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CBT-I Training For the Mental Health Clinician to Deliver Evidence-Based Treatment to Address Impaired Sleep Quality in a Correctional Facility

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Project Committee

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Abstract

Description of the Problem: Insomnia significantly impacts mental and physical well-being, with long-term health effects and considerable healthcare costs. While pharmacological treatments offer temporary relief for some, they do not always provide lasting solutions.

Available Knowledge: A PRISMA-guided literature review found that training programs for cognitive-behavioral therapy for insomnia (CBT-I) are effective in increasing knowledge and confidence for addressing impaired sleep.

Aim and Objectives: This project aimed to enhance mental health clinicians' ability to assess and treat impaired sleep, focusing on implementing a tailored CBT-I educational initiative in a correctional facility.

Intervention: This project implemented evidence-based CBT-I training for mental health clinicians at a Boston correctional facility to address sleep issues among incarcerated adults. Pre-assessments and final surveys gauged clinicians' confidence and knowledge in CBT-I, while bi-weekly huddles gathered feedback on training effectiveness.

Evaluation of Intervention: The output measures included data from frequency and proportion of mental health clinicians who participated in a face-to-face training, who participated in bi-weekly huddles, who showed an increase in knowledge and confidence and survey results completed by the mental health clinicians about feasibility, applicability, and value added.

Results: The project ran from August 2023 to March 2024. Initially, all eight clinicians began training, but only five remained. Bi-weekly feedback huddles had participation rates ranging from 50% to 88%. Although 63% reported increased knowledge and confidence, it did not meet the 85% target. Participants had varied perceptions of the initiative's value, feasibility, and applicability, indicating mixed feedback.

Discussion: This project aimed to enhance mental health clinicians' skills in addressing impaired sleep among incarcerated individuals through a tailored CBT-I program. Clinicians reported increased knowledge and confidence over weeks 4, 8, and 12. Feedback indicated that 73% found the project valuable, 60% found it feasible, and 53% saw its relevance in correctional settings, with no negative responses. The project supports the use of Orem's theory when considering non-pharmacological interventions in correctional sleep care, demonstrating CBT's effectiveness in managing sleep issues.

CBT-I Training for the Mental Health Clinician to Deliver Evidence-Based Treatment to Address Impaired Sleep Quality in a Correctional Facility

Introduction

Description of the Problem

According to the Centers for Disease Control and Prevention (CDC, 2020), insomnia can effect an individual's mental and physical functioning and can impact long-term health effects. Insomnia is typically characterized by difficulty in initiation of sleep and maintaining sleep, resulting in daytime sleepiness (Sateia et al., 2017). Insomnia frequently is a complaint with individuals who have co-existing medical or mental health conditions (Townsend et al., 2017). Impairments to judgement, cognition and decreased overall functioning can lead to psychiatric, cerebro-cardiovascular, and/or metabolic diseases making insomnia a major healthcare problem (Garbarino et al., 2017). According to Colton et al. (2006), the economic costs of impaired sleep have been estimated to be about $107 billion. Increased sleep difficulty is associated with lower socio-economic status and long work hours but was not reported to be associated with race (Grandner et al., 2010).

Although cognitive-behavioral therapy (CBT) is the first-line treatment for insomnia, pharmacological treatment is widely used and estimated to be used among about 50% of Americans (Leger et al., 2008). Pharmacological treatments usually provide only temporary relief of sleep disturbances for some individuals and that relief will often diminish after drug discontinuation (Black, 2015). Non-pharmacological interventions such as cognitive-behavioral therapy (CBT), mindfulness techniques, and sleep hygiene education are some additional approaches to help treat insomnia (Tan et al., 2012).

Incarcerated individuals susceptible to an elevated risk of insomnia as the environment can have a negative impact on sleep (Sheppard & Logan, 2022). Some studies showed that insomnia in prisons were more likely a primary problem and some sleep issues began in prison or worsened by being in prison and the prison's environmental factors (Sheppard & Logan, 2022).

Local Problem

In Boston, there is a correctional facility that houses adult incarcerated individuals who are awaiting trial or are committed with a sentence of up to 2.5 years where addressing impaired sleep among incarcerated individuals can be challenging for the mental health clinician. In the correctional facility, incarcerated individual's normal sleep-wake patterning may be affected through interruption of their usual daily routines, environmental factors such as extreme hot or cold temperatures, over/under exposure to light, excessive noises, forced contact with others, fear of violence, and lack of control or autonomy (Dewa et al., 2015). According to Sheppard & Logan (2022), a systematic review identified 12 cross-sectional studies reporting on prevalence found that impaired sleep quality using self-report measures among adult incarcerated individuals to be variable.

Despite non-drug interventions that have been found to be effective in treating insomnia in the community, there appears to be a focus towards prescribing medication as first line treatment in prison (Dewa et al., 2015). In the past, approximately 4 out of 10 or 40% of initial psychiatric referrals in this correctional facility have been primarily due to impaired sleep. When these individuals are evaluated and questioned about strategies they have used to improve sleep, they typically indicate they have not been instructed in non-pharmacological methods or express a preference for medication. about Currently, at this Boston correctional facility, the only formal

intervention that is utilized to address impaired sleep is providing sleep hygiene packets that has suggestions such as eliminating electronic use before bedtime, decreasing, or eliminating caffeine after a certain time during the day, adding more physical exercise during the day and establishing a bedtime routine. If the individual has tried to implement these practices without success and continues to experience sleep disturbances, the mental health clinician will meet with the individual and will refer them for a psychiatric medication evaluation. Although a sleep hygiene packet mentions CBT briefly, CBT is underutilized in this Boston correctional facility to address impaired sleep quality.

Available Knowledge

A PRISMA-guided review of the literature (Appendix A) was undertaken to explore and examine if training programs for cognitive-behavioral therapy for insomnia (CBT-I) are effective and feasible in addressing impaired sleep. Studies included in this search also addressed which types of programs, i.e., duration of program trainings and if online, in-person or the combination of both, are more favorable. Overall, 13 studies met the criteria and were included in the review. Of these 13 studies, 4 studies (randomized control and experimental) support utilizing CBT-I as an intervention to address impaired sleep (Manber et al., 2012**;** Peachey & Zelman, 2012; Taylor et al., 2021; Torrens et al., 2021). Seven studies (randomized control trials, meta-analysis) indicate that training programs were acceptable, feasible, and effective in increasing clinician's knowledge (Ayano et al., 2017; D'Souza et al., 2021; Ersu et al., 2017; Fraser et al., 2017; Marstuti et al., 2020; Seidler et al., 2022; Uslu et al., 2021).

Of the training program studies, 5 were in-person trainings, one was an online training, and one was a combination of in-person and online training (Ayano et al., 2017; D'Souza et al., 2021; Ersu et al., 2017; Fraser et al., 2017). A meta-analysis study showed that individual training was

more effective in improving staff attitudes versus group training. Included in the synthesis table (Appendix A) is a systematic review supporting online training as the most cost-effective for therapists (Frank et al., 2019).

As noted in the synthesis table (Appendix A), the first four studies (Manber et al., 2012; Peachey & Zelman, 2012; Taylor et al., 2021; Torrens et al., 2021) showed that participants regard training programs for CBT-I as helpful. Participants found that training programs met their educational expectations and provided new psychotherapy skills that were relevant to treating insomnia (Manber et al., 2012). Participants expressed an increase in knowledge, confidence, and self-efficacy, which allowed more informed referral and treatment options rather than only referring for medication intervention (Peachey & Zelman, 2012). Online learning was easy to learn, increasing number of CBT-I clinicians, with possible decrease in overuse of pharmacotherapy to treat insomnia (Taylor et al., 2021). Lastly, there were benefits for patients: decreased sleep latency, increased sleep duration, and decreased sleep disruptions (Torrens et al., 2021).

The next three studies (Appendix A) that used in person training (Ayano et al., 2017; D'Souza et al., 2021; Ersu et al., 2017) showed improvement in knowledge, attitude, practice and competency, and increased self-confidence. Significant improvement in knowledge, attitude and practice during post intervention surveys was evidenced by comparing pre-intervention measurements of knowledge, attitude, and practice among participants (Ayano et al., 2017). An evidence-based practice (EBP) training program showed improvements in knowledge, attitude, practice, and competency of nurse educators which was evidenced by the intervention group having a significant improvement in EBP competency that was measured by a Fresno test (D'Souza et al., 2021). A study by Ersu et al. (2017) showed that education to enhance and

improve knowledge also showed long-term sustainability regarding sleep issues. The results of these studies were evidenced by pre- and post- training questionnaires completed by the participants of the studies.

There were studies that showed effectiveness of different types of education training programs (Fraser et al., 2017; Seidler et al., 2022; Marstuti et al., 2020; Mitchell-Miland et al., 2022). In the study by Fraser et al. (2017), a train-the-trainer program showed that course content was positively appraised and the participants gained new or enhanced skills and increased self-confidence in presenting and facilitating training that was based on semi-structured individual interviews. The online training program (Seidler et al., 2022) also utilized pre- and post-training questionnaires that indicated efficacy of the training program and improved self-reported competencies for engaging male clients in mental health care. Classroom-based learning techniques such as didactic class, case study, role play and movies) with direct experience with patients was shown to be effective in preparing community health workers in recognizing and responding to mental health needs through a 20-question knowledge assessment test as pre-test then repeated as a post-test (Marstuti et al., 2020). A study by Mitchell-Miland et al. (2022) found that using peer specialist-led cognitive-behavioral social skills training was more effective than treatment as usual. Treatment as usual was defined as medication management, case management, and occasional psychotherapy targeting disorder-specific symptoms (Mitchell-Miland et al., 2022). According to a meta-analysis reviewing different durations of training programs (Uslu et al. 2021), training programs that were shorter span and duration were found to be more effective in improving employee attitudinal outcomes, showing improvement in employee motivational outcomes. Uslu et al. (2021) also showed that individual-based training was found to be more effective than group-based training as being the sole recipient of training

(as compared to having to share time with a group) and may be more favorable to improve employee attitudes and motivation.

