application should depend on individual patient characteristics (Sake et al., 2019). For instance, while some patients might need pharmacological therapy, others often need non-pharmacological therapy or a combination of both (Mindell & Owens, 2015). Most healthcare providers face difficulties in selecting the best interventions for older adults (Ulmer et al., 2017). Numerous guidelines recommend non-pharmacological interventions as the first line of treatment (Qaseem et al., 2016; Sateia et al., 2017). Nonetheless, these are rarely offered by primary care providers who regularly offer pharmacological remedies (Sateia et al., 2017). Lack of education on alternative strategies for the management of insomnia contributes to the poor management of this condition in primary care.

Scope of the Problem

Insomnia constitutes a key component of sleep health, with some estimates showing that it affects approximately six to 10 percent of the general population and an estimated 30% of primary care patients (Oh et al., 2019). In the United States alone, insomnia affects 60 million people annually (Qaseem et al., 2016). Among the elderly, a study by Suzuki et al. (2017) reported that more than half of older adults suffer from insomnia with an annual incidence of five to 8%. Another study by Nguyen et al. (2019) reported that up to 75% of older adults experience insomnia symptoms. One worrying trend is that most older adults are undertreated which adversely impacts their quality of life (Suzuki et al., 2017).

Insomnia is also frequently misreported and poorly documented by primary care clinicians which can lead to the use of suboptimal management strategies (Grandner & Chakravorty, 2017; Ulmer et al., 2017). Ulmer et al. (2017) reported that clinicians believed that 20 to 39% of their patients experience insomnia symptoms. Prior research shows the number to be even higher, at 75% in older adults (Nguyen et al., 2019). Grandner and Chakravorty (2017) found that even when insomnia is encountered, only about half (53%) of primary care providers routinely document it, while less than half (39%) include it in the active patient problem list. Healthcare providers also tend to neglect insomnia while treating other comorbid conditions (Grandner & Chakravorty, 2017). Training healthcare providers on diagnosis and treatment has the potential to promote proper reporting, documentation, and management of insomnia in older adults (Grandner & Chakravorty, 2017, Nguyen et al., 2019; Patel et al., 2018; Ulmer et al., 2017).

Consequences of the Problem

Poor provider knowledge on the diagnosis and management of insomnia in older adults has several negative consequences. First, it leads to adverse outcomes of insomnia which are

common in older people (Perach et al., 2019). For instance, late diagnosis due to poor provider knowledge makes it harder to manage insomnia in the long-term (Grandner & Chakravorty, 2017). Lack of provider knowledge regarding insomnia can also result in misdiagnosis which, in turn, can lead to the use of inappropriate and ineffective treatment strategies (Stanford et al., 2020). This could result in adverse events for the patient such as negative drug interactions, cognitive decline, disability, institutionalization, and the development of other conditions such as depression (Stanford et al., 2020).

Ignoring insomnia once it has been diagnosed is also a significant problem in primary care. Most healthcare providers labor under the misconception that insomnia is a secondary condition or symptom for other conditions rather than a comorbid diagnosis (Grandner & Chakravorty, 2017). These views are contradictory to scientific evidence, and result in poor treatment and outcomes for patients (Grandner & Chakravorty, 2017). Neglecting insomnia in older adults can worsen health outcomes, including the prognosis for other co-existing conditions (Jansson-Fröjmark & Norell-Clarke, 2016). As noted previously in this proposal, insomnia can result in an increased mortality rate among older adults, especially those who have underlying chronic health conditions (Miner et al., 2018).

Additional data provided by Wickwire et al. (2019) further demonstrates the implications of untreated insomnia in older adults. Specifically, Wickwire and coauthors reviewed Medicare claims data for 151,668 beneficiaries and found that patients with untreated insomnia had higher rates of healthcare utilization and higher costs of care. Compared with beneficiaries without insomnia, annual treatment costs were noted to be \$63,607 higher for those with untreated insomnia. Additional data provided by Dragioti et al. (2018) indicate that mean annual healthcare costs for older adults with insomnia were almost double when compared with older adults who

had not reported clinical history of this condition. This evidence suggests that effective treatment of insomnia in primary care may have a cost benefit, resulting in lower costs as well as lower healthcare utilization rates.

Knowledge Gaps

Increased interest in insomnia in the past few years has led to studies that have shown that the prevalence of insomnia is higher in older adults when compared with their younger counterparts (Grandner & Chakravorty, 2017). Research has also demonstrated that the treatment of insomnia is suboptimal and its documentation in primary care remains unreliable (Grandner & Chakravorty, 2017). Literature also shows that there are gaps in provider knowledge regarding the diagnosis and management of insomnia (Nguyen et al., 2019; Ulmer et al., 2017). Evidence-based practice recommendations for the treatment of insomnia provide needed guidance for primary care providers to improve the diagnosis and management of this disease in practice (Qaseem et al., 2016; Sateia et al., 2017). However, providers consistently fail to employ these guidelines when delivering patient care (Ulmer et al., 2017).

Synthesis of the evidence provided here reveals the current gap in knowledge and practice that exists for primary care providers. Even though insomnia is typically treated in primary care practice, providers lack the knowledge and expertise needed to accurately diagnose the condition and provide evidence-based treatment (Grandner & Chakravorty, 2017). This gap in knowledge must be addressed in order to help improve the care and treatment of patients with insomnia. For older adults who are already at-risk for developing insomnia, reducing this gap in knowledge could not only lead to reduced disease burden and mortality (Miner et al., 2018), but also effective treatment of insomnia in this group could result in lower healthcare utilization rates and costs to provide care (Dragioti et al., 2018; Wickwire et al., 2019).

Proposed Solution

With the current gap in knowledge elucidated, it is possible to consider the evidence-based solutions that could be employed to bridge this gap and improve care for patients. Utilizing the background evidence provided here, it is possible to see that a lack of primary care provider knowledge regarding the diagnosis and treatment of insomnia is the primary factor contributing to poor outcomes for disease management. A review of the literature regarding this topic does indicate that, in addition to the fact that providers would prefer more knowledge on the topic (Ulmer et al., 2017), educational interventions have been notably successful in improving provider knowledge of how to diagnose and treat insomnia in primary care (Koffel & Hagedorn, 2020; Nguyen et al., 2019; Sake et al., 2019; Taylor et al., 2021; Torrens et al., 2021).

The education of healthcare providers in primary care regarding evidence-based guidelines for the management of insomnia has the potential to fill the existing knowledge gaps regarding this topic. A cursory review of the evidence to support this solution facilitates some insight into the role and importance of provider education in increasing knowledge of the diagnosis and treatment of insomnia. For instance, a study by Sake et al. (2019) demonstrated that the implementation of a sleep health education program can help reduce disparities in insomnia recognition and management among providers. The authors concluded that this should, in turn, facilitate the optimal management of insomnia in general practice (Sake et al., 2019). Nguyen et al. (2019) also suggested that healthcare providers can improve their knowledge through the completion of specialized training courses with continuing education credits on the diagnosis and management of insomnia. Taylor et al. (2021) also found that through the use of a web-based training program, provider knowledge of insomnia diagnosis and treatment increased from 69% at baseline to 92% post-education.

Collectively, this evidence supports the use of provider education as the solution for improving knowledge of the diagnosis and treatment of insomnia. This should, over time, result in improvements in clinical care. Using this as the proposed solution to the problem, this quality improvement project seeks to evaluate the use of an online educational program to increase provider knowledge of insomnia with the assumption that knowledge gains made by providers will directly influence practice and lead to better outcomes for patients who present with symptoms of insomnia.

Significance

The significance of this quality improvement project can be seen when reviewing the scope and impact of insomnia on the patient as well as the overall implications for the healthcare system. As noted, insomnia has been shown to have a deleterious impact on patient health (Olfson et al., 2018). In the short-term, insomnia can impact patient well-being and quality of life (Sateia et al., 2017). Insomnia often interferes with the ability of the patient to engage in routine daily activities, impacting both occupational and academic functioning (Olfson et al., 2018). Insomnia can result in lower productivity and can also increase anxiety over sleep (Olfson et al., 2018). Anxiety about sleep can further exacerbate the symptoms of insomnia, leading to further declines in productivity and quality of life (Olfson et al., 2018). If acute insomnia is not effectively treated, the condition can become chronic and can have myriad physiological implications for patient health (Javaheri & Redline, 2017). These issues are particularly important in older adults who may have underlying health conditions that will be exacerbated by a lack of restorative sleep (Javaheri & Redline, 2017).

While the impact of insomnia on the patient is an important factor to consider when evaluating the significance of this health issue, evidence also indicates that not only does

insomnia result in higher overall mortality rates for older adults (Miner et al., 2018), but also, this condition contributes to higher healthcare utilization rates as well as higher healthcare costs (Dragioti et al., 2018; Wickwire et al., 2019). Collectively, the individual and societal impacts of insomnia cannot be ignored. Failure to address this issue has significant ramifications for both individual and population health. What is perhaps most distressing about this problem is that there are evidence-based guidelines to facilitate optimal treatment and management of patients with this condition (Qaseem et al., 2016; Sateia et al., 2017). Further, evidence supports the use of provider education to increase knowledge of insomnia treatment and management in primary care (Koffel & Hagedorn, 2020; Nguyen et al., 2019; Sake et al., 2019; Taylor et al., 2021; Torrens et al., 2021). Consequently, there is an impetus for practitioners to address the current gaps in practice and to provide education that will, over the long-term, improve the care that patients with insomnia receive.

Summary of the Literature

Insomnia is a meaningful health problem that is still under-diagnosed and undermanaged in primary care settings (Grandner & Chakravorty, 2017). The condition is particularly prevalent among older adults and has severe consequences for both patients and society (Neubauer et al., 2018). Despite the prevalence of the problem, significant knowledge deficiencies exist among healthcare providers regarding the diagnosis and management of insomnia in older adults (Roach et al., 2020). The identified solution for the problem focuses on the use of an online educational intervention to increase primary care provider knowledge of the diagnosis and management of insomnia. Included in this section is a review the available literature on the topic, including the need for provider education, recommended techniques for diagnosis and management of

insomnia in older adults, and the effectiveness of staff education. A summary of this literature can be found in Appendix A.

Need for Provider Education

The literature shows that there are gaps in provider knowledge on the diagnosis and management of insomnia in older adults (Nguyen et al., 2019; Sake et al., 2019; Ulmer et al., 2017). For instance, Nguyen et al. (2019) note that up to 75% of older adults experience insomnia symptoms. Nonetheless, Sake et al. (2019) found that diagnosis and management of insomnia are not key priorities for 83% of general practitioners. Older adults with insomnia end up under-diagnosed and under-managed, which can result in issues that significantly affect their quality of life (Patel et al., 2018). Some of these issues include increased risk of falls, mental health disorders such as depression and anxiety, and increased severity of chronic conditions, including heart disease and high blood pressure (Patel et al., 2018). Research also indicates that insomnia can exacerbate chronic health conditions in older adults leading to increased mortality rates (Miner et al., 2018).

A study by Ulmer et al. (2017) reported that providers would like more education and training in the management of insomnia. For example, primary care physicians (PCPs) can benefit from training on behavioral interventions which are the most frequently recommended first-line treatment (Nguyen et al., 2019). This occurs because providers rarely use non-pharmacological approaches despite the recommendation to do so before initiating drug therapy (Lam & Macina, 2017). The inclusion of adequate amounts of sleep health education in the medical curriculum on the diagnosis and management of insomnia is one of the essential strategies for improving the quality of life of patients with sleep complaints (Sake et al., 2019). Unfortunately, this element of the curriculum is often overlooked, resulting in the inability of

providers to acquire essential knowledge and training before entering the profession (Sake et al., 2019).

There is also a need to improve the education of primary care providers regarding the use of evidence-based guidelines for the treatment of insomnia (Sateia et al., 2017). To this end, two evidence-based guidelines were included in this literature review (Qaseem et al., 2016; Sateia et al., 2017). The guidelines provided evidence-based recommendations on pharmacological and non-pharmacological management strategies for insomnia which are further evaluated in this section. Qaseem et al. (2016), for instance, has two main recommendations: the employment of cognitive behavioral therapy for insomnia (CBT-I) to adult patients as initial treatment for chronic insomnia and the use of a shared decision-making approach by clinicians to determine whether to add pharmacotherapy when CBT-I alone is unsuccessful. Education of healthcare providers on the use of CBT-I, as well as the short-term use of pharmacological interventions, is recommended by Sateia et al. (2017), who argue that these interventions should be used to promote effective management of insomnia in older adults.

Diagnosis and Management of Insomnia

The diagnosis of insomnia in older adults is based on conducting a thorough investigation of the patient's history of sleeping problems and the determination of co-morbidities that could be to blame for the condition (Patel et al., 2018). Nguyen et al. (2019) recommend that primary care providers incorporate screening questionnaires in both their baseline and ongoing assessment forms. Patel et al. (2018) note that a thorough assessment of insomnia can be achieved using sleep diaries and questionnaires. A good questionnaire should include questions about temporal and quantitative aspects of sleep such as bedtime, wake-up time, sleep satisfaction, and sleep quality (Patel et al., 2018). Examples of forms that can be used to

diagnose insomnia in primary care are the Insomnia Severity Index, Athens Insomnia Scale, Minimal Insomnia Symptoms Scale, and the Epworth Sleepiness Scale (Nguyen et al., 2019).

Healthcare providers should also ask patients about risk factors for insomnia to facilitate an accurate diagnosis (Nguyen et al., 2019). Nguyen et al. (2019) identify several risk factors that healthcare providers inquire about, including the existence of medical co-morbidities, social factors such as relationships and living environment, and recent falls. Additionally, living alone and having no contact with family and friends can increase insomnia risk in older adults (Nguyen et al., 2019). Behavioral and environmental factors, such as the use of electronic devices before bed and sound levels, should also be assessed. These factors can suppress sleep and adversely affect sleep patterns (Patel et al., 2018).