Based on the evidence reviewed, and in consideration of the needs of the project setting, utilizing a training program for CBT-I can be feasible and acceptable in increasing knowledge and confidence for mental health clinicians to address sleep impairments in a correctional facility.

Rationale

The studies included in this systematic review did not explicitly identify a conceptual framework; however, Orem's theory was applicable as the basis of Orem's theory is to identify when nursing care is needed to help patients meet their own self-care needs when they are unable to meet them on their own (Seed & Torkelson, 2012). The focus of nursing care is to sustain health and recover from illness (Seed & Torkelson, 2012). Some assumptions that were drawn were that sleep difficulties contribute to psychological, physical, and behavioral issues and that staff are frustrated and looking for more non-pharmacological interventions to address impaired sleep. When applied to this improvement project, Orem's theory is based on being aware that there is limited use of non-pharmacological interventions to address impaired sleep; deciding and performing the actions needed to increase knowledge, and identifying the outcomes of these actions can help guide this change project (Seed & Torkelson, 2012). This sleep-focused educational training worked to help to increase knowledge and confidence in using CBT to address impaired sleep in the incarcerated population.

Implementation of this change project was guided by Kotter's change management model which consists of establishing a sense of urgency, creating a powerful guiding coalition, creating a strategic vision and communicating that vision, empowering others to act on the vision, plan

for and create short term wins, consolidating improvements and produce still more change, institutionalizing new approaches (Haas et al, 2019). Within the current practice at the adult correctional facility, there was a need to use a sleep-focused CBT training to increase the knowledge in mental health clinicians to better address impaired sleep of incarcerated individuals in the correctional setting. Developing a team that could provide valuable input towards increasing knowledge and confidence of the mental health clinicians was crucial in effectuating change. Short-term wins were identified as mental health clinicians who found the knowledge useful, feasible and applicable in their strategies of addressing impaired sleep among the incarcerated individuals Frequent review and continuing changes for improvement helped to support other mental health clinicians to adopt these changes in this adult correctional facility.

Specific Aims

The purpose of this project was to help increase the mental health clinicians' knowledge and confidence to better assess and treat incarcerated individuals with sleep disorders. The overarching aim was to implement a sleep-focused CBT-I educational initiative tailored to the mental health clinicians who work in the correctional facility to address the needs of the incarcerated adult.

The objectives of this improvement project included the following:

- To convene stakeholders to review the needs of the incarcerated population and gain input on developing a sleep-focused CBT-I educational initiative to address impaired sleep.
- 95% of mental health clinicians will participate in the sleep-focused educational initiative.

- 90% of mental health clinicians will engage in bi-weekly huddles to provide feedback on the sleep-focused CBT-I educational initiative.
- For those who participate, 85% will self-report increased knowledge and confidence of how to use the sleep-focused educational initiative in the correctional setting for incarcerated individuals with impaired sleep.
- Mental health clinicians will find that the sleep-focused CBT-I educational initiative added value, is feasible and applicable to the correctional setting.

Methods

Context

The company that is contracted to this correctional facility provides comprehensive correctional healthcare to incarcerated individuals in county, state, and federal correctional facilities. This company employs providers in disciplines such as internal medicine, chronic disease management, women's health/obstetrics, addictions, and psychiatry. Many of the facilities that this company is contracted with have populations that are predominately male, age 18 and older, who are awaiting trial, and some who have received their commitment times. During their stay in these facilities, they receive their medical and mental health care from CPS providers.

Impaired sleep quality is a common issue among the incarcerated population. These patients are referred to mental health services for an evaluation. The mental health clinician will provide a sleep hygiene packet that includes suggestions to avoid caffeine after a certain time, avoid daytime naps, increase physical exercise, avoid electronics after 9pm, and to establish a bedtime routine. There is not an exact timeline that is used by mental health to determine when

to refer for a psychiatric medication evaluation; however, if the patient continues to experience impaired sleep, the mental health clinician will then refer the patient to psychiatry.

Cognitive-behavioral therapy for Insomnia (CBT-I) is an effective non-pharmacological treatment for insomnia; however, it is underutilized due to lack of trained professionals (Rossman, 2019). There are 5 key components to CBT-I (Rossman, 2019): sleep consolidation; stimulus control; cognitive restructuring; sleep hygiene; and relaxation techniques. The current sleep hygiene protocol that is used by this company only briefly mentions cognitive restructuring. The mental health clinicians who work directly with patients who are referred for sleep issues are the ideal population to implement a pathway to provide training with CBT-I.

As outlined in the microsystem map (Appendix B), the staff who are directly involved with the mental health clinicians who work with incarcerated individuals with impaired sleep quality include the director of behavioral health, the assistant director of behavioral health, the mental health directors, medical services, and either one psychiatric nurse practitioner or one psychiatrist. Staff members who are also involved with the mental health clinicians would be medical and correctional staff who make referrals to the mental health clinician as needed.

Factors Associated with Sleep Disturbance in the Correctional Setting

There are many causes that lead to sleep being inadequately addressed in the incarcerated population, as detailed in the appended cause and effect diagram (Appendix C). A high stress environment such as a correctional setting can lead to understaffing. With understaffing, the mental health clinician may have an increased workload, making it seem that it would be easier to refer to a psychiatric provider for a medical evaluation. When it is perceived by the mental health clinician that is easier to refer, there is a lack of urgency to address impaired sleep more

adequately. The time needed for training and having to add another intervention like a CBT skill, may cause increased workload for the mental health clinician.

Many cases in the correctional system include mental health illnesses such as post-traumatic stress disorder, depression, anxiety, and more serious mental health illnesses (SMI) such as schizophrenia, bipolar disorder, and other psychotic disorders. The high acuity in numbers and in mental health illnesses can create a more high-stress environment where adding a CBT technique could potentially cause more strain for the mental health clinician. Most patients are initially unwilling or resistant to learning a CBT technique and would prefer medications for immediate results.

A correctional setting is high stress for both staff and incarcerated individuals. There are times where appointments are conducted at their cell doors, in an office where the door has to be slightly open and, in some cases, a correctional officer is in the room for safety. Therefore, privacy is limited if an inmate needs to express private thoughts that need to be addressed with CBT. When considering the lack of privacy, the environment is noisy, with staff and incarcerated individuals often walking past the door, causing distraction for the staff and incarcerated individuals during a time of discussing impaired sleep.

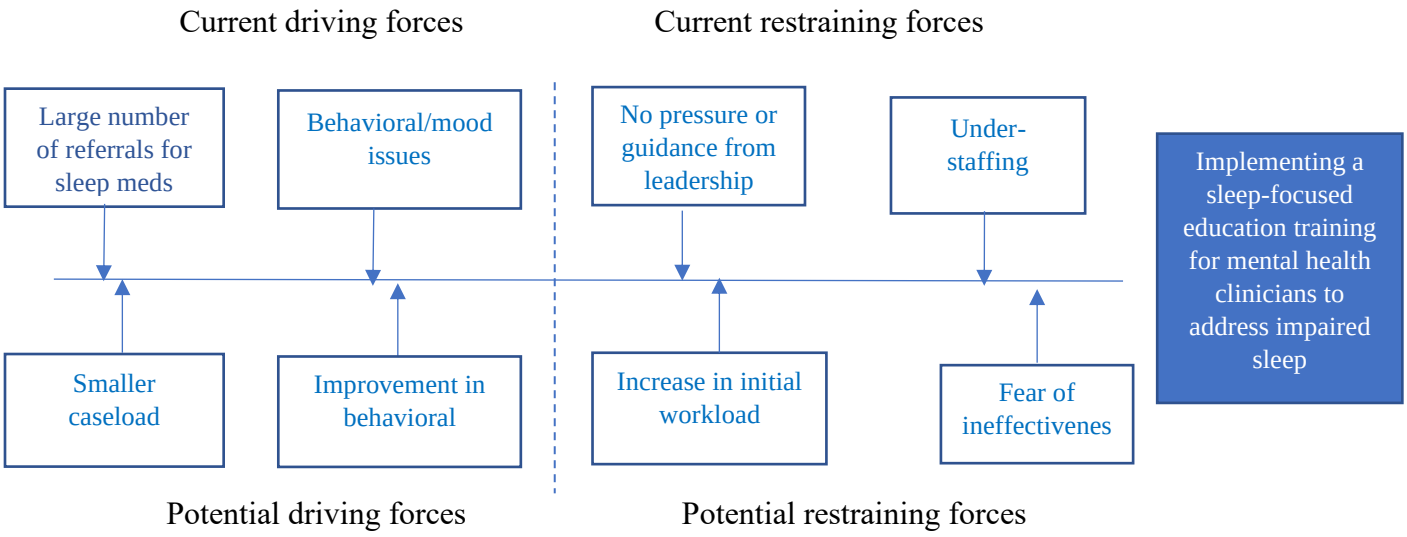
This company that employs these mental health clinicians does not provide financial support for continuing education or paid workdays for any of their staff. If there are educational conferences that span one or more days, staff are more likely not to attend if they must use their earned time. Also, because of chronic understaffing, the facility may not be keen to encourage continuing education or to provide education in-services. If the mental health clinicians are not feeling supported by leadership from the contract company and/or the correctional facility administration, they may be more likely to be complacent in their practice and not have the

motivation or interest in addressing impaired sleep, further than what is already and easily available.