Further, it is important to review any medication that the patient uses when making an insomnia diagnosis (Patel et al., 2018). Medications such as antidepressants, sedatives, steroids, antihypertensive, and antihistamines can interfere with sleep patterns and should be monitored (Patel et al., 2018). Lam and Macina (2017) also agree that medication and polypharmacy can contribute to insomnia. Consequently, the authors recommend asking the patient to provide detailed information on their use of over the counter (OTC), prescription, recreational, and dietary agents (Lam & Macina, 2017).

The goals for the management of insomnia are improvement in sleep measures and reduction in sleep-related distress (Lam & Macina, 2017). There are two management techniques that healthcare providers can employ when managing insomnia in older adults; non-pharmacological management and pharmacological management (Parsons et al., 2017; Sake et al., 2019). Non-pharmacological management involves methods such as sleep hygiene and CBT-I (Patel et al., 2018). Healthcare providers could also encourage their patients to engage in

consistent exercise, listen to soothing music before sleep, and engage in organized social activities (Nguyen et al., 2019).

Healthcare providers often face difficulties when selecting the best intervention for older adults due to the complexity of their insomnia (Ulmer et al., 2017). The two guidelines that were reviewed as part of this paper recommend that cognitive-behavioral therapy for insomnia (CBT-I) should be used as the initial treatment for chronic insomnia (strong recommendation; high-quality evidence) (Qaseem et al., 2016; Sateia et al., 2017). However, for older adults in whom CBT-I is not sufficient, healthcare providers can consider pharmacological treatment (Lam & Macina, 2017). Additionally, pharmacotherapy may be recommended when CBT-I is appropriate for the patients. For instance, a patient with dementia maybe unable to properly participate in their treatment (Lam & Macina, 2017).

In cases where pharmacological management is necessary, guidelines from the American College of Physicians recommends the use of orexin-receptor not-antagonist (suvorexant) and two non-BzDRAs (zolpidem or eszopiclone) (Qaseem et al., 2016). On the other hand, the American Academy of Sleep guidelines recommend the use of a BZD (triazolam or temazepam), ramelteon, a BzDRA (zolpidem, zaleplon, or eszopiclone), or suvorexant (Sateia et al., 2017). Despite these recommendations, Lam and Macina (2017) note that the absolute effect for these agents, when compared to the effect of placebo, is small with undesirable evidence of harm. Consequently, healthcare providers should closely monitor and discontinue or taper agents suspected of exacerbating insomnia or causing other problems to the patient (Lam & Macina, 2017).

Healthcare providers should be mindful that most pharmacological management strategies for insomnia carry risks for the patient (Patel et al., 2018). These potential risks include

behavioral and cognitive changes which may necessitate dose reduction in older adults and exploration of alternative managements (Lam & Macina, 2017). The study by Nguyen et al. (2019) demonstrated that other therapies, such as bright-light therapies and acupuncture, can potentially reduce the symptoms of insomnia. Nonetheless, Lam and Macina (2017) dispute this by stating that there is insufficient evidence for the success of complementary management strategies such as herbal medicine and acupuncture. However, evidence-based practice guidelines provided by Sateia et al. (2017) on behalf of the AASM recommend the use of short-term pharmacotherapy for the treatment of insomnia to help relieve symptoms while building CBT-I competencies that will lead to improved sleep.

Effectiveness of Staff Education

Providing sleep health education to healthcare providers can help to fill the gap in provider knowledge (Ulmer et al., 2017). A study by Sake et al. (2019) noted that the implementation of sleep health education can help reduce disparities in insomnia recognition and management. This would, in turn, facilitate the optimal management of insomnia in general practice (Sake et al., 2019). Nguyen et al. (2019) suggest that healthcare providers can improve their knowledge through the completion of specialized training courses with continuing education credits on the diagnosis and management of insomnia. Koffel and Hagedorn (2020) further conducted semi-structured interviews to assess provider views on the treatment of insomnia in primary care practice. The authors found that when providers had previously received training on the topic, their ability to diagnose and manage insomnia in clinical practice improved. This evidence supports the use of provider education to improve outcomes for patients suffering with insomnia. However, it is also helpful to review primary research that demonstrates

the efficacy of provider education in improving knowledge of the diagnosis and management of insomnia.

In a recent study conducted by Parsons et al. (2017), the authors sought to investigate the effectiveness of an educational intervention for healthcare providers called the Veteran Affairs Extension for Community Healthcare Outcomes (VA-ECHO). A total of 39 multidisciplinary providers—including physicians (15%), registered nurses (21%), and nurse practitioners (26%)—completed an educational program consisting of 10 sessions via video streaming, bidirectional audio, instant messaging, and an audience response system (Parsons et al., 2017). Participation in the educational intervention resulted in a significant increase (77%) in primary care provider comfort in managing patient sleep complaints. Participants also experienced an increase in clinical competence in the form of increased knowledge of the identification and treatment of insomnia. Participants attended a median of only three sessions but reported significant changes across the practice domain including an increase in patient education of 93% (Parsons et al., 2017). While the study is limited by a small sample and lack of generalizability, the results do demonstrate that education can be highly effective for improving provider knowledge and comfortability with diagnosing and treating insomnia in primary care practice.

A similar study undertaken by Taylor et al. (2021), further highlights the role of education/training to improve provider knowledge of the diagnosis and management of insomnia. In this study, Taylor and coauthors compared the use of online education versus in-person workshops to increase primary care provider knowledge of insomnia. A total of 44 PCPs were involved with the program, including 21 in the online training group and 23 in the in-person workshop. All participants had not received prior training on the use of evidence-based practice guidelines for the management of insomnia (Taylor et al., 2021). Results from both

groups indicated a combined increase in knowledge scores from a baseline of 69% to 92% following training (Taylor et al., 2021). While the results of this study are limited due to a small sample size, the results not only support the use of provider education to improve the management of insomnia, but also support the use of online training to achieve this goal.

Finally, Torrens et al. (2021) examined the use of staff training to implement CBT-I for the treatment of insomnia in primary care. The primary outcome sought through this research was outcomes for patients as measured through the Pittsburgh Sleep Quality Index. A total of 25 primary care providers were randomly assigned to an education or care as usual group. Following education, 32 patients were randomized to either the education or care as usual provider group. Care was provided for a total of three months to patients. Following the intervention, the patient group treated by providers that had been trained experienced a statistically significant reduction in Pittsburgh Sleep Quality Index scores, indicating better sleep. Torrens et al. also report that in the education group, patients had a higher rate of medication discontinuation for the treatment of insomnia. While there are methodological limitations to this study including a lack of generalizability, the findings do indicate that not only is provider education effective for increasing knowledge, but also provider education actually improves patient outcomes to reduce symptoms of insomnia.

Summary and Gaps in Literature

The current literature supports the need to markedly expand the use of provider education and training to effectively diagnose and treat insomnia in primary care practice. At the present time, a majority of PCPs lack the knowledge and skills needed to provide effective treatment (Ulmer et al., 2017). This can have a deleterious impact on the ability of the provider to meet the needs of the patient while also exacerbating underlying health conditions that can impact patient

well-being, quality of life, health, and mortality (Miner et al., 2018; Patel et al., 2018). What is perhaps most upsetting about the current state of practice regarding the management of insomnia in primary care is that there are credible, recent, and robust guidelines that provide needed evidence to support practice change that could markedly improve patient experiences with care (Qaseem et al., 2016; Sateia et al., 2017). The current evidence also indicates that there is strong support for the use of educational interventions to improve provider knowledge of insomnia treatment (Koffel & Hagedorn, 2020; Nguyen et al., 2019; Sake et al., 2019; Taylor et al., 2021; Torrens et al., 2021). Online and web-based education has been proven to be effective (Parsons et al., 2017; Taylor et al., 2021) and there is evidence which demonstrates the concrete impact that provider education and training can have on outcomes for patients (Torrens et al., 2021).

Even though there is evidence to support the use of an online educational intervention to improve primary care provider knowledge of insomnia treatment and management, there are some gaps in the current literature. Evidence to support training for providers is still in its infancy and methodological weaknesses in current studies abound (Parsons et al., 2017; Taylor et al., 2021; Torrens et al., 2021). Presently, there are a limited number of randomized controlled trials examining the use of education to demonstrate definitive causality between this intervention and improved knowledge (Torrens et al., 2021). The paucity of RCTs to support practice change further limits the ability of researchers to combine evidence through a systemic review/meta-analysis to provide more robust evidence to advocate for practice change. Given this current gap in the literature, a quality improvement project to evaluate the use of provider education to increase knowledge of the diagnosis and management of insomnia in primary care is both timely and needed.

Purpose, PICO Clinical Question, and Objectives

Purpose of the Project

The purpose of the project was to determine whether an online educational intervention for healthcare providers can improve their knowledge on the diagnosis and management of insomnia in older adults. The project was managed and run by the co-investigator, Roberto Carmona (PCP), with the help of the staff at the project site, IMC Health. Nilda R. Acosta, M.D., will guide the development and implementation of the quality improvement project. The administrator of the Center, Lissett Marin, can be contacted at (305) 253-1660 for any inquiries concerning the project. A support letter from the facility is included in Appendix B.

Key stakeholders for the project included leaders and all healthcare providers at the project site. Leaders at the practice site were responsible for providing the supports and resources needed to deliver the educational intervention to staff. Further, staff were responsible for participating in the intervention and integrating new knowledge and information into the direct care of patients. Although the main direct participants were healthcare providers at IMC Health, it was hypothesized that patients with insomnia receiving care at the facility would also benefit from the project. More precisely, was hoped that the quality improvement project would lead to better care and treatment that, over the long-term, will result in improved quality of life and improved outcomes for older adults with insomnia.

PICO Clinical Question

The PICO (population, intervention, comparison, outcome) format was used to develop the clinical question that this project seeks to answer. The PICO framework contains four components that help to create a well-focused question (Kloda, 2020). This facilitates the literature search process by making it easier to identify relevant and appropriate evidence (Kloda,

2020). For this project, the PICO clinical question was: Among healthcare providers in a medical home who deliver care for older adults (P) will the implementation of an online educational module on the diagnosis and management of insomnia (I) result in an increase in provider knowledge of this content (O) from baseline to post-training (C)? Below is an outline of the four components and their respective representations in the PICO clinical question.

- P (Population)–Healthcare providers in a medical home who deliver care to older adults.
- I (Intervention)–Online educational module on the diagnosis and management of insomnia.
- C (Comparison)–Provider knowledge before and after the intervention.
- O (Outcome)–Increased knowledge among healthcare providers about diagnosis and management of insomnia in older adults.

Objectives

The project strove to achieve 3 main objectives:

1. Recruitment of staff at the facility to participate in provider training
2. Developing and delivering an evidence-based education program for providers.
3. Improved provider knowledge regarding the diagnosis and management of insomnia in older adults.

The long-term objectives of the project included improving patient care by increasing the use of evidence-based treatment of insomnia by providers and promoting a culture of continuous training to enhance provider willingness and ability to utilize evidence-based practice guidelines and recommendations for the care of all patients seen at the facility. This will assist in further promoting the knowledge and performance of healthcare providers and improving clinical care of all patients.

Definition of Terms

The proposed quality improvement project aimed to investigate whether an educational intervention for healthcare providers improves their knowledge on the diagnosis and management of insomnia in older adults. To this end, six terms need to be defined. These are educational interventions, healthcare providers, insomnia, restorative sleep, cognitive behavioral therapy for insomnia (CBT-I), and older adults.

- Educational Interventions: These supports are put in place to effect change in a healthcare setting from the current state to the desired state (Cusack et al., 2018). According to Cusack et al. (2018), educational interventions assist people in understanding key concepts of healthcare to improve processes and healthcare outcomes.
- Healthcare Providers: Any healthcare professional involved in the direct care of older adults with insomnia. This includes physicians, advanced practice providers, nurses, and specialists such as sleep specialists and geriatric specialists who are usually involved with conditions such as insomnia and older adults, respectively.
- Insomnia: A sleep disorder in which the patient has trouble falling asleep or staying asleep (Nguyen et al., 2019). The conditions can be short-term or long-term. Short-term insomnia is known as acute insomnia, while long-term insomnia is known as chronic insomnia (Grandner & Chakravorty, 2017).
- Restorative Sleep: Restorative sleep occurs when all five stages of sleep are achieved and the brain and body systems are provided with the opportunity to be repaired, promoting healing, health, and growth (Helvig et al., 2016).
- CBT-I: A therapeutic process that identifies the cognitions, behaviors, and feelings that interrupt sleep (Cunningham & Shapiro, 2018). Cognitions and feelings adversely impacting

sleep are reframed and behaviors that promote sleep are identified and reinforced (Cunningham & Shapiro, 2018).

- Older adult: Older adults are defined by Song and Kong (2015) as individuals that are aged 65 years old or older.

Underpinning and Theoretical Framework

Kurt Lewin's change model was used as the theoretical framework for the implementation of the quality improvement project. The change model involves three steps: unfreezing, changing, and refreezing (Hussain et al., 2018). According to Burnes (2020), the process of change begins with establishing the foundation for the required change and is accomplished in the unfreezing stage. Changing or moving involves the implementation of the change to achieve desired outcomes (Burnes, 2020). Finally, refreezing involves the solidification of the new procedures and activities to make them a permanent part of the organization's operations (Burnes, 2020).

Theory Overview

The first step of "unfreezing" involves the creation of awareness on how the current state is hindering the organization (Deborah, 2018). During this stage, organizational assessment can be used to show stakeholders the necessity for change in the organization to improve operations (Deborah, 2018). This step is necessary to reduce or prevent resistance to change, and communication is particularly important during this stage of the model (Deborah, 2018). This is because effective communication helps to inform stakeholders of the impending changes, reasons for the changes, and the benefits of the changes (Deborah, 2018).

In the "change" step of the model, an organization moves from the old state to the new state (Deborah, 2018). This stage involves the implementation of the changed determined to be

necessary for the improvement of organizational operations (Deborah, 2018). The more prepared the stakeholders are, the easier it is to complete the change step. Communication, support, and education are important in this stage as stakeholders become familiar with the new changes (Harrison, 2017). Lastly, the “refreezing” step of the model symbolizes the reinforcement and solidification of the newly achieved state (Deborah, 2018). This final stage is important to ensure people do not revert to the old state before the implementation of changes (Deborah, 2018).