Driving and Restraining Forces that Affect Implementation

To help better understand the contextual factors such as the driving and restraining forces for change and how they affect the implementation of an improvement project a force-field analysis was completed (Figure 1). Current driving forces to implement a sleep-focused educational initiative training for mental health clinicians included patient behavioral and mood issues because of impaired sleep and large number of patient referrals for sleep medications. Potential driving forces included that with mental health clinicians acquiring more knowledge and increasing their confidence in sleep-focused CBT skills, there would be less referrals for sleep medications, resulting in a smaller caseload for the psychiatric provider. A smaller caseload could support less strain and pressure on the psychiatric provider and result in more focus on the other mental health referrals. Current restraining forces against implementing a sleep-focused education initiative training would be having no incentive from leadership to add any further non-pharmacological intervention prior to referral for sleep medications. Another restraining force was that understaffing of mental health clinicians made it easier to refer for sleep medications instead of working with patients to build CBT skills to address their impaired sleep quality. Some potential restraining forces were that mental health clinicians may feel that their clinical workload would increase. If understaffing is an issue, the workload can feel like an increase. Another potential restraining force was the fear of the CBT not being effective and that the perceived delay in treatment may complicate further mood and behavioral issues

Figure 1: Force Field Analysis



Intervention

In the Boston adult correctional facility, mental health clinicians address impaired sleep by providing sleep hygiene packets for incarcerated individuals to review. Incarcerated individuals are encouraged to practice the suggestions in the packet and if sleep does not improve, they are referred to psychiatry for a medication evaluation. Although the packet includes some cognitive techniques, a direct and purposeful intervention focus on CBT will attempt to help address impaired sleep.

A face-to-face educational initiative/training was developed and implemented at this adult correctional facility. Its purpose was to increase the mental health clinician's knowledge, skills and confidence in using cognitive restructuring to better address and treat individuals with impaired sleep. The intervention underwent three phases that included pre-implementation, implementation and evaluation that can be seen in the Intervention Flowchart (Figure 2). A logic model was also prepared (Appendix E) to visually illustrate the intervention implementation process.

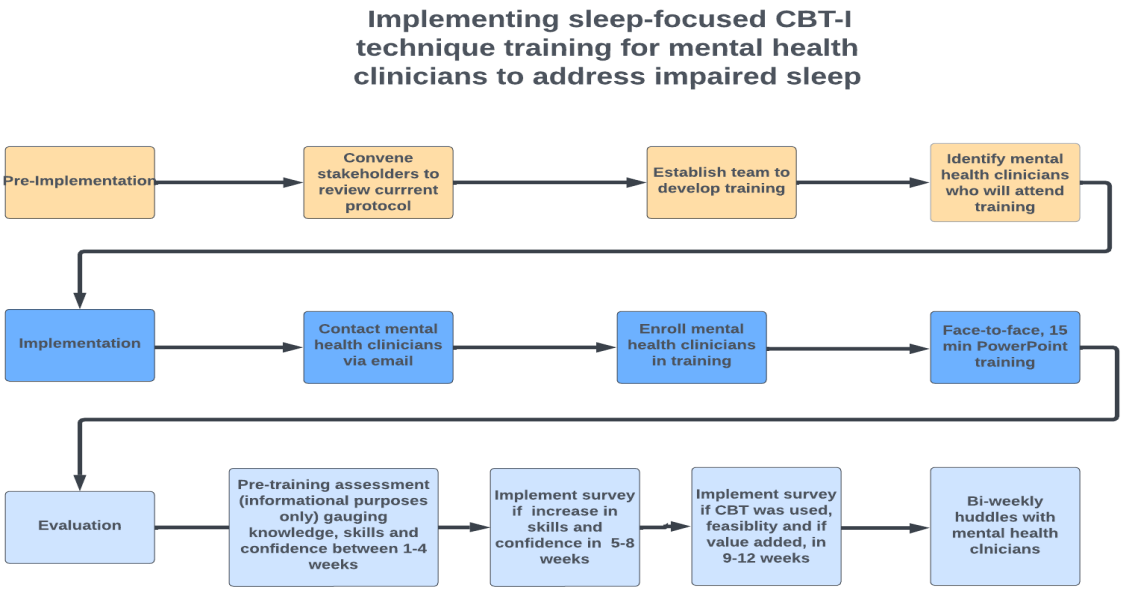
The training consisted of a PowerPoint presentation that reviewed the definition of impaired sleep with a focus on using CBT-I, specifically cognitive reframing. It detailed the five key components of CBT-I, including sleep consolidation, stimulus control, cognitive restructuring, sleep hygiene, and relaxation techniques. The remainder of the training focused on defining cognitive restructuring and its feasibility and applicability to a correctional setting for incarcerated individuals. A short case study was provided and enacted by the mental health clinicians during the training session. At the end of the training, questions and concerns were addressed, including anticipation of possible challenges from incarcerated individuals.

Pre-Implementation

A flowchart was completed to illustrate the flow of the intervention process (Figure 2). During the pre-implementation phase, the project leader convened stakeholders to review the needs of the incarcerated population to assist in gaining insight on the current protocol which helped to develop a sleep-focused educational initiative to address impaired sleep that was fitting to the correctional setting.

The next step was to establish a team that helped develop a face-to-face sleep-focused training that was appropriate to the correctional setting. This face-to-face training lasted approximately 15 minutes and was conducted for both morning and evening shifts. Once the training was finalized and developed, the project leader identified the mental health clinicians who attended the training. The mental health clinicians who attended the training also completed a pre-assessment for informational purposes only.

Figure 2: Intervention Flowchart



Implementation

During the implementation phase, the mental health clinicians were contacted by email. Those who agreed to attend were enrolled for the training. A face-to-face training was implemented, which enabled trainees to ask questions or raise concerns in real-time. The mental health clinicians participated in bi-weekly huddles to offer feedback about the training. Examples of questions that were asked during huddles were: “Were you able to incorporate the cognitive restructuring technique” “Have you faced any challenges while incorporating cognitive restructuring,” and “Do you feel that cognitive restructuring has helped to improve sleep” and “How confident are you in using cognitive restructuring to address poor sleep quality?”

In the initial 4 weeks, the anticipated outcome was an increase in knowledge reported by mental health clinicians. During weeks 5-8, the focus shifted to the application of the acquired knowledge. Lastly, in weeks 9-12, the expected outcome was an increase in confidence among

clinicians in utilizing CBT for addressing impaired sleep, with an additional ability to integrate these skills into practice. The ultimate impact aims to enhance outcomes for incarcerated patients struggling with impaired sleep.

Evaluation of the Intervention

The approach that was used to assess the impact of this improvement project is the Plan, Do, Study, Act (PDSA) Cycle. The PDSA Cycle is considered ongoing and efficient for trial-and-learning, beginning with a plan, ending with an action (Langley, 2009). As the word "Cycle" implies, PDSA is cyclical that usually includes multiple cycles that are needed to yield successful changes (Langley, 2009). With this project, multiple aspects could be changed from the original plan such as cognitive restructuring to instead using relaxation techniques. Reviewing the current sleep hygiene packet and improving on the existing interventions could be in another PDSA cycle. Comparing results to the output in Appendix E: Logic Model was assessed by the project leader.

Measures and Analysis

A measures table was completed (Figure 3) to illustrate the measures of outcomes and outputs of the project to confirm attainment of the project's aims and objectives. Surveys (Appendix G) were used to collect data from staff which were then gathered into a Project Tracking Tool (Appendix G) created by using an Excel spreadsheet.

The first aim was *to convene stakeholders to review the needs of the incarcerated population and gain input on developing a sleep-focused CBT-I educational initiative to address impaired sleep.* This helped to facilitate constructing and implementing a brief, online, sleep-focused CBT-I educational initiative for the mental health clinician that was appropriate to the correctional setting. This was measured by a team meeting that was conducted to review if the

educational initiative was tailored to the correctional setting and the mental health clinician's roles and responsibilities. The information gathered was analyzed qualitatively. Data tracking was supported with an attendance form that included attendees, the attendees' job position, the date, and the location of the meeting (Appendix G).

The second aim was that *95% of mental health clinicians will participate in the sleep-focused educational initiative* that was measured by acceptance of the meeting. This was analyzed by determining the frequency and proportion of mental health clinicians who participated in a face-to-face educational training. Data tracking was supported with a form that recorded the number of mental health clinicians in the correctional facility and of that number, how many mental health clinicians had attended the trainings (Appendix G).

The third aim was that *90% of mental health clinicians will engage in bi-weekly huddles to provide feedback on the sleep-focused CBT-I educational initiative.* Bi-weekly huddles were informal and conducted bi-weekly to allow mental health clinicians to provide feedback during this project. Data tracking was supported with a form that recorded the number of mental health clinicians who attended the training and of that number, how many mental health clinicians attended the bi-weekly huddles (Appendix G). This was analyzed by frequency and proportion of mental health clinicians who participate in bi-weekly huddles.

The fourth aim was *for those who participate, 85% will self-report increased knowledge and confidence of how to use the sleep-focused educational initiative in the correctional setting for incarcerated individuals with impaired sleep.* This analysis was conducted by assessing the frequency and proportion of participating clinicians exhibiting these improvements. Tracking data was facilitated through a form, which documented the attendance of mental health clinicians

at the trainings, along with the subset who reported enhancements in knowledge, confidence, and successful integration of training into their practice (Appendix G).

The last aim was *mental health clinicians will find that the sleep-focused CBT-I educational initiative added value, is feasible and applicable to the correctional setting*. This was attained and analyzed by survey results completed by the 5 mental health clinicians who participated in in the final survey. Data tracking was supported and recorded utilizing data from surveys, using a 1-5 Likert scale that ranged from "strongly agree, agree, neutral, strongly disagree, disagree" respectively (Appendix G).

Ethical Considerations

This clinical quality improvement project involving a sleep-focused educational initiative training for the mental health clinician to increase knowledge and increase confidence in the use of CBT-I has been approved by the Regional Director who oversees the mental health services department. This project proposal does not need further review by committees or review boards for approval.

As shown in the Clinical Quality Improvement Checklist (Appendix F) the specific aim of this project is to improve an established practice standard or to implement a change that is evidence-based, without intent of using data for any research purposes. This project does not meet the definition of human subjects research and will be used to provide improvement in the facility. This project will not receive federal funding or from research-focused organizations.

The project or innovation proposed is quality improvement and does not meet the definition of human subjects research because it is not designed to generate generalizable findings but rather to provide immediate and continuous improvement feedback in the local

setting in which the project is carried out. The University of Massachusetts Boston IRB has determined that quality improvement projects do not need to be reviewed by the IRB.

Results

The implementation of this quality improvement project started in August of 2023 and was completed March 2024. The below details aims, outcomes, and results.