Clinical Fit

The quality improvement program involved the implementation of an educational intervention that would lead to changes in the knowledge level of providers treating older adults with insomnia. According to Hussain et al. (2018), a theory of change is appropriate when trying to determine the effectiveness with which an organization can modify processes, structures, and strategies. Lewin’s change model helped to understand the movement of the current practice site from the current state to the future desired state. The steps include the unfreezing stage, change stage, and refreezing stage (Burnes, 2020).

The unfreezing stage of the theory was used to assess the current state of the organization, prepare the staff for change, build the educational project, and communicate with staff about the change. The change state involved the implementation of the educational intervention to the healthcare providers. Lastly, the refreeze stage was used to ensure the change is sustainable. This was achieved by implementing an annual educational program and updating the educational video to reflect the current state of knowledge. Healthcare providers were encouraged to apply the acquired knowledge when caring for older adults with insomnia.

Theory Evaluation

Theory evaluation is the process of evaluating the theory concerning its applications in a particular context (Peterson & Bredow, 2019). Peterson and Bredow (2019) outline six questions for theory evaluation: operationalization, application, performance, relationship, level congruence, and theory tools. This section presents an evaluation of Lewin's change model under these six questions and how it is related to the quality improvement project of implementing an educational intervention on insomnia diagnosis and management.

Theory Operationalization

Kurt Lewin's change model was readily operationalizable to the clinical issue. The unfreezing step was used in this context to determine the current state of the organization. The unfreezing process also included preparing the staff for change, building the educational project, and communicating with the staff about the change. The implementation of the educational intervention was done in the change step. Finally, the changes made were made the norm in the refreezing step. At this step, strategies were implemented to ensure the sustainability and longevity of the implemented changes if the project is successful. For instance, the educational intervention can be implemented annually to ensure health care providers do not lose their acquired knowledge. Additionally, the training material will be updated annually to ensure it is in line with current knowledge and recommendations. Had the educational intervention not be successful, further investigation would have been required to better understand the reasons as to the project failed to produce the desired and expected results.

Theory Application

Lewin's change model has been applied to multiple quality improvement projects in the healthcare sector. An example of a study where the theory has been applied is Wojciechowski et

al. (2016). The theory was used in the study to implement an educational intervention to promote inter-professional collaboration and the development of an interventional model for implementing and sustaining bedside shift reporting. The model was effective at leading and supporting the change to support high-quality outcomes in the care for patients (Wojciechowski et al., 2016). Another study by Saleem et al. (2019) used Lewin's change theory to guide change at a private healthcare organization. The model was used to give direction for the development of a new accreditation plan (Saleem et al., 2019).

Theory Performance

Kurt Lewin's theory has been successfully applied in the management of change. For instance, the model was used to successfully support change as outlined in a study by Wojciechowski et al. (2016). The model was used to support inter-professional collaboration and the implementation of bedside shift reporting (Wojciechowski et al., 2016). The theory is preferred by many organizations due to its simplicity and ability to breakdown all the necessary steps to describe a problem, determine expected outcomes, implement change, and sustain the change (Deborah, 2018).

Hussain et al. (2016) stated the importance of compiling specific and critical information of the center subjected to change in order to implement effective steps and improve quality of care. This is because the management of change varies widely based on the nature of the organization and the involved stakeholders (Hussain et al., 2018). For example, an organization that is already at the unfreezing phase might only need the change and refreeze steps of the model to manage organizational change (Hussain et al., 2018).

Theory Relationship

Lewin's three-step model for change had a direct relationship to the current quality improvement project. The framework of the theory guided the implementation of change in approach to diagnosis and management of older adults in primary care settings (Cummings et al., 2016). Lewin's model has been critical for modern interprofessional problem-solving approaches for enhancing quality of care. Lewin's theory proposes that people's behavior is modulated by restricting rules or sparked by challenges that lead to individuals to offer resistance to change and maintain the status quo (Cummings et al., 2016). Lewin's theory also establishes that the need to elaborate positive motor forces will favor change to happen. The interaction between negative and positive forces keep equilibrium. Organizations will have to execute a set of activities to implement change and move on from the status quo stage. Lewin's model can assist leaders in achieving such goals (Cummings et al., 2016).

Level Congruence and Theory Tools

Theories and models are always based on assumptions (Nkwake & Morrow, 2016). Lewin's model is based on three main assumptions: performance is prone to regress unless measures are applied to institutionalize changes; people experience tensions when faced with a psychological need or intent exists and the tension is released if their need is fulfilled; and, the tension can be either positive or negative (Cummings et al., 2016). These assumptions are congruent with the clinical problem. To illustrate, a failure to conduct the "refreeze" step after implementation of the educational intervention could lead to a regression to old practices and procedures with regards to insomnia diagnosis and management in older adults (Cummings et al., 2016). The levels of the model are also congruent with the quality improvement project. For instance, the unfreezing stage includes determining the state of the organization and preparing the staff for change, the change stage would involve the actual implementation of the education

program, while the refreezing stage would involve incorporating the changes into normal practice routine (Picarillo, 2018).

During the unfreezing stage, the goal is to increase awareness of the problem and to undo the status quo. A literature review, and current epidemiological data supporting the negative impact of insomnia in older adults, will attempt to move providers from resistance, and the implementation of a pretest before the online presentation and a posttest after will motivate them to move to change their current practices. During the unfreezing phase, tools such as flow charts and presentations can be used to communicate the need for change and the procedures to be followed when implementing change. According to Picarillo (2018), flowcharts and process maps can help to visualize various organizational processes. This can help to map out current organizational states in preparation for change (Picarillo, 2018).

Once providers have moved to the next step, the change phase, there will be a need to address possible negative forces that will oppose the implementation new practices and alternative methods for insomnia. Brainstorming, training, and role modeling are examples of positive procedures to reinforce the movement towards change. Finally, during the refreezing phase, new practices become a habit that will offer resistance to further change (Picarillo, 2018).

Methodology Overview

The quality improvement project used a quasi-experimental pre-/post-intervention study. There was no control group, and the sample will not be randomized. The quality improvement project took place in a primary care center that serves older adults with insomnia. All healthcare providers at the facility were invited to participate in the project via email. This section outlines the details regarding the setting and participants, project procedures, efforts that were

implemented to protect human subjects, data collection procedures, and the strategies that were used in the management and analysis of the collected data.

Setting and Participants

The quality improvement project was conducted at IMC Health Medical Center, located at 11348 Quail Roost Drive, in Miami, Florida. IMC Health is a medical group consisting of medical centers, activity centers, and access centers that provide a variety of healthcare services including primary care, specialty and ancillary services, and diagnostic services. The center uses a comprehensive home model focused on preventive, acute, and chronic healthcare delivery. The selection of the immersion site was influenced by the large number of older adults that visit the facility for their healthcare needs.

The direct participants were all healthcare providers at the facility who received training on interventions to improve the diagnosis and management of insomnia in older adults. Healthcare providers were important to the project because they are the first line of contact with patients who present with insomnia at the healthcare center. They are also directly involved in the diagnosis and management of insomnia. It was hoped that the quality improvement project would lead to improved quality of life for older adults with insomnia at the facility.

Description of Approach and Project Procedures

Quasi-experimental studies including those with pre-/post-intervention components have been noted in the literature to provide a useful foundation for examining the impact of an experimental intervention on outcomes (Bärnighausen et al., 2017). While the results of a quasi-experimental study will not demonstrate causation between the intervention applied and the outcomes, the results demonstrate if there is a difference in outcomes when comparing two groups (Bärnighausen et al., 2017). In the present study, a comparison of provider knowledge

scores before and after project implementation provides the data for determining if the educational intervention was effective.

This quality improvement project began with the principal investigator and the co-investigator seeking facility and leadership approval for the project. This was followed by acquisition of IRB approval for the project. Once these resources had been secured, staff from the facility were recruited via email. The email used for recruitment can be found in Appendix C. Concurrent with staff recruitment was the development of the educational intervention to improve staff knowledge. The educational video was provided via YouTube and uploaded for those agreeing to participate in the project. The educational video was developed utilizing evidence-based resources regarding staff education, along with evidence-practice guidelines regarding the management of insomnia in primary care. The educational video was evaluated by three independent physicians working in sleep medicine to ensure its accuracy and effectiveness for educating healthcare providers.

Once staff recruitment and the video were complete, an email was sent to acquire informed consent from participants. The informed consent form that was sent to participants can be found in Appendix D of this work. Staff was asked to electronically sign the form and return it within 72 hours. For interested participants who did not complete the informed consent form, a reminder was provided via email. Contacted participants had 48 hours to respond with their completed informed consent form. Those who did not respond were excluded from the project. Once all informed consent forms had been acquired, participants were sent a demographic questionnaire via email. This questionnaire can be found in Appendix E of this work. Participants had 72 hours to complete the form and return it via email to the co-investigator. All participant demographic information was entered into an Excel spreadsheet for analysis. For

participants who did not return the demographic questionnaire within 72 hours, a reminder email was sent, and participants had 48 hours to respond. Those who did not respond were excluded from the project.

Following receipt of the demographic questionnaire, all participants were sent a knowledge test to evaluate their baseline understanding regarding the diagnosis and management of insomnia. The knowledge test was a slightly modified version of the Assessment of Sleep Knowledge in Medical Education (ASKME) survey. The modified ASKME survey is included in Appendix F. Participants had one week to complete the ASKME survey and to return the completed survey to the investigator. Participants who did not return the survey within the stated timeframe received a follow-up email and were asked to complete the survey within 48-hours. All participants who did not complete the survey were excluded from the project. Once all completed ASKME surveys have been received, the instruments were scored and data for all participants was entered into an Excel spreadsheet for analysis and comparison with post-intervention ASKME survey scores.

Following receipt of all pre-intervention ASKME surveys, providers were sent the link to an educational video that will be available via YouTube. Providers were given two weeks to review the video and will be instructed to email the co-investigator about any questions that they may have regarding the video content or insomnia management. Participants were asked to send an email to the investigator indicating that they have watched the video. For participants who did not complete this activity within two weeks, a follow-up email was sent to remind participants about watching the video. Providers were given an extra week to complete this task, and all participants that did not watch the video within this timeframe were excluded from the project.

Participants retained through the study were sent one final email asking them to complete the ASKME survey as a post-intervention assessment of knowledge. Participants were asked to complete the assessment within 72 hours and to return their completed responses via email. Participants who did not return the surveys were sent a follow-up email and asked to complete the assessment within 48 hours. Participants who did not return the complete assessments in this timeframe were excluded from the project. The surveys were scored, and scores were entered into an Excel spreadsheet for comparison to pre-intervention scores. To reduce the potential for test bias, the questions provided on the post-ASKME survey were randomized from the pre-intervention assessment.

Protection of Human Subjects

Several steps were taken to ensure the protection of human subjects in this project. Institutional Review Board (IRB) approval for this project was sought from Florida International University on January 19, 2021, and was granted on May 5, 2021. Appendix G includes the approval letter from the Institutional Review Board. Additionally, all providers wishing to participate in the project were required to sign and return an informed consent form indicating that they understand their rights and agree to voluntarily participate in the study (Appendix D).

As part of this project, no personal identifying information regarding participants was collected including names, phone numbers, etc. While emails would be used to correspond with participants, these emails were not be used when entering data into the Excel spreadsheet for analysis. All data was stored on a password-protected laptop to which only the principal investigator and co-investigator would have access. The laptop was stored at the current clinical site, and all data from the project would be destroyed by scrubbing the hard drive of the computer within five years of the completion of this project.

Some of the activities that participants would agree to in the consent form are completing the pre-test and post-test questionnaires and attending the 60-minute online training program. Concerning the risks, there was the potential that the healthcare providers would be fatigued watching the 60-minute training video. As a result, the video was organized into two 30-minute sections to reduce the potential for fatigue. Further, provider participation would not interfere with office schedules. There were also some potential benefits for participation, including improved knowledge and skills and improved outcomes for older adults diagnosed with insomnia. Any information collected for the project would be stored securely and remain confidential including the participant's information and their records.

Data Collection

Data collection occurred using a demographic survey (Appendix E) and the use of the modified ASKME survey (Appendix F). The demographic survey included questions regarding participant gender, age, ethnicity, and current role within the organization. Additionally, the demographic questionnaire included questions to evaluate the level of provider training or knowledge regarding the treatment of insomnia in older adults. Data collection also contained the use of the ASKME survey which was modified for the purposes of this project. A modified version of the survey was used to ensure that statements regarding the management of insomnia were focused specifically on the older adult population.

The ASKME survey is a validated 30-item questionnaire that can be used to assess sleep knowledge among healthcare practitioners (Zozula et al., 2020). The survey utilizes a five-point Likert scale that is used to describe the level of agreement of responders to a statement. Responses range from 1 (strongly disagree) to 5 (strongly agree). Higher scores on the instrument are indicative of higher levels of agreement with statements provided and a higher

level of knowledge regarding the management of insomnia, while lower scores indicate disagreement with a statements on the survey and a lower level of knowledge regarding the management of insomnia (Batterton & Hale, 2017).The questionnaire demonstrates a high degree of reliability and internal consistency among the surveyed items which include basic sleep principles, wake control, normal sleep architecture, common sleep disorders, and the effect of alcohol and drugs on sleep (Zozula et al., 2001). The modified survey includes 22-items.

Data Analysis

All data from the demographic survey and modified ASKME questionnaire was entered into an Excel spreadsheet for analysis. Descriptive statistics including mean, frequency, and standard deviation were used to provide an overview of the participants enrolled in the project. Additionally, descriptive statistics was used to provide an overview of mean scores from the pre- and post-ASKME survey data. Inferential statistics, including a paired t-test, was used to compare pre- and post-intervention ASKME scores. An alpha value of 0.05 was used to determine if the difference in knowledge from the pre- and post-intervention assessments was statistically significant.