Convening the Stakeholders

Aim 1: To convene stakeholders to review the needs of the incarcerated population and gain input on developing a sleep-focused CBT-I educational initiative to address impaired sleep.

Key stakeholders, including the site mentor, assistant regional mental health director, and company owner, were convened by the project leader to discuss a new initiative aimed at addressing increased referrals for psychiatric evaluations related to impaired sleep. This information was collected in an excel sheet (Figure 3). Collaboratively, they approved and developed an educational training program tailored for correctional settings. The stakeholders reviewed and approved both the project proposal and the educational initiative, which included pre-assessment and final surveys. The project successfully met its goals with stakeholder support and approval throughout the process.

Figure 3: Aim 1: Convening Stakeholders

Attendee ID	Job Title	Date Attended	Location
1	CPS owner	8/24/23	Boston
2	Regional MH Director	8/24/23	Boston
3	Asst. Regional MH Director	8/24/23	Boston
4	Psychiatric NP Director	8/24/23	Boston

Aim 2: 95% of mental health clinicians will participate in the sleep-focused educational initiative.

In this correctional facility, all 8 mental health clinicians initially participated in the training, including the mental health team director and assistant regional director. A pre-assessment survey was conducted, followed by a 15-minute educational presentation delivered face-to-face. However, participation decreased over time, with only 5 clinicians remaining active throughout the project. The mental health director and assistant regional director did not engage in patient meetings, attend bi-weekly huddles, or complete surveys, and one clinician left the position before completing assessments or participating in huddles. This aim was met with 100% participation of the mental health clinicians (Figure 4).

Figure 4: Aim 2: Educational Initiative Participation

Date of Training:	**Number of mental health clinicians in this correctional facility**	**Number of mental health clinicians who attended training**	**Percent of participants**
11/20/23	8	8	100%

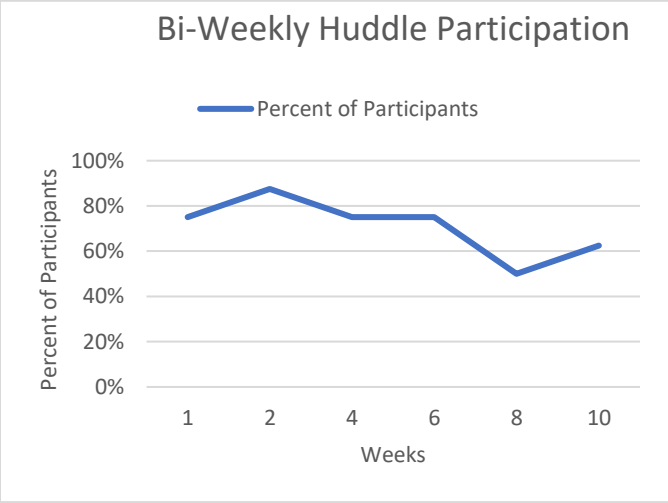
Aim 3: 90% of mental health clinicians will engage in bi-weekly huddles to provide feedback on the sleep-focused CBT-I educational initiative.

Bi-weekly huddles were conducted informally using handouts with questions about cognitive restructuring techniques and their effectiveness in improving sleep quality (Figure 5). Valuable insights were gathered despite varied participation rates (50-88%) due to clinician absenteeism and turnover. A consistent challenge identified was incarcerated individuals' reluctance to engage in non-pharmacological approaches for sleep issues. However, this data was collected for informational purposes only and did not formally contribute to the project's aims. During bi-

weekly huddles, one of the challenges encountered was coordinating meetings with mental health clinicians who worked various shifts. This was resolved by meeting with mental health clinicians during the various shifts. This aim was not met.

Figure 5: Bi-weekly huddle participation

week	Number of mental health clinicians who attended training	Number of mental health clinicians who attend bi-weekly huddles	Percent of participants
1	8		
2		6	75%
4		7	88%
6		6	75%
8		6	75%
10		4	50%
12		5	63%



Aim 4: For those who participate, 85% will self-report increased knowledge and confidence of how to use the sleep-focused educational initiative in the correctional setting for incarcerated individuals with impaired sleep.

Out of the original 8 attendees, there were only 5 mental health clinicians who participated in completing the surveys, therefore 63% of the 8 original attendees reported an increase in knowledge by weeks 4, 8 and 12. The 3 original attendees who were unable to participate in the surveys included the mental health director, the assistant regional director and a mental health clinician who terminated her position. This aim was not met. However, out of the five remaining participants, all five reported an increase (Figure 6).

Figure 6: Aim 4: Increased Knowledge and Confidence

Number of mental health clinicians who attended training	**Number of mental health clinicians who reported increase in knowledge. (week 4)**	**Number of mental health clinicians who will begin to apply knowledge (week 8)**	**Number of mental health clinicians who reported increase in confidence. (week 12)**
8	5	5	5
	63%	63%	63%

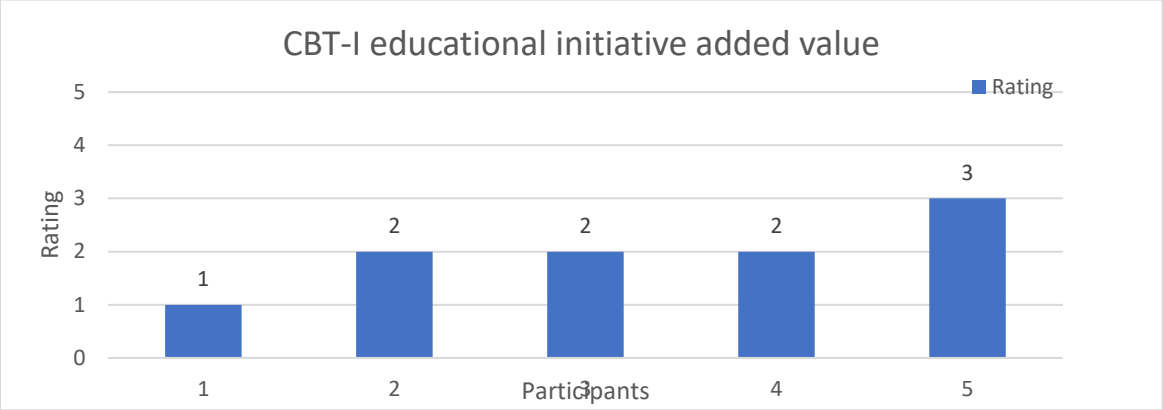
Aim 5: ***Mental health clinicians will find that the sleep-focused CBT-I educational initiative added value, is feasible and applicable to the correctional setting.***

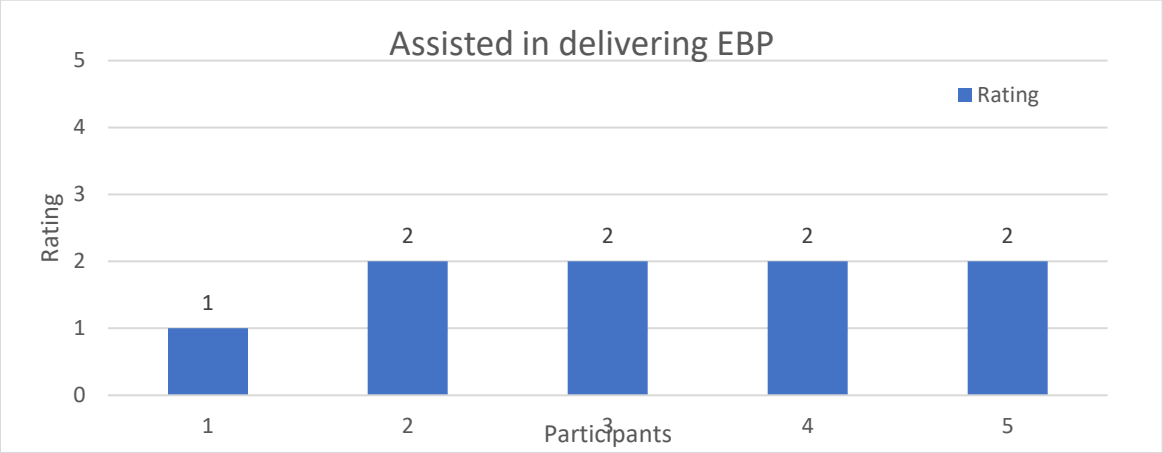
In this quality improvement project, participants were asked three distinct questions regarding participants' thoughts on added value, feasibility, and applicability (Figures 7, 8, 9). The below details the results of these questions.

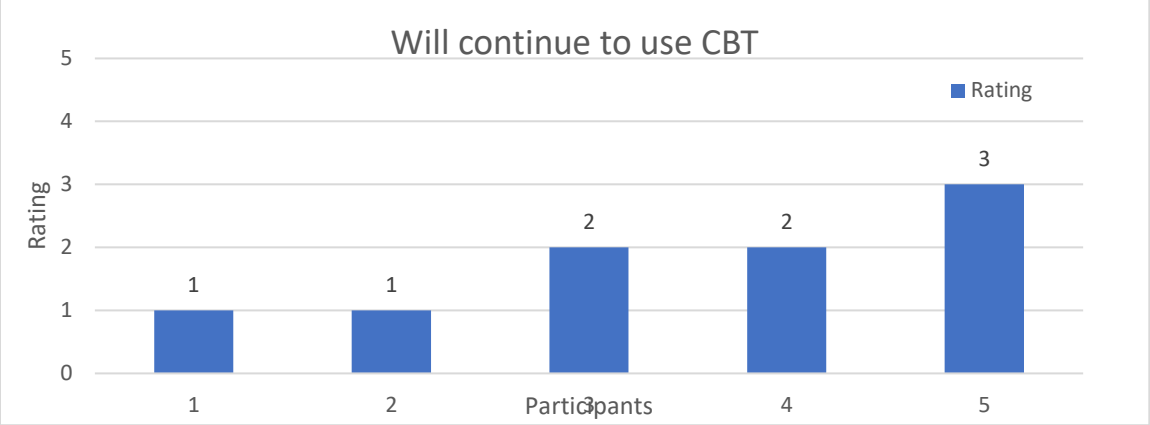
Added Value

In response to the first question regarding added value, "The CBT-I educational initiative added value to the correctional setting," 20% (n=1) of the 5 participants strongly agreed, 60% (n=3) rated agreed, 20% (n=1) rated neutral. For the second question addressing added value, "The CBT-I initiative assisted me in delivering EBP to address impaired sleep quality in the incarcerated individual," 20% (n=1) of the 5 participants strongly agreed, 40% (n=2) rated agree, and 40% (n=2)rated neutral. Regarding the third question on added value, "I will continue to use this CBT technique after the completion of this improvement project," 40% (n=2) of the 5 participants remained strongly agreed, 40% (n=2) agreed and 20% (n=1) remained neutral.