Results

A total of 12 healthcare providers gave consent to participate in the study. A majority of the participants were females, since the study site has more female healthcare providers compared to their male counterparts. The ages of the participants ranged from 25 to 55 years old. Considering the current healthcare provider base at the study center, most of the participants were from the Hispanic community. There was a low representation of Asians, Whites, and African Americans in the sample size. All participants completed the initial post-test questionnaire and were enrolled in the educational program.

Concerning the initial characterization of the participants as determined from the post-test questionnaire, it was expected that many of the participants had not partaken in any educational interventions to improve their knowledge on the screening and management of insomnia. Over 50% of the participants had not participated in any educational intervention on insomnia that focuses directly on insomnia in older adults. A majority of the participants reported not following a proper standardized routine when screening for and managing insomnia in older adults. Table 1 includes a representation of the demographic data that is expected from the current project based on the demographic survey provided (Appendix E).

Table 1

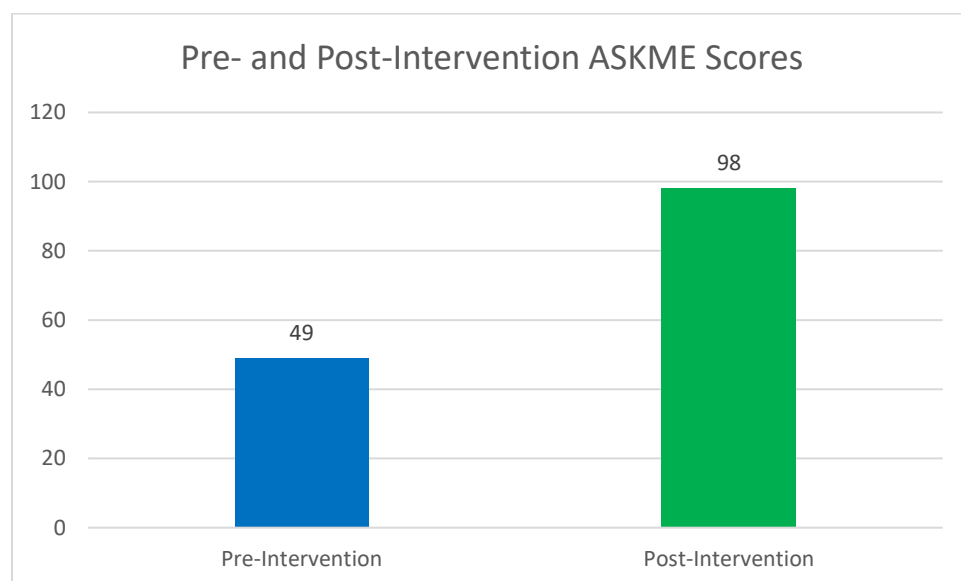
Participant Demographic Data

Descriptor	Participant Data (n = 12)
Age	48 (s.d. 3.32)
Gender	
Male	4 (%)
Female	8 (%)
Race	
White	1 (%)
African American	1 (%)
Hispanic	8 (%)
Asian	1 (%)
Other	1 (%)
Role	
Physician: MD, DO	4 (%)
Advanced Practice Nurse	4 (%)
Physician Assistant	4 (%)
Number of Training Programs	
None	10 (%)
1	2 (%)
2	0 (%)
3	0 (%)
More than 3	0 (%)
Don't know	0 (%)

With regard to results from the pre- and post-education ASKME scores, it was further anticipated that knowledge on the diagnosis and management of insomnia in older adults would be low before the implementation of the educational intervention and would increase following intervention. Figure 1 below provides a graphic representation of mean scores for the pre- and post-intervention assessments. Data provided in this Figure show that the mean score for the pre-intervention assessment was 49 and for post-assessment was 98, indicating an increase in scores.

Figure 1

Comparison of Mean ASKME Score Assessment: Pre- and Post-Intervention



To evaluate the statistical significance of the results, a t-test was utilized with an alpha value of 0.05. Table 2, below, includes hypothetical data for the p-value employed for this project. The p-value of 0.001 indicated the results were statistically significant, demonstrating that the intervention was effective in improving provider knowledge. Although the t-test demonstrated that the pre- and post-intervention scores were notably different, t-tests do not demonstrate directionality in the results (Guo & Yuan, 2017). Consequently, the data from

Figure 1 were used to confirm that the scores increased significantly from the pre- to post-intervention phases.

Table 2

Mean Pre- and Post-Intervention Scores and P-value

	Mean Pre-Intervention Knowledge Scores	Mean Post-Intervention Knowledge Scores	P-Value
Pamphlet (n = 15)	49	98	P = .001

Discussion

Following the presentation of results, it is necessary to provide some discussion of this information in order to better elucidate understanding of the data and provide recommendations for the use of these data findings in practice. In reviewing these results, it may be possible to evaluate the project outcomes in order to determine if this evidence-based change should be retained in practice. Included in this section are a discussion of the results, a discussion of the project implementation, project limitations, areas for future research, and recommendations based on the findings.

Discussion of Results

The results demonstrated that there was a significant gap in knowledge on the diagnosis and management of insomnia in older adults among healthcare providers as reported in prior research (Grandner & Chakravorty, 2017; Roach et al., 2020; Ulmer et al., 2017). In many respects, these results were anticipated from the literature, which indicates a lack of awareness on the part of providers regarding the latest evidence-based guidelines regarding insomnia. These gaps likely represent a lack of educational programs and a curriculum on insomnia in older adults. It could also reflect a lack of continuing education and professional development for

healthcare providers. Some causes of the gap, as indicated from the results, include a lack of training to identify insomnia as a distinct sleep disorder from other conditions and the lack of knowledge or awareness that insomnia is a significant issue among older adults.

While the education of healthcare providers has been demonstrated to improve knowledge on the diagnosis and management of insomnia in older adults (Qaseem et al., 2016; Sake et al., 2019), the present quality improvement project has identified that most healthcare providers lack access to educational programs. Delivering an educational intervention to the providers provides a useful and informative resource to improve their knowledge. As expected, there was a significant increase in provider knowledge after the educational intervention. Increasing provider knowledge has the potential for promoting early screening and diagnosis of insomnia, improving patient outcomes, and improved competence in the treatment of the condition (Parsons et al., 2017).

Implementation Discussion

Project implementation represents the point at which project evidence is translated into practice (Dols et al., 2017). Often this process is overlooked as it is assumed, based on the evidence, that project implementation will not only go smoothly, but also that the desired results will be achieved (Dols et al., 2017). Unfortunately, this is not always the case. In every project there are unique circumstances that can arise which may impact the process of implementation. In an effort to facilitate a deeper understanding of how challenges and obstacles in project implementation can impact outcomes, the information provided here includes a consideration of what when right and wrong, influencing factors for the project, project monitoring, and project maintenance.

What Went Right/Wrong

Reflection on the project and what went right suggests that there were several elements of the project that transpired as expected. First, the facility and its leadership were accepting of the proposed practice change and supported the intervention as a means to help improve practice. In many healthcare organizations, leaders and staff are reluctant to support evidence-based practice change and quality improvement (Warren et al., 2016). Even though practice change can have systemic benefits, some organizational cultures do not support change, creating barriers for staff to lead and to initiate improvement when and where it is needed (Warren et al., 2016). This was not the case in the current project as leaders and staff were receptive and open to supporting the project.

Second, ample evidence to support the practice problem was available. This evidence clearly demonstrated that gaps in provider knowledge (Grandner & Chakravorty, 2017) were present, and further, that staff education could be used as a foundation for ameliorating this gap (Koffel & Hagedorn, 2020; Nguyen et al., 2019; Sake et al., 2019; Taylor et al., 2021; Torrens et al., 2021). Third, recruitment of staff to participate in the project occurred as outlined in the methodology. Here again it seems important to note that, while many staff may support evidence-based practice change in theory, they may not be eager or willing to participate in the process (Li et al., 2018). This did not occur in the project and provided a helpful foundation for enhancing the project. Finally, the results obtained from the intervention were reflective of the evidence used to support the practice change. Even though evidence-based practice should result in the success of an intervention, this is not always the case (Evans, 2020). Evidence-based initiatives, including quality improvement projects, can fail, resulting in the need to review the evidence and to consider what additional factors influenced outcomes and what alternatives may be suitable (Evans, 2020).

While it is evident that various elements of this project were successful, there were some challenges as well. Despite the fact that staff recruited for the project expressed an interest in fully participating, ensuring that staff met deadlines to complete paperwork, including the informed consent form, pre-intervention assessments, the educational intervention, and post-intervention assessments, was challenging. Three staff members recruited for the project had to be reminded to complete paperwork and two participants indicated that they would complete the paperwork, only to fail to do so. The procedure outlined for this project included additional time and follow-up to allow for these issues. However, even with this follow-up time included, acquiring documentation from some of the participants proved difficult. To overcome this issue, the deadlines for accepting paperwork and for watching the video were extended. However, there was one initial participant that still could not meet these deadlines and the decision was made to drop this participant from the study.

Also of note when attempting to complete this project was the abbreviated timeframe that was available for data collection as a result of difficulties with the IRB at FIU. While it was anticipated that IRB approval would be acquired before May of 2021, this did not occur, limiting the amount of time that was available to collect data and to complete this quality improvement project. When coupled with the lack of responsiveness for meeting deadlines from staff members agreeing to participate in the project, this created considerably more difficulty as the timeframes to complete the project were shortened. The lessons learned from this have made it clear that IRB approval may take longer than anticipated and further, emphasizing and reinforcing the importance of deadlines to project participants will be imperative in order to ensure that these issues do not recur.

Influencing Factors

Influencing factors can include positive and negative internal and external variables that shaped outcomes for the project. As noted in the previous section, leadership and staff support for the project were important for implementation. These factors also had a positive impact on the co-investigator's overall motivation for completing the project. Challenges with IRB approval and staff attention to deadlines for submitting paperwork for the project were also influencing factors that also shaped the motivation of the co-investigator during the project. While these influencing factors served to create a certain level of frustration and disorganization at times within the project, these influencing factors were short-lived and were addressed as part of completing the project. Consequently, it seems reasonable to argue that when it comes to influencing factors, there is an opportunity to be gained even when an influencing factor initially has a negative impact on project outcomes.

Other influencing factors in the project included the lack of a standardized measurement to evaluate staff knowledge regarding the treatment of insomnia in older adults as it pertained to the specific educational program developed. Despite the fact that other studies have provided staff education to improve knowledge and change attitudes regarding insomnia, these studies do not consistently report the use of a standardized tool for evaluating knowledge outcomes (Nguyen et al., 2019; Sake et al., 2019). Similarly, there are few standardized, evidence-based educational tools for addressing this content in practice. These factors did make the project more complex and further, do have implications for the results. While additional testing of the educational program and assessment tool would prove useful for demonstrating their reliability and validity, for the purposes of this project this information could not be acquired.

To overcome this influencing factor, a thorough review of the literature was undertaken with the purpose of identifying what content would be appropriate for inclusion in the

educational program. Further, a review of various educational modalities employed for educating healthcare providers was explored through the literature. The current COVID-19 pandemic limited the tools and approaches for providing instruction that could be used. All contact with staff to provide education had to be done remotely and, while this approach may have been suitable for some staff members to learn, for others this modality may have impacted learning. The assessment tool developed for the project was also evidence-based and developed within the content established for the educational intervention. While extensive tests of the instrument for reliability and validity were not possible, the measure was reviewed for content validity to help ensure its efficacy within the current project.

Project Monitoring

Project monitoring has been noted in the literature to be an important component of building practice change as the process allows for periodic assessment of the project to ensure that it remains on schedule and on budget (Martens & Vanhoucke, 2017). Before beginning the implementation of the project, monitoring was supported through the current DNP curriculum at FIU. The co-investigator was responsible for completing all elements of the project that did not require IRB approval, including the background, literature review, methodology, and organizational analysis. This coursework was monitored through various deadlines for completing work and through review of the work by faculty at the facility. By completing all of the background work to the project before seeking IRB approval, it was possible to ensure that the project remained on schedule.

Project monitoring at the practice site was also facilitated throughout the project with the site mentor providing support, motivation, and encouragement in the months leading up to project implementation. During these months, the co-investigator met with the site preceptor

once per month to discuss the work being done on the project in the classroom and to determine when project implementation would occur. Following IRB approval, subject recruitment, data collection, and staff education occurred rapidly over the course of a four-week period. During this time, the co-investigator met with the site mentor to discuss challenges and issues encountered and to review progress. Again, the site mentor was helpful in providing support and encouragement to complete the project. Meetings with the site mentor occurred on a weekly basis and often lasted 30 to 45 minutes. Following the completion of the project, meetings with the site mentor still occurred every week. However, the meetings were much shorter—i.e., approximately 15 minutes each—and focused more on how the final project was proceeding.

Project Maintenance

Project maintenance requires a consideration of what additional steps will be taken following project completion to maintain the gains made through the project (Dols et al., 2017). Because the educational project was successful, the site mentor recommended utilizing the educational program to educate all staff at the facility to help create a supportive environment for the effective treatment and management of older adults diagnosed with insomnia. Because the co-investigator is still employed at the site, there are currently plans in place to educate all staff about the educational program and to provide access to the program on an ongoing basis. This should help to improve staff knowledge and to ensure that staff are aware of how insomnia is currently being managed by providers in the facility.

While sharing the educational program with staff at the facility should help raise awareness of the need to provide better, evidence-based care for the treatment of insomnia in older adults, the reality is that as staff leave the organization and new staff are hired, the knowledge gains made from the program may be lost. With this in mind, the co-investigator has

made a request for the site mentor to include this educational program as part of new hire training within the facility. By including the educational program as a part of new hire orientation it may be possible to increase staff awareness of the problem and to foster engagement in evidence-based care and decision making to help ensure that patients receive the best possible care. Translating this program into policy for the practice—i.e., as part of onboarding for new hires—will be a clear demonstration of the policy competencies that should be achieved by the DNP in clinical practice.