Figure 7: Added Value



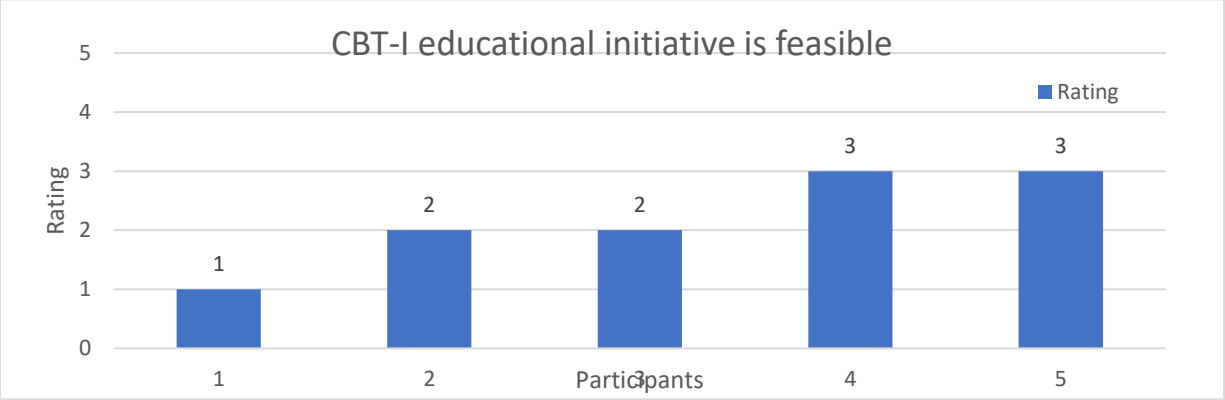


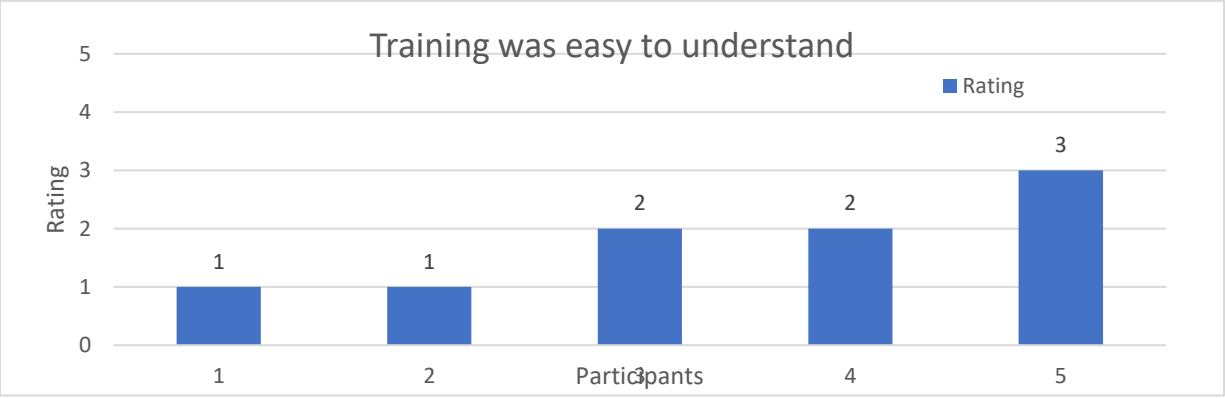


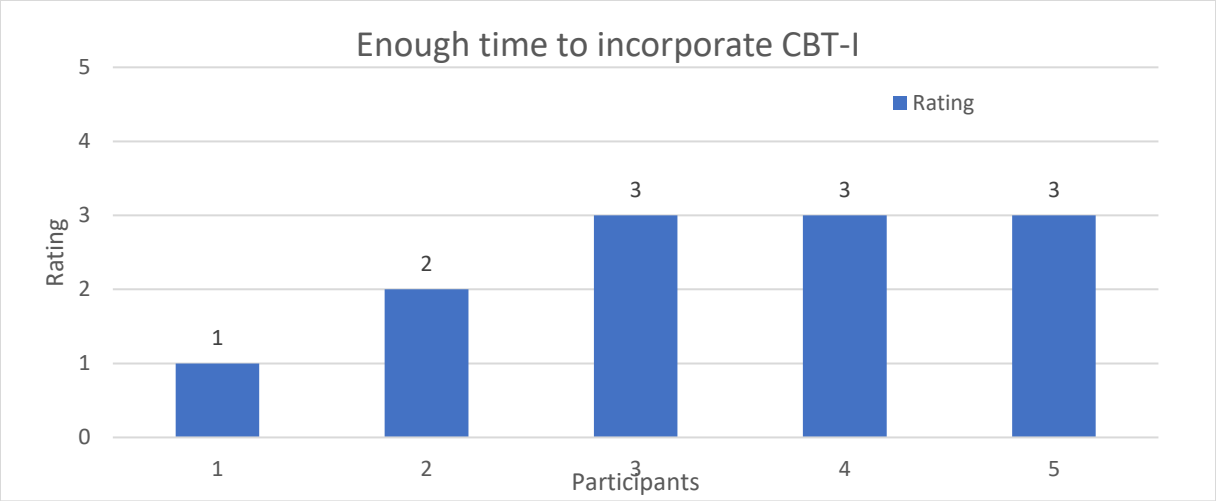
Feasibility

In response to the first question regarding feasibility, "The CBT-I educational initiative is feasible to use in the correctional setting," 20% (n=1) of the 5 participants strongly agreed, 40% agreed, and 40% (n=2) remained neutral. For the second question addressing feasibility, "The goals or the training was easy to understand," 40% (n=2) of the 5 participants strongly agreed, 40% (n=2) agreed and 20% (n=1) remained neutral. For the third question on feasibility, "I had enough time to incorporate CBT-I," 40% (n=2) of the 5 participants strongly agreed, 40% (n=2) agreed and 20% (n=1) remained neutral.

Figure 8: Feasibility



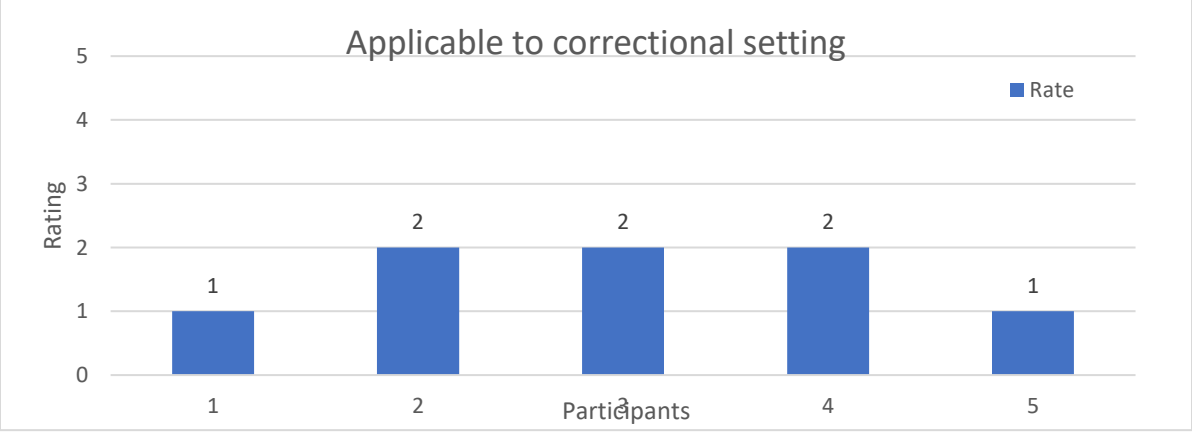


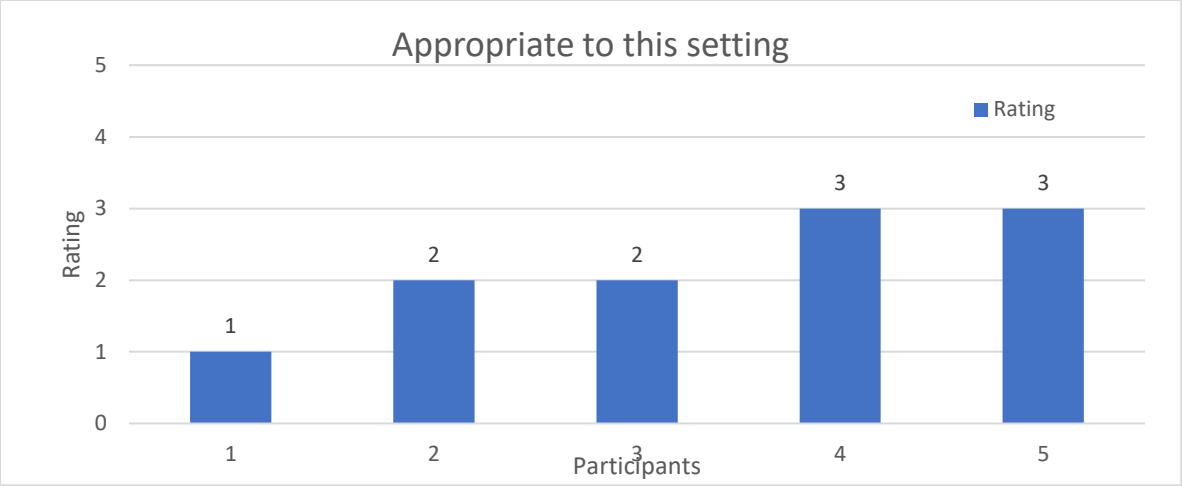


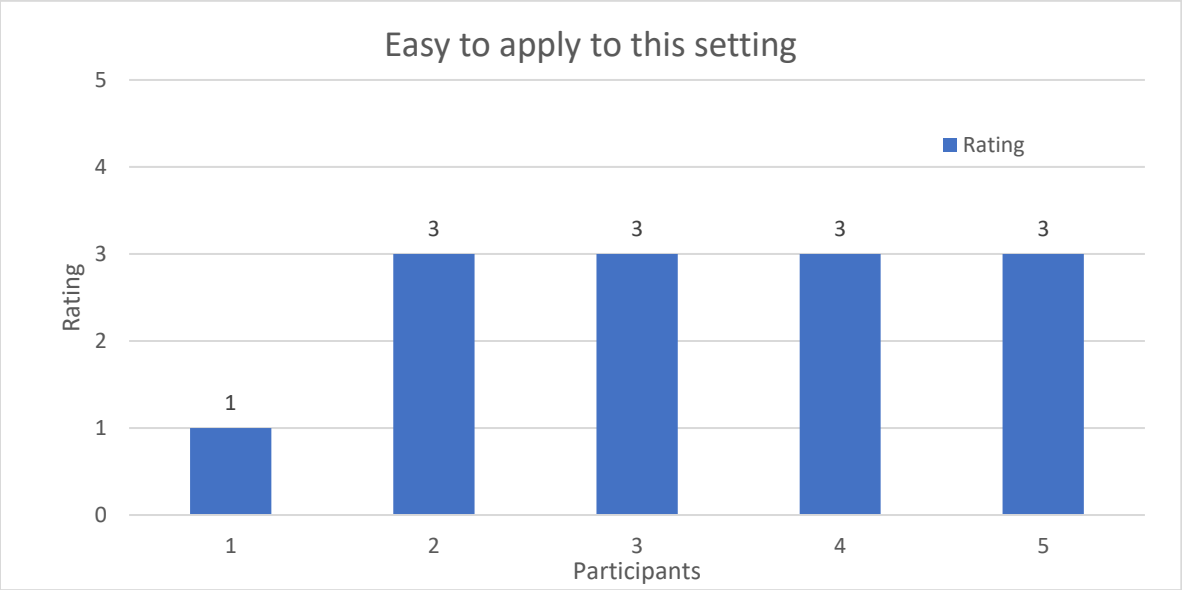
Applicability

In response to the first question addressing applicability, "The CBT-I educational initiative is applicable to the correctional setting," 20% (n=1) of the 5 participants strongly agreed, 60% (n=3) agreed, 20% (n=1) remained neutral. For the second question addressing applicability, "CBT-I is appropriate to this setting," 20% (n=1) of the 5 participants strongly agreed, 40% (n=2) agreed and 40% (n=2) remained neutral. Lastly, the third question in regard to applicability, "The CBT-I was easy to apply to the setting," 20% (n=1) rated strongly agree and 80% (n=4) rated neutral.

Figure 9: Applicability







Discussion

Summary

This quality improvement project was designed to help increase the mental health clinicians' knowledge, skills and confidence to better assess and treat individuals with impaired sleep through implementation of a sleep-focused CBT-I educational initiative tailored for the mental health clinicians who work in the correctional facility to address the needs of the incarcerated adult. An educational initiative was implemented for the mental health clinician

with the collaboration of the stakeholders. Of the 8 initial participants, all 5 mental health clinicians who remained as participants throughout the project reported the following:

- An increase in knowledge and confidence by weeks 4, 8, and 12.
- Project added value (73%)
- Project is feasible (60%)
- Project is applicable (53%)

The remaining responses were neutral and there were no negative responses noted.

As highlighted in Orem's theory (Seed & Torkelson, 2012), recognizing the necessity for enhanced education concerning non-pharmacological interventions to address sleep issues among incarcerated individuals has emerged as crucial. Given the present reliance on pharmacological solutions and resource constraints, the mental health team has been actively exploring alternative approaches to address these sleep disturbances. The results demonstrated that this quality improvement project helped mental health clinicians enhance their skills and confidence in using CBT to address impaired sleep in the incarcerated individual. The mental health clinicians felt that this technique added value to their practice and was feasible to implement in the correctional setting.

The findings of this project align with the evidence presented in the literature review (Appendix A), which indicates that educational training enhances staff knowledge, skills, and confidence. Specifically, this project aimed to improve mental health clinician's proficiency and confidence in using an evidence-based, non-pharmacological intervention, such as CBT, to address impaired sleep in incarcerated individuals.

Ensuring sustainability of CBT-I in a correctional setting involves a multi-faceted approach that integrates the practice into everyday operations, garners leadership support,

continuously monitors progress, documents outcomes, and actively engages with the community and stakeholders.

To effectively integrate Cognitive Behavioral Therapy for Insomnia (CBT-I) into routine encounters with incarcerated individuals, it is crucial to embed CBT-I techniques into daily practices and interactions. This ensures their consistent application and reinforcement, supported by regular staff training to maintain high standards of care. Mental health professionals require continual updates and refreshers on CBT-I practices to stay current and effective. In parallel, securing commitment from leadership and correctional facility managers is essential to prioritize and support CBT-I initiatives. Adequate resource allocation—encompassing time, funding, and personnel—is necessary to sustain these programs effectively.

Continuous monitoring and evaluation further enhance the success of CBT-I interventions by allowing for the tracking of progress and the implementation of data-driven adjustments based on feedback from participants and staff. Additionally, comprehensive documentation of CBT-I sessions, outcomes, and best practices is critical for a thorough understanding of the intervention's impact. Sharing insights and success stories within the organization and with external stakeholders fosters learning and encourages the replication of successful strategies, thereby promoting the overall effectiveness and longevity of CBT-I programs.

Interpretation

According to Dewa et al. (2015), impaired sleep is common in incarcerated individuals and linked to comorbid conditions that is negatively influenced by the prison environment which leaves little room for effective management. Cognitive-behavioral therapy is an evidence-based practice that has been found to be effective for impaired sleep (Rossman, 2019). Mental health

clinicians are well-versed in cognitive-behavioral therapy, as it is a standard component of their educational training. The objective of this project was to expand on that existing knowledge and further promote the use of non-pharmacological approaches before referring to psychiatry for medication.

An unforeseen issue was a decrease in the number of participating mental health clinicians compared to the initial eight who attended the educational training. Additionally, one mental health clinician left their position. All five who participated throughout the project reported an increase in knowledge and confidence. They found the project to be valuable, feasible, and applicable to the correctional setting. Despite the drop in participation, these results were very encouraging.

Another unexpected issue was the need to accommodate the clinicians' varying work shifts, including day and evening shifts. Bi-weekly huddles were divided among these two shifts which was a successful resolution of the challenge. There were no anticipated financial costs since the training and bi-weekly huddles were conducted during daily triage meetings after lunch. Mental health clinicians appreciated the informal nature of the meetings.

As such, although not all aims were met and despite the unexpected challenge of a decrease in clinician participation, the project ultimately demonstrated significant positive outcomes for those involved. This underscores the importance of adaptable strategies in managing unforeseen issues, a key component of continued success in potential similar initiatives moving forward.

Limitations

There were some limitations in this quality improvement project. One limitation was the three mental health clinicians who were unable to participate due to their administration roles

and due to one participant who terminated their position. With less participation, there can be a lack of diverse perspectives and expertise which can potentially reduce this project's overall effectiveness. This can lead to a narrower range of ideas and solutions.

Another limitation was having limited feedback during huddles. The only feedback received was that incarcerated individuals were resistant to using non-pharmacological interventions as they preferred immediate relief through medications. Despite mental health clinicians' positive feedback of the educational initiative, the incarcerated individual's resistance was discouraging.

Although having the training during a team meeting had its advantages such as attendance, a limitation was that to maintain reasonable time, the training was shortened to 15 minutes. Some challenges with shortening the duration of training can result in inadequate time to cover essential topics in sufficient detail. This can also reduce opportunities for different case scenarios for interactive learning and skill-building. Shortened training durations can compromise the project's success by limiting the team's preparedness and ability to execute plans with confidence and competence. Shortened training may result in gaps in understanding, leading to inconsistent application of quality improvement approaches. Inadequate training can impact morale and overall team cohesion.

Conclusion

Based on this project, using educational trainings to further enhance knowledge and increase confidence in using non-pharmacological approaches to address impaired sleep is a potentially viable way to ensure that mental health clinicians can refine and enhance their skills for treating impaired sleep. One clear strength from the project results was that by integrating these trainings seamlessly into the routine workday, the training was more feasible and less

burdensome for the mental health team. Future work may benefit from more incremental goals and adjusted education.

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Appendix A:

Synthesis Table

Education program/intervention	Studies	Level of Strength	Number of Participants and Demographics	Significant Findings
Cognitive-behavioral therapy for insomnia	1. Manber et al. (2012)	1. L1, B	1. N=23 Participants had CBT training in depression.	1.By self-report, the training, met their educational expectations, provided with new psychotherapy skills that were relevant to treating insomnia. The participants also highly valued the skills exercises in small groups.
	2. Peachey & Zelman (2012)	2. L1, B	2. N=38-partipants from practice-focused doctoral psychology training programs at CSPP n-19 enrolled in course. n-19 comparison group	2. Results showed increase in knowledge, increased confidence, self-efficacy to make more informed referral and treatment options rather than only referring for medication intervention.
	3. Taylor et al. (2021)	3. L1, B	3. N=44 n=18-in person workshop n=11 CBTIweb.org training 15 participants dropped out.	3. Website was easy to navigate, materials were presented as easy to learn, directions were easy and clear, video demonstrations were helpful and sufficient. CBTIweb.org can be a valuable tool to increase number of CBTI-clinicians, decreased the overuse of pharmacotherapy to treat insomnia.
	4. Torrens et al. (2021)	4. L1, B	4. N=25 general practitioners, randomized to CBT-I intervention group or the usual care group n-32 patients randomly allocated to 2 groups.	4. General practitioners recommended longer training (study was 2 sessions, 2 hours each). Benefits for patients: decreased sleep latency, increased sleep duration, and decreased sleep disruptions.
Five day in-person training	5. Ayano et al. (2017)	5. L1, B	5. N=94 n= 44 health officers n=22 diploma nurses n=28 BSC nurses. All participants who presented to the training were included.	5. Significant improvement in knowledge, attitude and practice during post intervention surveys was evidenced by pre-intervention measurements of knowledge, attitude and practice among participants. Within 5 days of training, knowledge and attitude were assessed. Knowledge and attitude were assessed again after 3months of work experience at the primary care level by reviewing charts/records.