Limitations

Although this quality improvement project did demonstrate some notable benefits for increasing provider knowledge regarding the treatment of insomnia in older adults, there are some notable limitations to this project that must be taken into consideration. The first limitation stems from the use of a small sample drawn from a single site. This limitation impacts the representativeness of the sample. Representative samples are needed to ensure that the results from a project can be generalized to the larger population from which the sample was drawn (Kamper, 2019). Millions of primary care providers currently work in the United States and building a representative sample proves challenging when utilizing only one practice site. Given the lack of generalizability in the findings, it is not possible to state with certainty whether the same outcomes—i.e., increases in staff knowledge—would result if the same educational program were to be utilized in other primary care practices.

The second limitation of this quality improvement project stems from the methodology employed. Quasi-experimental pre-/post-intervention studies typically do not use a control group for comparison and have internal weaknesses that must be addressed when reviewing the results (Kim & Steiner, 2016). Considering first the lack of control group, scholars note that this group

provides a means for isolating the effect of an intervention (Kim & Steiner, 2016). What this means is that if two groups are similar and one is exposed to the intervention (experimental) and the other is not (control) it is possible to state with certainty that the intervention was the sole result of changes that occurred in the exposed group (Kim & Steiner, 2016). The control group provides a means for justifying the cause-effect relationship between the subjects and the intervention (Kim & Steiner, 2016). In a quasi-experimental methodology in which no control is present, various threats to internal validity make it impossible to state with certainty that the intervention resulted in the outcomes recorded.

In a review of threats to internal validity that can occur, scholars note the following: self-selection effects, experimental mortality, history, maturation, regression toward the mean, and testing (Flannelly et al., 2018). In the current project, history, maturation, regression toward the mean, and testing are all threats to internal validity that may be present. History refers to external events that occur in the life of the participant that cannot be controlled by the researcher but influence learning or outcomes, while maturation effects refer to growth that may occur after the intervention that are outside of the experiment (Flannelly et al., 2018). Regression toward the mean indicates that those who perform well on a pre-assessment will not work as hard to perform well on the post-assessment as compared with those who scored poorly on the pre-assessment and will work harder to perform well on the post-assessment (Flannelly et al., 2018). Testing bias can occur as a result of exposure to the pre-test and from learning the answers to a test rather than learning something new (Flannelly et al., 2018). Each of these threats to internal validity may have been present in this quality improvement project, skewing the results. Because it is not possible to demonstrate causality in the results, it is not possible to state with certainty that the gains in knowledge made from this project were solely the result of the intervention.

Finally, this quality improvement project was limited by a lack of standardized educational tools and assessments. As noted, when reviewing the influencing factors shaping the development and direction of this project, there are currently a dearth of extensively used and validated education and assessment tools to provide staff education to increase knowledge regarding the treatment of insomnia in older adults. This lack of standardization made it difficult to compare the results to the literature. While it is possible to see that staff education works, a fact that is congruent with the current literature on the topic, what is not as evident from the findings is the efficaciousness of the intervention and the assessment tool. Standardization of educational tools may enhance education and further increase staff awareness. Further, validated measures of staff knowledge may reveal additional areas of education that must be emphasized to further increase and enhance staff knowledge of the topic.

Areas of Future Research

Future studies should focus on investigating other barriers to the diagnosis of insomnia in primary care, such as time constraints. This would help in the development of more effective strategies designed to overcome such barriers. Additionally, the quality improvement project did not investigate the effect of the educational intervention on provider actions and patient outcomes. In future studies, investigating provider actions and patient outcomes before and after an educational intervention can provide useful information on the effectiveness of such interventions in improving patient care and outcomes.

Older adults with insomnia are under-diagnosed and under-managed, which can result in issues that significantly affect their quality of life (Patel et al., 2018). Some of these issues include increased risk of falls, mental health disorders such as depression and anxiety, and increased severity of chronic conditions, such as heart disease and high blood pressure (Patel et

al., 2018). A future study could establish the effectiveness of online educational intervention for insomnia in seeking a reduction of falls, greater recognition of concurrent mental illness, and control of hypertension, diabetes, and other chronic diseases (Patel et al., 2018). A final research question that might arise from this project would be related to the frequency of nonpharmacological options, such as cognitive-behavioral therapy for insomnia (CBT-I), for treating insomnia amongst healthcare providers who received the training compared to those who were not exposed to the intervention (Patel et al., 2018).

Recommendations

The major finding from the quality improvement project is the demonstration that the online educational intervention on insomnia can improve provider knowledge regarding the diagnosis and management of insomnia in older adults. It is therefore recommended that regular educational programs should be implemented in primary care as a routine part of the standard of care. Giving healthcare providers access to such professional development programs such as this one has the potential for improving the outcomes of patients with insomnia (Grandner & Chakravorty, 2017). Other context-specific recommendations include increasing awareness on the importance of effective insomnia diagnosis and management, as well as the creation of opportunities for briefer intervention times, given the time barriers often faced by healthcare providers (Grandner & Chakravorty, 2017). An additional recommendation would be the need for further research on the topic regarding patient outcomes, measuring the impact of an educational intervention over patient-linked variables such as quality of sleep, falls, incidence of depression, anxiety, and stability of chronic disease like hypertension and diabetes mellitus (Grandner & Chakravorty, 2017). Finally, it is recommended that further research on the use of non-pharmacological therapeutic choices is needed to address insomnia in older adults, with

enhancement in the screening and diagnosis of insomnia as a disorder and not as an isolated symptom (Grandner & Chakravorty, 2017).

Interpretation of the Results

Although the quantitative results from this project have been interpreted in terms of what the statistics reveal—i.e., that knowledge gains of staff made after education were statistically significant—the reality is that interpretation of the results also requires a consideration of how the data could be extrapolated and utilized in practice. With this in mind, this section details the changes in patient care and healthcare that could and should result from the project, the transferability of the project to other care settings, the cost effectiveness of the project, and recommendations for expanding the project. A review of these issues will provide a more complete understanding of how the results from this project should be interpreted.

Changes in Patient Care/Healthcare

The first issue addressed here involves a consideration of how the project should change patient care and healthcare in general. At the practice site, the education of staff to improve knowledge regarding the treatment of insomnia in older adults should result in better care for older adults who present with symptoms. As noted in the literature, providers often fail to properly recognize insomnia as a specific and unique condition (Ulmer et al., 2017). Rather, providers often choose to link insomnia to other comorbid health conditions, especially in older adults, often failing to take into account the needs of the patient (Ulmer et al., 2017). Increases in staff knowledge and awareness of these issues should result in more patients within the facility being evaluated and treated for insomnia. Further, the educational program should result in providers utilizing evidence-based treatment for insomnia in older adults to better address this

problem in practice. Both of these changes should have a significant impact on patient health, quality of life, and overall satisfaction with care.

Although there are limitations to the generalizability of the findings from this project, the results when combined with current evidence on the topic do strongly suggest that a change in primary care and provider education is needed. Primary care providers clearly need to be educated about this topic. However, providers may lack access to educational programs that can increase awareness. Building educational programs through specific primary care sites or building education through continuing education programs or changes to healthcare provider educational curriculum are all possibilities that can, and should be, considered in light of the findings from this quality improvement project. While building continuing education programs and changing healthcare provider curriculum to address insomnia as part of training to meet the needs of geriatric patients may require time, dissemination of the project's findings and building new programs for the education of primary care providers is feasible in the short-term to help improve patient care and ameliorate gaps in provider knowledge regarding this topic.

Transferability of the Results

The transferability of the findings from this quality improvement project were addressed under the limitations of the project through a consideration of the generalizability of the results. As noted, the results were obtained from a small sample at a single site that is not representative of the broader population of primary care providers currently working in the United States. Consequently, the transferability of the project to other sites is low with regard to ensuring that the same results could be achieved in different primary care settings. Even though it is not possible to state with certainty that the project can be transferred to another primary care facility

to produce similar results, there are certain aspects of the project that could be transferred with ease based on the methodology employed.

When looking at the feasibility of utilizing a staff education program in primary care to increase staff knowledge of how to manage insomnia in older adults, a review of this project does indicate that change can be initiated with little effort and few resources. If staff in a given facility are willing to provide education to other professionals working in practice, it should be possible to increase staff awareness of what is needed to provide effective treatment for this disorder and patient population. Further, the educational program developed for this project utilized common web-based tools for education, including YouTube. These tools are widely accessible to other practice sites and should facilitate the ability of change agents in a primary care facility to provide this type of education to healthcare providers. Thus, while there are some challenges for generalizing the results to ensure that the same outcomes would result at other facilities, there are components of this educational program that could be easily transferred to other primary care facilities.

Cost Effectiveness

The cost effectiveness of providing staff education to improve the treatment and management of older adults with insomnia must be considered in the context of what such an educational program would cost, compared with the economic burden of this disease on the patient. While the current quality improvement project was delivered with minimal costs due to the fact that the change agent and staff agreed to voluntarily participate in the project, if the project were undertaken at a primary care facility in which staff had to be reimbursed for their time, it is possible that the project could cost as much as \$5,400 to reimburse 12 staff members at \$450 for 1.5 hours of instruction and assessment. However, if it is assumed that each of the 12

staff members could effectively treat insomnia for one patient, the cost-benefit of this project would clearly be realized.

Information provided by Taddei-Allen (2020) indicates that when the total costs of care for patients with and without insomnia is tabulated care costs for patients with insomnia are \$63,607 higher than for patients that do not have this condition. These costs are primarily driven by inpatient care that results from accidents or falls that result from insomnia (Taddei-Allen, 2020). If these costs of care are multiplied by 12, indicating that 12 patients could have their insomnia effectively treated by a cohort of providers that had been educated regarding insomnia treatment, the cost savings for providing education would be \$763,384. What this suggest is that the educational program would be highly cost effective in the long-term to help prevent the economic losses that often occur as a result of untreated insomnia.

Project Recommendations

Based on the insight provided here regarding the changes in patient care, the transferability of project elements, and the cost effectiveness of staff education, the principal recommendation that should be considered is to not only continue the program at the facility but also to expand the program to all staff, new staff, and staff at other facilities currently working in the Miami area. What is evident based on the information provided here is that there is a real impetus to create practice change through staff education to enhance the treatment of older adults with insomnia. By expanding the program and ensuring that it is consistently used in practice to improve staff knowledge and patient treatment, it should be possible to not only improve patient health and outcomes, but also enhance the treatment of insomnia across the entire medical system. Clearly, there is an opportunity for revolutionary change here that could markedly improve provider skills and competencies along with patient care and health outcomes.

Plans for Dissemination

The dissemination of project findings is central to the need for advancing scientific knowledge and enhancing practice. Project dissemination can occur through myriad approaches including posters, presentations, and publication (Sarver & McNett, 2020). Dissemination should also be considered in terms of its location: i.e., internally and externally. The plans for disseminating the project findings are reviewed here in an effort to detail how this process will be managed both internally and externally.

Internal Dissemination

Internal dissemination of the project results will be undertaken at the project site immediately following the conclusion of this DNP project. In particular, a brief abstract of the project will be emailed to all staff at the facility including those who participated in the project. Additionally, a copy of the final approved DNP report will be sent to the site preceptor for review. After the site preceptor has reviewed the project, the co-investigator will meet with the site preceptor to schedule a presentation for the facility. The presentation will be scheduled onsite and will include an abbreviated PowerPoint presentation that is built on the final Capstone defense for this project. The presentation will be followed by a question-and-answer session in which those in attendance will be given the opportunity to discuss the project and how it can be expanded and maintained at the practice site.

External Dissemination

Following the conclusion of this project, the research will be disseminated via publication in a medical journal. The proposed journal for publication is the *Journal of Sleep Research*, since it focuses on the field of sleep research and sleep medicine which is in line with the scope of the project topic. The findings could also be presented via a poster or PowerPoint presentation at a

medical conference in order to share the findings from the project with interested parties. The proposed conference suggested for dissemination is the virtual SLEEP 2022 conference organized by the American Academy of Sleep Medicine (AASM) and the Sleep Research Society (SRS) which will be held online between March 11th, 2022, and March 16th, 2022.

Implications for Advanced Nursing Practice

Advanced Practice Registered Nurses (APRNs) encompass a significant portion of the primary care providers in both the State of Florida and nationwide. An APRNs scope of practice includes providing primary care across the lifespan through assessment, diagnosis, and treatment of disease and injuries (Fagerström, 2017). APRNs enhance access to care, while also seeking to reduce cost in the healthcare system. APRNs who possess masters-level clinical education and extensive work-experience embrace a holistic and person-centered perspective and are able to develop trustful relationships with patients constitute the foundation of advanced practice nursing (Fagerström, 2017).

The diagnosis and management of insomnia in older adults is within the scope of practice of Advanced Practice Registered Nurses. Findings in the literature suggest that implementing an educational intervention can improve clinical practice by making it easier for providers to diagnose insomnia. Education can also make APRNs knowledgeable in a variety of management and treatment strategies that they can employ for insomnia diagnoses in older adults. Providing education to healthcare providers on insomnia allows them to improve their knowledge and apply it in their clinical practice. If the knowledge of healthcare providers is improved, there is potential for patient outcomes to improve (Fagerström, 2017).

Further, APRNs are recognized for their roles as leaders and educators. They often exemplify these roles by implementing educational interventions at their facilities to improve

provider knowledge on the diagnosis and management of insomnia in older adults. The findings from this quality improvement project have implications for education, clinical practice, and administration and leadership in advanced nursing practice, given that a significant portion of the primary healthcare provider workforce at IMC Health are APRNs who can replicate the intervention throughout the organization (Fagerström, 2017).

In regard to nursing education, the findings of this project support the inclusion of an insomnia curriculum into Advance Practice Registered Nurse programs. Clinical competencies relevant to sleep disorders should be included in Advanced Practice Registered Nurse courses. Continuing education and staff development programs on insomnia can also help to keep nurses updated and refreshed on their insomnia knowledge (Fagerström, 2017). The findings have the potential to change how APRNs, as leaders and administrators, perceive the effectiveness of educational interventions in regard to knowledge of insomnia and its treatment. The findings provide APRNs with necessary information that would guide them in the implementation of insomnia interventions, and if APRNs receive adequate training, they can also teach other healthcare providers what they have learned (Fagerström, 2017).

Conclusion

Insomnia is the most common sleep disorder worldwide. The disorder is particularly common in older adults resulting from multiple causes such as changes in sleep patterns, medication that can lead to lack of sleep, and the co-existence of other sleep disorders. Despite the high prevalence of insomnia symptoms among older adults in primary care, knowledge on the diagnosis and management of the condition remains low among healthcare providers. The quality improvement project will contribute to educate healthcare providers about diagnosis and management insomnia in older adults.

Results obtained from literature review have demonstrated there is significant gap in knowledge for the diagnosis and management of insomnia in older adults. Through the implementation of this educational intervention project, there is an expectation to improve this knowledge and improve the quality of care in the organization. The summary of the literature on the topic points to high levels of insomnia and poor outcomes among older adults. Advanced practice nurses are in a perfect position to improve patient outcomes, yet there are still gaps in knowledge among healthcare providers concerning the diagnosis and management of insomnia in older adults. It is expected that the implementation of this quality improvement project will lead to increased knowledge among healthcare providers on insomnia diagnosis and management in primary care. The implications of such an increase in knowledge on patients include improved outcomes, increased engagement in their care, and improved adherence to therapeutic regimens. There are also potential implications for advanced nursing practice, including improved competence and improved control of nursing-sensitive indicators affecting patient outcomes.

Lewin's Change Theory served as the theoretical foundation for this project. Lewin's process of unfreezing, change, and refreezing fits well with attempting to establish a clinical change in practice. Through this multistep process, the collection of quantitative data allowed for the measurement of knowledge scores before and after an educational intervention and the establishment of sustainability in perpetuating this change in practice.

The results from this study will be disseminated through various professional channels identified as being receptive to the implications from these results. Increased provider knowledge can only benefit patients, especially as further quality improvement projects are undertaken to advance the understanding reached with this project. By integrating evidence-based change into

clinical practice, healthcare providers, educators, and leaders will be able to advance care, leading to better outcomes for patients.

By focusing on the impact of online presentation for diagnosis and management of insomnia in older adults, this project provides valuable contribution to address this issue. Potential benefits of this quality improvement project include higher screening rates, improved outcomes for patients, and improved provider's confidence in managing sleep complaints, in primary care. It is hoped that more primary care practices will adopt and implement educational programs as a way of improving provider knowledge and improving the outcomes for older adults with insomnia. This quality improvement project provides compelling evidence that supports educational interventions as effective in improving provider knowledge.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Author.
- Avidan, A. Y., & Neubauer, D. M. (2017). Chronic insomnia disorder. *CONTINUUM: Lifelong Learning in Neurology*, 23(4), 1064-1092.
<https://doi.org/10.1212/01.con.0000522244.13784.bf>
- Bärnighausen, T., Tugwell, P., Røttingen, J., Shemilt, I., Rockers, P., Geldsetzer, P., Lavis, J., Grimshaw, J., Daniels, K., Brown, A., Bor, J., Tanner, J., Rashidian, A., Barreto, M., Vollmer, S., & Atun, R. (2017). Quasi-experimental study designs series—Paper 4: Uses and value. *Journal of Clinical Epidemiology*, 89(12), 21-29.
<https://doi.org/10.1016/j.jclinepi.2017.03.012>
- Batterton, K. A., & Hale, K. N. (2017). The Likert scale what it is and how to use it. *Phalanx* 50(2), 32-39. <https://www.jstor.org/stable/26296382>
- Burnes, B. (2020). The origins of Lewin's three-step model of change. *The Journal of Applied Behavioral Science*, 56(1), 32-59. <https://doi.org/10.1177/0021886319892685>
- Cunningham, J. E. A., & Shapiro, C. M. (2018). Cognitive behavioral therapy for insomnia: A systematic review. *Journal of Psychosomatic Research*, 106, 1-12.
<https://doi.org/10.1016/j.jpsychores.2017.12.012>
- Cummings, S., Bridgman, T., & Brown, K. G. (2016). Unfreezing change as three steps: Rethinking Kurt Lewin's legacy for change management. *Human Relations*, 69(1), 33-60.
<https://doi.org/10.1177/0018726715577707>
- Cusack, L., Del Mar, C. B., Chalmers, I., Gibson, E., & Hoffmann, T. C. (2018). Educational interventions to improve people's understanding of key concepts in assessing the effects

- of health interventions: a systematic review. *Systematic Reviews*, 7(1), 68-85.
<https://doi.org/10.1186/s13643-016-0213-9>
- Deborah, O. K. (2018). Lewin's theory of change: Applicability of its principles in a contemporary organization. *Journal of Strategic Management*, 2(5), 1-12.
<https://stratfordjournals.org/journals/index.php/journal-of-strategic-management/article/view/229>
- Dols, J. D., Hernandez, C., & Miles, H. (2017). The DNP project: Quandaries for nursing scholars. *Nursing Outlook*, 65(1), 84-93. <https://doi.org/10.1016/j.outlook.2016.07.009>
- Dragioti, E., Bernfort, L., Larsson, B., Gerdle, B., & Levin, L. A. (2018). Association of insomnia severity with well-being, quality of life and health care costs: A cross-sectional study in older adults with chronic pain (PainS65+). *European Journal of Pain*, 22(2), 414-425. <https://doi.org/10.1002/ejp.1130>
- Evans, T. R. (2020). Improving evidence quality for organizational change management through open science. *Journal of Organizational Change Management*, 33(2), 367-378.
<https://doi.org/10.1108/JOCM-05-2019-0127>
- Fagerström, L. (2012). The impact of advanced practice nursing in healthcare: recipe for developing countries. *Annals of Neurosciences*, 19(1), 1-2.
<https://doi.org/10.5214/ans.0972.7531.180401>
- Flannelly, K. J., Flannelly, L. T., & Jankowski, K. R. B. (2018). Threats to the internal validity of experimental and quasi-experimental research in healthcare. *Journal of Health Care Chaplaincy*, 24(3), 107-130. <https://doi.org/10.1080/08854726.2017.1421019>

Grandner, M. A., & Chakravorty, S. (2017). Insomnia in primary care: Misreported, mishandled, and just plain missed. *Journal of Clinical Sleep Medicine, 13*(8), 937-939.

<https://doi.org/10.5664/jcsm.6688>

Guo, B., & Yuan, Y. (2015). A comparative review of methods for comparing means using partially paired data. *Statistical Methods in Medical Research, 26*(3), 1323-1340.

<https://doi.org.10.1177/0962280215577111>

Helvig, A., Wade, S., & Hunter-Eades, L. (2016). Rest and the associated benefits in restorative sleep: A concept analysis. *Journal of Advanced Nursing, 72*(1), 62-72.

<https://doi.org/10.1111/jan.12807>

Hussain, S. T., Lei, S., Akram, T., Haider, M. J., Hussain, S. H., & Ali, M. (2018). Kurt Lewin's change model: A critical review of the role of leadership and employee involvement in organizational change. *Journal of Innovation & Knowledge, 3*(3), 123-127.

<https://doi.org/10.1016/j.jik.2016.07.002>

Jansson-Fröjmark, M., & Norell-Clarke, A. (2016). Cognitive behavioral therapy for insomnia in psychiatric disorders. *Current Sleep Medicine Reports, 2*(4), 233-240.

<https://doi.org/10.1007/s40675-016-0055-y>

Javaheri, S., & Redline, S. (2017). Insomnia and risk of cardiovascular disease. *CHEST, 152*(2),

435-444. <https://doi.org/10.1016/j.chest.2017.01.026>

Kamper, S. J. (2019). Generalizability: Linking evidence to practice. *Journal of Orthopaedic & Sports Physical Therapy, 50*(1), 45-64.

<https://www.jospt.org/doi/10.2519/jospt.2020.0701>

Kim, H. S. (2012). The role of theory in clinical nursing practice. *KliniskSygepleje*, 26(2), 16-29.

https://www.idunn.no/klinisk_sygepleje/2012/02/the_role_of_theory_in_clinical_nursing_practice

Kim, Y., & Steiner, P. (2016). Quasi-experimental designs for casual inference. *Educational*

Psychology, 51(3-4), 395-405. <https://doi.org/10.1080/00461520.2016.1207177>

Kloda, L. A., Boruff, J. T., & Cavalcante, A. S. (2020). A comparison of patient, intervention, comparison, outcome (PICO) to a new, alternative clinical question framework for search

skills, search results, and self-efficacy: A randomized controlled trial. *Journal of the*

Medical Library Association, 108(2), 185-197. <https://doi.org/10.5195/jmla.2020.739>

Koffel, E., Amundson, E., Polusny, G., & Wisdom, J. P. (2019). “You’re missing out on

something great”: Patient and provider perspectives on increasing the use of cognitive

behavioral therapy for insomnia. *Behavioral Sleep Medicine*, 18(3).

<https://doi.org/10.1080/15402002.2019.1591958>

Koffel, E., & Hagedorn, H. (2020). Provider perspectives of implementation of an evidence-

based insomnia treatment in Veterans Affairs (VA) primary care: Barriers, existing

strategies, and future directions. *Implementation Science*, 1, 107-118.

<https://doi.org/10.1186/s43058-020-00096-4>

Lam, S., & Macina, L. O. (2017). Therapy update for insomnia in the elderly. *The Consultant*

Pharmacist, 32(10), 610-622. <https://doi.org/10.4140/TCP.n.2017.610>

[Li, S., Jeffs, K., Barwick, M., & Stevens, B. \(2018\). Organizational contextual features that](#)

[influence the implementation of evidence-based practices across healthcare settings: A](#)

[systematic integrative review. *Systematic Reviews*, 7, 72-81.](#)

<https://doi.org/10.1186/s13643-018-0734-5>

Martens, A., & Vanhoucke, M. (2017). A buffer control method for top-down project control.

European Journal of Operational Research, 262(1), 274-286.

<https://doi.org/10.1016/j.ejor.2017.03.034>

Matheson, E., & Hainer, B. L. (2017). Insomnia: Pharmacologic therapy. *American Family*

Physician, 96(1), 29-35. <https://www.aafp.org/afp/2017/0701/afp20170701p29.pdf>

McCrae, C. S., Curtis, A. F., Williams, J. M., Dautovich, N. D., McNamara, J. P. H., Stripling,

A., Dzierzewski, J. M., Chan, W. S., Berry, R. B., McCoy, K. J. M., & Marsiske, M.

(2018). Efficacy of brief behavioral treatment for insomnia in older adults: Examination of sleep, mood, and cognitive outcomes. *Sleep Medicine*, 51, 153-166.

<https://doi.org/10.1016/j.sleep.2018.05.018>

Mindell, J. A., & Owens, J. A. (2015). *A clinical guide to pediatric sleep: Diagnosis and*

management of sleep problems. Lippincott Williams & Wilkins.

Miner, B., Gill, T. M., Yaggi, H. K., Redeker, N. S., Van Ness, P. H., Han, L., & Fragoso, C. A.

V. (2018). Insomnia in community-living persons with advanced age. *Journal of the*

American Geriatrics Society, 66(8), 1592-1597. <https://doi.org/10.1111/jgs.15414>

Moghei, M., Oh, P., Chessex, C., & Grace, S. L. (2019). Cardiac rehabilitation quality

improvement. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 39(4), 226-

234. <https://doi.org/10.1097/hcr.0000000000000396>

Neubauer, D. N., Pandi-Perumal, S. R., Spence, D. W., Buttoo, K., & Monti, J. M. (2018).

Pharmacotherapy of insomnia. *Journal of Central Nervous System Disease*, 10, 210-218.

<https://doi.org/10.1177/1179573518770672>

Nguyen, V., George, T., & Brewster, G. S. (2019). Insomnia in older adults. *Current Geriatrics*

Reports, 8(4), 271-290. <https://doi.org/10.1007/s13670-019-00300-x>

- Nkwake, A. M., & Morrow, N. (2016). Clarifying concepts and categories of assumptions for use in evaluation. *Evaluation and Program Planning*, *59*, 97-101.
<https://doi.org/10.1016/j.evalprogplan.2016.05.014>
- Oh, C. M., Kim, H. Y., Na, H. K., Cho, K. H., & Chu, M. K. (2019). The effect of anxiety and depression on sleep quality of individuals with high risk for insomnia: A population-based study. *Frontiers in Neurology*, *10*, 849. <http://doi.org/10.3389/fneur.2019.00849>
- Olfson, M., Wall, M., Liu, S., Morin, C. M., & Blanco, C. (2018). Insomnia and impaired quality of life in the United States. *Journal of Clinical Psychiatry*, *79*(5), 17m12020.
<https://doi.org/10.4088/jcp.17m12020>
- Parsons, E. C., Mattox, E. A., Beste, L. A., Au, D. H., Young, B. A., Chang, M. F., & Palen, B. N. (2017). Development of a sleep telementorship program for rural department of veteran's affairs primary care providers: Sleep veterans' affairs extension for community healthcare outcomes. *Annals of the American Thoracic Society*, *14*(2), 267-274.
<https://doi.org/10.1513/AnnalsATS.201605-361BC>
- Patel, D., Steinberg, J., & Patel, P. (2018). Insomnia in the elderly: A review. *Journal of Clinical Sleep Medicine*, *14*(6), 1017-1024. <https://doi.org/10.5664/jcsm.7172>
- Perach, R., Allen, C. K., Kapantai, I., Madrid-Valero, J. J., Miles, E., Charlton, R. A., & Gregory, A. M. (2019). The psychological wellbeing outcomes of nonpharmacological interventions for older persons with insomnia symptoms: A systematic review and meta-analysis. *Sleep Medicine Reviews*, *43*, 1-13. <https://doi.org/10.1016/j.smrv.2018.09.003>
- Peterson, S. J., & Bredow, T. S. (2019). *Middle range theories: Application to nursing research and practice*. Wolters Kluwer Health.