2.5 days in-person and e-course	6. Das et al. (2019)	6. L1, B	6. N=12 n=8 intervention n=4 control group Mean age of 47 (57% female). Worksites to have > 300 employees, a postal address, have contact info for a company rep who signed a consent form completed a questionnaire for assess of eligibility.	6. Pre-post testing: Improvements observed for vitality, general health, and mental health areas. By 18 months, participants maintained an average increase in baseline vitality scores of 17%, indicating 10-point improvement in scores observed prior to start of the program.
30-hour EBP training program (over four days)	7. D'Souza et al. (2021)	7. L1, B	7. N=51 n=27 intervention group n=24 control group Participants were nurse educators who were available during this study period and were willing to participate. They also had previous experience in implementing an EBP program.	7. EBP training program showed improvements in knowledge, attitude, practice, and competency of nurse educators, evidenced by the intervention group having a significant improvement in EBP competency that measured by a Fresno test.
PowerPoint presentation with a question-and-answer session	8. Ersu et al. (2017)	8. L1, B	8. N=210 n= 132 intervention group n=78 control group Pediatricians from 8 training and research hospitals in Istanbul.	8. Physician awareness was enhanced, knowledge about sleep was improved, that was sustained in the long term as the intervention group scored higher showing that education did improve knowledge on sleep issues.

Four-day train the trainer program-in person sessions	9. Fraser et al. (2017)	9. L1, B	9. N=9 n=6 mental health service users, 4 male, 2 females n=3 carers, 3 females, 1 male Two service users and a carer where co-applicants were recruited to co-facilitate the training intervention. Remaining six training participants were recruited EQUIP Service User Carer Advisory Group (SUCAG) following an advert detailing the paid training opportunity.	9. Course content was positively appraised, and participants gained new or enhanced skills and increased self-confidence in presenting and facilitating training based on semi-structured individual interviews.
Classroom-based learning techniques (didactic class, case study, role play and movies) with direct experience with patients	10. Marstuti et al. (2020)	10. L1, B	10. N=65 All women who had completed high school (70.8%); 7 completed additional diploma or degree (10.8%). Most were between 36–55 years of age (87.7%). Most participants (69.2%, n = 40) lived in urban communities. 65.2% of the participants (n=15) had exposure to people with mental illness	10. 20 question knowledge assessment tests as pre-test then repeated as a post test showed that the program appears to be effective in preparing community health workers in recognizing and responding to mental health needs.

Care delivered by peer specialists vs usual care	11. Mitchell-Miland et al. (2022)	11. L1, B	11. N-252 Ages 18+, primary diagnosis of SMI (schizophrenia, schizoaffective disorder, bipolar d/o with psychotic features, delusional disorder, schizohreniform disorder), fluency in English	11. Using peer specialist-led cognitive-behavioral social skills training (CBSST) was more effective than treatment as usual. Treatment as usual was defined as medication management, case management, and occasional psychotherapy targeting disorder-specific symptoms. TAU does not include targeting errors in thinking "cognitive" as CBSST uses.
Online training	12. Seidler et al. (2022)	12. L1,B	12. N=196 n=54 male n=142 females Ages ranged from 23-73	12. Pre-training and post-training scores indicated efficacy of the training program in improving self-reported competencies for engaging male clients. There was positive feedback favoring training's online environment compared to in-person training
Long duration vs. short duration	13. Uslu et al (2021)	13. L1,B	13. N=107 n=-44-attitudinal outcomes n=63 motivation outcomes Review of published/unpublished training literature from January 1990 to September 2020 from PsycINFO, Wiley Online Library, Taylor & Francis, Web of Science, Sage Journals, Scopus, PubMed, Academic Search Complete, and ProQuest Dissertations. Google Scholar	13. Training programs that incorporated use of practice and were shorter span and duration were found to be more effective in improving employee attitudinal and motivational outcomes. Individual-based training was found to be more effective than group-based training.
Systematic review of training models	14. Frank et al, (2019)	14. L5, A	14. -synthesized training literature published since 2010 -evaluate how different training models such as	14. Online training and train-the-trainer expands the reach and most cost-effective. Overall, training is more effective at improving competence and intervention use when followed by consultation.

			workshop, workshop w/consultation, online-training, train-the-trainer, and intensive training can affect therapists' knowledge, beliefs, behaviors.	

Appendix B

Clinical Microsystem

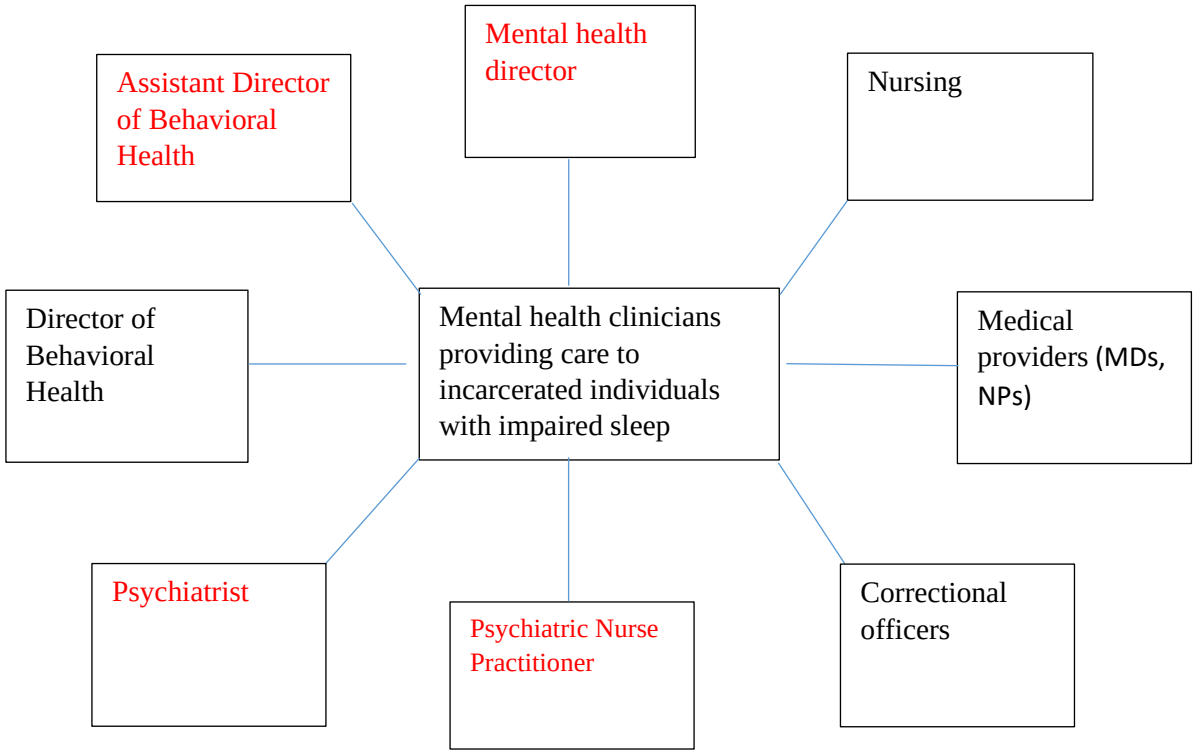
1. Clinical Microsystem: a contract company that provides mental health clinicians and psychiatric nurse practitioners to the prison setting

2. Subpopulation: mental health clinicians providing care to incarcerated individuals within the contract company

3. Patient Specific healthcare needs

a. Addressing impaired sleep with treatment
b. Education regarding CBT to address impaired sleep
c. Provide in-service training of CBT-I
d. Assess for effectiveness and refer to psych NP or psychiatrist if needed