- Picarillo, A. P. (2018). Introduction to quality improvement tools for the clinician. *Journal of Perinatology*, 38(7), 929-935. <https://doi.org/10.1038/s41372-018-0100-4>
- Qaseem, A., Kansagara, D., Forcica, M. A., Cooke, M., & Denberg, T. D. (2016). Management of chronic insomnia disorder in adults: A clinical practice guideline from the American College of Physicians. *Annals of Internal Medicine*, 165(2), 125-33. <https://doi.org/10.7326/M15-2175>
- Raglan, G. B., Swanson, L. M., & Arnedt, J. T. (2019). Cognitive behavioral therapy for insomnia in patients with medical and psychiatric comorbidities. *Sleep Medicine Clinics*, 14(2), 167-175. <https://doi.org/10.1016/j.jsmc.2019.01.001>
- Reynolds, M. E., & Cone, P. H. (2018). Managing adult insomnia confidently. *The Journal for Nurse Practitioners*, 14(10), 718-724. <https://doi.org/10.1016/j.nurpra.2018.08.019>
- Reynolds, S. A., & Ebben, M. R. (2017). The cost of insomnia and the benefit of increased access to evidence-based treatment: Cognitive behavioral therapy for insomnia. *Sleep Medicine Clinics*, 12(1), 39-46. <https://doi.org/10.1016/j.jsmc.2016.10.011>
- Roach, M., Juday, T., Tuly, R., Chou, J. W., Jena, A. B., & Doghramji, P. P. (2020). Challenges and opportunities in insomnia Disorder. *International Journal of Neuroscience*, 1-12. <https://doi.org/10.1080/00207454.2020.1773460>
- Ruck, K., & Ruck, K. (2015). *Exploring internal communication: Towards informed employee voice* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315255620>
- Sake, F. T. N., Wong, K., Bartlett, D. J., & Saini, B. (2019). Insomnia management in the Australian primary care setting. *Behavioral Sleep Medicine*, 17(1), 19-30. <https://doi.org/10.1080/15402002.2016.1266491>

- Saleem, S., Sehar, S., Afzal, M., Jamil, A., & Gilani, S. A. (2019). Accreditation: Application of Kurt Lewin's theory on private health care organizational change. *Saudi Journal of Nursing and Health Care* 2(12). <https://doi.org/10.36348/sjnhc.2019.v02i12.003>
- Sandlund, C., Hetta, J., Nilsson, G. H., Eksted, M., & Westman, J. (2017). Improving insomnia in primary care patients: A randomized controlled trial of nurse-led group treatment. *International Journal of Nursing Studies*, 72, 30-41. <https://doi.org/10.1016/j.ijnurstu.2017.03.007>
- Sany, S. N. T., Peyman, N., Behzad, F., Esmaily, H., Taghipoor, A., & Ferns, G. (2017). Health providers' communication skills training affects hypertension outcomes. *Medical Teacher*, 40(2), 154-163. <https://doi.org/10.1080/0142159X.2017.1395002>
- Sarver, W., & McNett, M. (2020). Determining the dissemination plan: Internal and external considerations. *Data for Nurses*, 20, 101-110. <https://doi.org/10.1016/B978-0-12-816543-0.00007-8>
- Sateia, M. J., Buysse, D. J., Krystal, A. D., Neubauer, D. N., & Heald, J. L. (2017). Clinical practice guideline for the pharmacologic treatment of chronic insomnia in adults: An American Academy of Sleep Medicine clinical practice guideline. *Journal of Clinical Sleep Medicine*, 13(2), 307-349. <http://doi.org/10.5664/jcsm.6470>
- Scogin, F., Lichstein, K., DiNapoli, E. A., Woosley, J., Thomas, S. J., LaRocca, M. A., Byers, D., Mieskowski, L., Parker, C.H., Yang, X., Parton, J., McFadden, A., & Geyer, J.D. (2018). Effects of integrated telehealth-delivered cognitive-behavioral therapy for depression and insomnia in rural older adults. *Journal of Psychotherapy Integration*, 28(3), 292-297. <https://doi.org/10.1037/int0000121>

- Song, M., & Kong, E. H. (2015). Older adults' definitions of health: A metasynthesis. *International Journal of Nursing Studies*, 52(6), 1097-1106.
<https://doi.org/10.1016/j.ijnurstu.2015.02.001>
- Stanford, D., Ling, C., Rodney, T., & Shattell, M. (2020). Mental illness misdiagnosed: Increasing awareness of obscure physical illnesses. *Journal of Psychosocial Nursing and Mental Health Services*, 58(10), 2-3. <https://doi.org/10.3928/02793695-20200814-02>
- Stone, K. L., & Xiao, Q. (2018). Impact of poor sleep on physical and mental health in older women. *Sleep Medicine Clinics*, 13(3), 457-465C.<http://doi.org/10.1016/j.jsmc.2018.04.012>
- Sun, J., McPhillips, M. V., Chen, K., Zang, Y., Lin, J., Oehlke, J., Brewster, G. S., & Gooneratne, N. S. (2021). Primary care provider evaluation and management of insomnia. *Journal of Clinical Sleep Medicine*, 1-12. Advance online publication.
<https://doi.org/10.5664/jcsm.9154>
- Suzuki, K., Miyamoto, M., & Hirata, K. (2017). Sleep disorders in the elderly: Diagnosis and management. *Journal of General and Family Medicine*, 18(2), 61-71.
<https://doi.org/10.1002/jgf2.27>
- Taddei-Allen, P. (2020). Economic burden and managed care considerations for the treatment of insomnia. *American Journal of Managed Care*, 26(Suppl 1), S91-96.
<https://doi.org/10.37765/ajmc.2020.43008>
- Taylor, D. J., Dietch, J. R., Pruiksma, K., Calhoun, C. D., Milanak, M. E., Wardle-Pinkston, S., Rheingold, A. A., Ruggiero, K. J., Bunnell, B. E., & Wilkerson, A. K. (2021). Developing and testing a web-based provider training for cognitive behavioral therapy

for insomnia. *Military Medicine*, 186(Suppl 1), 230-238.

<https://doi.org/10.1093/milmed/usaa359>

Torrens, I., Esteva, M., Vicens, C., Piza-Portell, M. R., Vidal-Thomas, M. C., Vidal-Ribas, C., Lorente-Montalvo, P., & Torres-Solera, E. (2021). Assessing the feasibility and acceptability of a cluster-randomized study of cognitive behavioral therapy for chronic insomnia in a primary care setting. *BMC Family Practice*, 22, 77-90.

<https://doi.org/10.1186/s12875-021-01429-5>

Ulmer, C. S., Bosworth, H. B., Beckham, J. C., Germain, A., Jeffreys, A. S., Edelman, D., Macy, S., Kirby, A., & Voils, C. I. (2017). Veterans Affairs primary care provider perceptions of insomnia treatment. *Journal of Clinical Sleep Medicine*, 13(8), 991-999.

<https://doi.org/10.5664/jcsm.6702>

Warren, J. I., McLaughlin, M., Bardsley, J., Eich, J., Esche, C. A., Kropkowski, L., & Risch, S. (2016). The strengths and challenges of implementing EBP in healthcare systems. *Worldviews on Evidence-Based Nursing*, 13(1), 15-24.

<https://doi.org/10.1111/wvn.12149>

Wickwire, E. M., Tom, S. E., Scharf, S. M., Vadlamani, A., Bulatao, I. G., & Albrecht, J. S. (2019). Untreated insomnia increases all-cause health care utilization and costs among Medicare beneficiaries. *Sleep*, 42(4), zsz007. <https://doi.org/10.1093/sleep/zsz007>

Wojciechowski, E., Pearsall, T., Murphy, P., & French, E. (2016). A case review: Integrating Lewin's theory with lean's system approach for change. *Online Journal of Issues in Nursing*, 21(2). <https://doi.org/10.3912/OJIN.Vol21No02Man04>

Zaki, N. F. W., Marzouk, R., Osman, I., Alamah, H. Y., Zaied, W. S., & Haggag, A. (2016). Sleep medicine knowledge among medical students in seven Egyptian medical faculties.

Journal of Sleep Disorder and Therapy, 5(2), 239-248. <https://doi.org/10.4172/2167-0277.1000239>

Zozula, R., Bodow, M., Yacilla, D., Cody, R., & Rosen, R. C. (2001). Development of a brief, self-administered instrument for assessing sleep knowledge in medical education: “The ASKME Survey.” *Sleep*, 24(2), 227-233. <https://doi.org/10.1093/sleep/24.2.227>

Appendix A: Literature Summary Matrix

Author/Year	Study Purpose	Methodology/ Design	Setting/ Sample/Sources	Results/Findings	Limitations	Level of Evidence/ Quality
Lam & Macina (2017)	To provide an update on insomnia in older adults and treatment options	<p>Systematic review</p> <p>Search terms: "insomnia" AND "older adult"</p> <p>Included guidelines, reviews, drug databases, and manufacturer package inserts</p>	Searches conducted on PubMed	<p>Therapeutic strategies should integrate sleep hygiene counseling and excluding possible drugs that aggravate insomnia.</p> <p>Non-pharmacologic methods are preferred before initiating drug therapy.</p> <p>Older adults have shown to develop an increased sensitivity to benzodiazepines as well as a lessened metabolism of long-acting agents. Older adults who use benzos develop an increased risk of cognitive impairment, delirium, falls, fractures, and motor vehicle crashes.</p>	Literature search process was not well documented	Level III Good Quality
Miner et al. (2018)	To provide an evaluation of the epidemiology of insomnia in older adults.	Cross-sectional design.	A total of 379 older adults living in the community as identified under the Yale Precipitating Events Project participants.	<p>Patients with insomnia were more likely to have depressive symptoms, cardiovascular disease, and cognitive decline. Mortality rates were higher among identified patients with insomnia compared</p>	<p>Cross-sectional study only provides a snapshot of the population at a point in time.</p> <p>Lack of generalizability due to small sample size.</p>	Level II High Quality

				with those who did not have the condition.		
Nguyen et al. (2019)	To provide a guide for healthcare providers on factors to consider when assessing and managing insomnia in older adults	<p>Systematic review</p> <p>Search terms: "insomnia" AND "older adult"</p> <p>Excluded literature reviews and clinical guideline reviews</p>	<p>Searches conducted on PubMed</p> <p>Limiter: aged 65+</p> <p>48 articles were included</p>	<p>Healthcare providers should integrate insomnia-screening questionnaire into baseline and ongoing annual assessment forms</p> <p>Healthcare providers should ask about risk factors for insomnia</p> <p>Behavioral interventions like CBTi and BBTi should be the first-line for managing insomnia</p> <p>- Many PCPs are unfamiliar with implementing behavioral interventions</p> <p>PCPs can collaborate with behavioral and sleep medicine providers or refer patients to sleep medicine specialists</p> <p>Primary care providers can also complete specialized training courses with continuing education credits</p>	Some of the included studies were only of fair quality and not good quality	Level II High Quality

				<p>Healthcare providers should provide education to patients on behavioral therapy and other non-pharmacological therapies</p> <p>Healthcare providers should review sleep medication and de-prescribe to reduce side effects.</p> <p>Healthcare providers should make assessments at baseline visits and preventive visits to provide early interventions</p>		
Parsons et al. (2017)	To determine the feasibility of an educational program named VA-ECHO for PCPs on sleep medicine	<p>Longitudinal survey</p> <p>Participants completed surveys via email</p>	<p>Setting: Northwest VA Health Network which includes eight healthcare systems and 50 community clinics</p> <p>Sample: 39 PCPs</p>	<p>Participation in the program led to an improvement in the PCPs comfort managing sleep complaints</p> <p>PCPs that attended zero or two sessions reported a lack of protected time and scheduling conflicts as the main barriers to participation</p> <p>Participants experienced an increase in clinical competence</p>	<p>Program was conducted within an integrated, single-payer healthcare network which limits the generalizability</p> <p>Small sample size</p>	Level II High Quality

Patel et al. (2018)	To summarize recent diagnostic guidelines and both non-pharmacological and pharmacological strategies for the management of insomnia in older adults	Systematic review Topics of focus included: epidemiology, definition, and age-related changes in sleep, factors contributing to late-life insomnia, and scales utilized for the assessment of insomnia in older people	Focused on older adults	<p>Insomnia is usually caused by predisposing factors, precipitating factors, and perpetuating factors</p> <p>Self-reported complaints of insomnia rates were lower in older adults which highlights the importance of approaching any complaint of insomnia in the older population with more vigilance</p> <p>Evaluation of insomnia symptoms present challenges as they may occur as a primary disorder or result from other co-morbid condition</p> <p>Clinicians should be educated on how to evaluate the nature, frequency, evolution, and duration of symptoms, as well as the response to treatment</p> <p>Sleep diaries and questionnaires can be used to achieve a thorough assessment of insomnia</p>	- Literature search process was not well documented	Level III Good Quality
---------------------	--	---	-------------------------	---	---	------------------------

				<p>Behavioral and environmental factors, such as the use of electronic devices before going to bed and bedroom temperature should also be addressed</p> <p>Modalities that can be used by healthcare providers to evaluate insomnia include: wrist activity, polysomnography, insomnia rating scales, and imaging studies</p> <p>Treatment can be either pharmacological or non-pharmacological</p>		
Qaseem et al. (2016)	Guidelines for healthcare providers for the management of insomnia.	Clinical guideline Associated organization: American College of Physicians Peer-reviewed	Focused on the management of insomnia Targets all clinicians	<p>All patients with chronic insomnia should have Cognitive Behavioral therapy as part of the initial treatment plan</p> <p>A shared decision-making approach should be engaged by clinicians in deciding whether pharmacotherapy should be started in those patients who did not respond to CBT- For older adults, CBT</p>	<p>Small sample sizes in the included RCTs which were also of short duration</p> <p>Large placebo response was also observed for pharmacologic treatment</p>	Level IV High Quality

				<p>improves Insomnia Severity Index (ISI) and Pittsburgh Sleep Quality Index (PSQI) scores compared with controls</p> <p>Health care providers can use behavioral therapy or BBT to improve sleep onset latency, wake after sleep onset, sleep efficiency, and sleep quality in elderly</p>		
Sake et al. (2019)	To explore the diagnosis and treatment of insomnia in general practice	<p>Cross-sectional survey</p> <p>Used a semi-structured interview guide to collect data</p>	<p>Setting: Sydney metropolitan area in New South Wales</p> <p>Sample: 24 general practitioners</p>	<p>Diagnosis and management of insomnia are not a key priority for general practitioners (83%)</p> <p>There is a lack of clear treatment guidelines for insomnia in practice</p> <p>There is a gap between current recommendations and practice with regards to insomnia management</p> <p>None of the participants provided behavioral therapy</p> <p>Up-skilling health professionals to provide behavioral</p>	<p>Small sample size</p> <p>Possibility for biased results due to the self-reporting nature of the study</p> <p>Interview bias may influence interviewer tactics for probing issues</p>	Level II High Quality

				<p>interventions for insomnia can help improve the quality of life of patients</p> <p>Subjects recommended the creation of public awareness as a precursor to better recognition of insomnia in practice</p>		
Sateia et al. (2017)	Guidelines for the evaluation and treatment of chronic insomnia in adults	Clinical guideline Associated organization: American Academy of Sleep Medicine	Focused on the pharmacological treatment of insomnia Targets all clinicians	<p>Pharmacological treatment when used, should be accompanied by cognitive-behavioral therapies whenever possible</p> <p>CBT is recommended as first-line treatment - Pharmacological treatment, including over-the-counter sleep aids and alcohol, is the most extensively used treatment for insomnia</p> <p>Healthcare providers are concerned about the use of medication due to worries about safety and dependency</p> <p>Other areas of concern are decreased awareness and availability of alternative treatments</p>	Limitations of data reporting on some variables such as the use of non-prescription agents and some sleep variables	Level II High Quality

				<p>Data supporting the use of sedating antidepressants in the treatment of insomnia are scant</p> <p>Recommendations are provided to guide healthcare providers on the use of various drugs for insomnia management</p> <p>For several drugs, there is insufficient evidence available to draw on in defining whether or not a compound is efficacious</p>		
Taylor et al. (2021)	To evaluate the use of online education versus in-person workshops to increase primary care provider knowledge of insomnia.	Quasi-experimental design with pre-/post-intervention measures.	<p>A total of 44 PCPs were involved with the program including 21 in the online training group and 23 in the in-person workshop.</p> <p>Participants drawn from multiple rural general practice sites.</p>	<p>Results from both groups indicated a combined increase in knowledge scores from a baseline of 69% to 92% following training</p>	<p>Small sample size limiting the generalizability of the findings.</p> <p>Rural practices utilized limiting generalizability.</p>	Level II High Quality
Torrens et al. (2018)	The purpose of this study was to evaluate staff training to implement CBT-I for the treatment of insomnia in primary care.	Randomized controlled trial.	<p>A total of 25 primary care providers were randomly assigned to an education or care as usual group.</p> <p>Following education, 32 patients were randomized to either</p>	<p>Following the intervention the patient group treated by providers that had been trained experienced a statistically significant reduction in Pittsburgh Sleep Quality Index</p>	<p>Small sample limits the generalizability of the findings.</p> <p>Sample selected from a single sample site.</p>	Level I High Quality

	The primary outcome sought through this research was outcomes for patients as measured through the Pittsburgh Sleep Quality Index.		the education or care as usual provider group. Care was provided for a total of three months to patients.	scores, indicating better sleep. Torrens et al. also report that in the education group, patients had a higher rate of medication discontinuation for the treatment of insomnia.		
Ulmer et al. (2017)	To determine the perspectives regarding insomnia treatment practices among PCPs working in the VA healthcare system	Cross-sectional survey Participants completed an online survey	Subjects recruited from primary care clinicians in VA facilities 9 sites Subjects were primary care providers 51 PCPs	15.7% of PCPs had never heard of CBT-I 13.7% reported there was no CBT-I at their facility PCPs perceive sleep hygiene as the most available treatment option and offer education to patients often (contrasts guidance for CBT-I as the first line) PCPs prefer sleep hygiene and medication It is possible that PCPs are unaware of the availability of CBT-I at their facility or are Focused efforts are needed to increase access to CBT-I in primary care settings	Sample was not representative of all PCPs Study conducted within a single region and thus not generalizable to PCPs in other regions Low response rate (13%) Potential non-response bias	Level III High Quality

				<p>PCPs often fail to document insomnia in medical records due to the perception that it is less important than other conditions</p> <p>PCPs should be provided with education about the processes by which insomnia develops to provide good treatment</p> <p>PCPs should be made aware of the updated insomnia diagnostic criteria</p> <p>PCPs should be encouraged to document insomnia in medical records</p> <p>Practice standards should be disseminated that align with empirical evidence</p>		
--	--	--	--	---	--	--

Appendix B: Facility Support Letter

Appendix E Support Letter from the Facility

From: Pablo Alonso
Medical Director at IMC Health
11348 Quail Roost Dr
Miami FL, 33157
(305)-253-1660

Subject: Letter of Acknowledgement of approval for Research Project at an IMC Health Facility for Roberto Carmona

Dear Dr. Gonzalez:

This letter will acknowledge that I have reviewed a request by Roberto Carmona to conduct a research project entitled, "*Online Education to Improve Clinicians' Knowledge of Insomnia in Older Adults*" at IMC Health

When the researcher has received approval for his/her project from the Florida International University Institutional Review Board received approval from the Research Review Committee, and upon presentation of the approval letter to me as site a Medical Director for IMC Health I will agree to allow access for the approved research project. If we have any concerns or need additional information, the project researcher will be contacted

Sincerely,

Dr Pablo Alonso MD

Signature

Date

Appendix C: Recruitment Email/Script**RECRUITMENT EMAIL**

Online Education to Improve Clinicians' Knowledge of Insomnia in Older Adults

(Date)

Re: Online Education to Improve Clinicians' Knowledge of Insomnia in Older Adults

Dear: *(Name)*

I am writing to let you know about an opportunity to participate in a voluntary quality improvement project about educational intervention to improve clinician's knowledge of insomnia in older adults. This project is being conducted by Dr Arturo Gonzalez , primary investigator; Roberto Carmona, DNP student at Florida International University and APRN at IMC Health.

The project targets all healthcare providers at IMC Health.

Participation includes a commitment of about 3 hours over three months. Participation will involve;

- Completion of a demographic quiz
- Completion of a pre-test and post-test questionnaire
- And, participation in a 60-minute training course

A consent form in DocuSign format has been attached to this email that explains the procedures and other details of the quality improvement project.

Once the consent is provided for participation in the study, the demographic and pre-test questionnaire will be delivered to your email.

If you would like additional information about this study, please contact us by replying to this email or by phone at +1 305-915-4565.

Thank you for your consideration, and once again, please do not hesitate to contact us if you are interested in learning more about this project.

Arturo Gonzalez
Principal Investigator
Roberto Carmona
Co-investigator
Florida International University

Appendix D: Informed Consent Form**ADULT ONLINE CONSENT TO PARTICIPATE IN A RESEARCH STUDY**

Online Education to Improve Clinicians' Knowledge of Insomnia in Older Adults

SUMMARY INFORMATION

Things you should know about this study:

- **Purpose:** The purpose of the study is to determine whether an online educational intervention can improve providers' knowledge on the diagnosis and management of insomnia in older adults.
- **Procedures:** If you choose to participate, you will be asked to complete a demographic quiz and pre/post-test questionnaire, and view an educational video.
- **Duration:** This will take about 3 hours of your time over three months.
- **Risks:** The main risk or discomfort from this research is the time spent completing the questionnaire and watching the educational video.
- **Benefits:** The main benefit to you from this research is improved knowledge on the diagnosis and management of insomnia in older adults.
- **Alternatives:** There are no known alternatives available to you other than not taking part in this study.
- **Participation:** Taking part in this research project is voluntary.

Please carefully read the entire document before agreeing to participate.

PURPOSE OF THE STUDY

The purpose of this study is to determine whether an online educational intervention for healthcare providers can improve their knowledge on the diagnosis and management of insomnia in older adults.

NUMBER OF STUDY PARTICIPANTS

If you decide to be in this study, you will be one of 12 people in this research study.

DURATION OF THE STUDY

Your participation will involve 3 hours over the 3 months of the study.

PROCEDURES

If you agree to be in the study, we will ask you to do the following things:

- Complete the pre-test questionnaire
- Complete a demographic quiz - Fill in a form on your demographic information such as gender, age, and ethnicity.
- Complete a pre-test questionnaire - The pre-test questionnaire will include questions regarding past educational interventions and practices with regards to the diagnosis and management of insomnia in older adults. It will also assess your knowledge of the topic.
- Participate in a 60-minute training course - Watch a 60-minute educational video on screening and management of insomnia. The video will be divided into 2 sections that are each 30 minutes long.
- Complete a post-test questionnaire - The post-test questionnaire will contain the same questions as those in the pre-test questionnaire.

RISKS AND/OR DISCOMFORTS

The study has the following possible risk to you: There is a risk of time constraint when participating in the study. The study will require about three hours of your time and this might affect your work schedule. Nonetheless, the likelihood of this is low since most of the study will be conducted online and can be done at your convenience.

BENEFITS

The study has the following possible benefits to you: It will improve your knowledge on the screening and management of obesity in older adults. The benefits to society include early diagnosis and better outcomes for patients with insomnia which would significantly improve the quality of life of the patients.

ALTERNATIVES

There are no known alternatives available to you other than not taking part in this study. Any significant new findings developed during the course of the research which may relate to your willingness to continue participation will be provided to you.

CONFIDENTIALITY

The records of this study will be kept private and will be protected to the fullest extent provided by law. In any sort of report, we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely and only the researcher team will have access to the records. However, your records may be inspected by authorized University or other agents who will also keep the information confidential.

USE OF YOUR INFORMATION

- Your information collected as part of the research will not be used or distributed for future research studies even if identifiers are removed.

COMPENSATION & COSTS

You will not be compensated for participating in this study. There are no costs to you for participating in this study.

RIGHT TO DECLINE OR WITHDRAW

Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. You will not lose any benefits if you decide not to participate or if you quit the study early. The investigator reserves the right to remove you without your consent at such time that he/she feels it is in the best interest.

RESEARCHER CONTACT INFORMATION

If you have any questions about the purpose, procedures, or any other issues relating to this research study you may contact Roberto Carmona, ARNP at Miami, FL, by phone at +1 305-915-4565, or by email at robertocar1977@gmail.com

IRB CONTACT INFORMATION

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to participate in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. I understand that I will be given a copy of this form for my records. By clicking on the “consent to participate” button below I am providing my informed consent.

(Insert Consent to Participate Button Here on the Website)

Appendix E: Demographic Form

Gender:

- Male
- Female

Age:

Ethnicity: Hispanic

- African American
- Caucasian
- Asian
- Other Position/Profession :

CHARACTERIZATION

How many training programs on insomnia have you attended in the past three years?

- None
- 1
- 2
- 3
- More than 3
- I don't know how many trainings I attended in the last 3 years. If attended at least 1 insomnia training program, what proportion of the programs covered insomnia in older adults? None
- 1
- 2
- 3
- More than 3
- I don't know how many trainings I attended in the last three years

Appendix F: Modified ASKME Survey

For the following statements, please choose strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), or Strongly Disagree (SD).

Statement	SA	A	U	D	SD
I know how to detect sleeping problems among older adults.					
I often follow a proper standardized diagnostic routine when diagnosing sleeping problems.					
I know the proper management strategies for sleeping problems in older adults.					
I am confident in my ability to diagnose insomnia in older adults.					
I regularly conduct insomnia screening among older adults.					
The report of insomnia is twice as common in older men than in older women.					
The ability to sleep increases in persons above 50 years of age					
Antihypertensive drugs (e.g., beta-blockers) may cause sleeping difficulties as a side effect.					
Early morning awakenings in the elderly are often associated with changes in the timing of their biological rhythms					
Underlying causes of insomnia include alcohol, noise, and depression.					
Common symptoms for insomnia include finding it hard to fall asleep, irritability, and difficulties concentrating.					
Adults need an average of 7 to 9 hours of sleep daily.					
Imaging studies can be used to diagnose insomnia.					
Sleeping longer on weekends is recommended as a regular practice to make up for loss of sleep during the workweek.					
Daytime napping is recommended for patients with difficulty initiating sleep.					
Slow-wave sleep is enhanced following daytime exercise.					

Difficulties sleeping can be avoided by avoiding smoking or drinking alcohol, tea or coffee at least 6 hours before bedtime.					
Over-the-counter sleeping medication can get rid of insomnia.					
Bright light therapy can be used to advance or delay sleep.					
Surgical referral may be indicated to correct some underlying medical conditions that cause insomnia, such as for palate surgery.					
A sleep journal kept for 2 weeks can help determine the extent of sleep disturbance					
Cognitive behavioral therapy (CBT) is efficacious for short-term treatment of insomnia					

Appendix G: IRB Approval Letter



Office of Research Integrity
Research Compliance, MARC 414

Dr. Arturo Gonzalez
Roberto Carmona

W

June 3, 2021

"Online Education to Improve Clinician's Knowledge of Insomnia in Older Adults: A Quality Improvement Project"

The Institutional Review Board of Florida International University has your study for the use of human subjects via the process. Your study was found to be in compliance with this institution's Federal Wide Assurance (00000060).

IRB-21-0200

06/02/21

IRB Expiration Date: 06/02/24

As a requirement of IRB Approval you are required to:

Submit an IRB Amendment Form for all proposed

Receive annual review and re-approval of your study prior to your IRB expiration date.

Submit the IRB Renewal Form at least 30 days in advance of the study's expiration date.
or discontinued.

HIPAA Privacy Rule:

Special Conditions: N/A

For further information, you may visit the IRB website at <http://research.fiu.edu/irb>