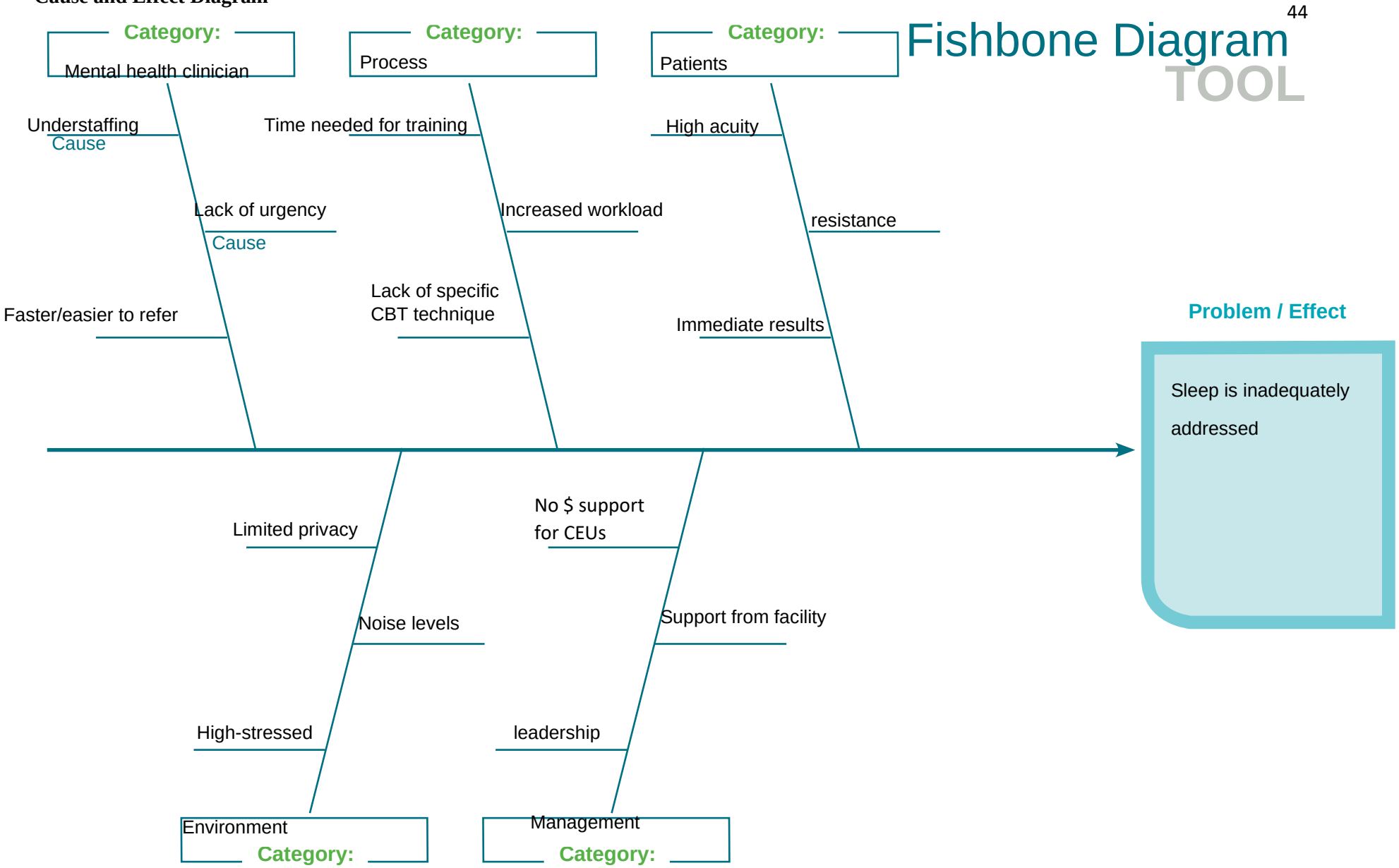
4. **Clinician specific needs**
a. Information needed to address impaired sleep
b. Sleep-focused training
c. Pathway to implement CBT technique



Improvement Ideas: To implement a sleep-focused cognitive behavioral training appropriate for the incarcerated setting to increase the mental health clinician's knowledge and competence in addressing sleep disorders in the prison setting.

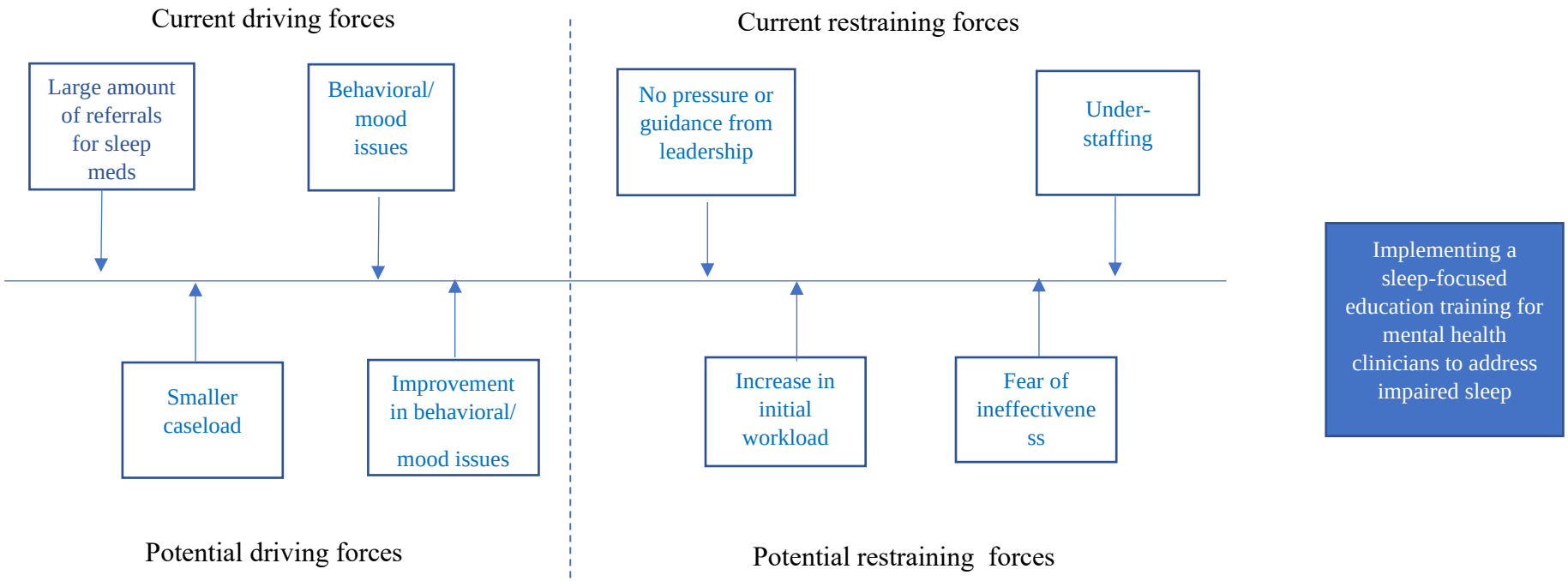
Appendix C

Cause and Effect Diagram



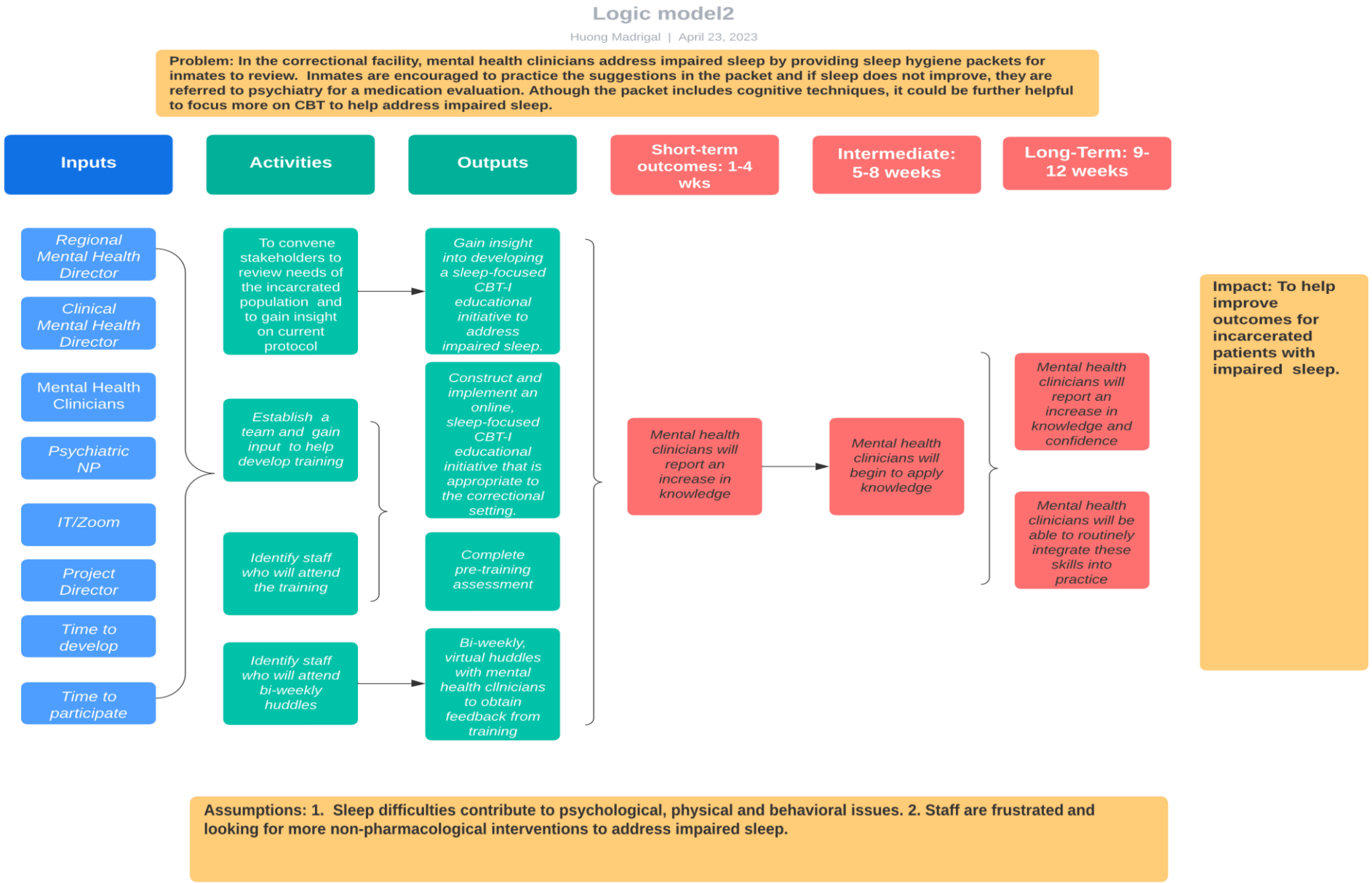
Appendix D

Force-Field Analysis



Appendix E

Logic Model



CLINICAL QUALITY IMPROVEMENT CHECKLIST

Date: 4/2/2023	**Project Leader:** Huong Madrigal
Project Title: CBT-I Training For the Mental Health Clinician to Deliver Evidence-Based Treatment to Address Impaired Sleep Quality in a Correctional Facility	
Institution where the project will be conducted: Correctional Psychiatric Services, MA	

Instructions: Answer YES or NO to each of the following statements about QI projects.	**YES**	**NO**
The specific aim is to improve the process or deliver of care with established/ accepted practice standards, or to implement change according to mandates of the health facilities' Quality Improvement programs. There is no intention of using the data for research purposes.	**X**	
The project is **NOT** designed to answer a research question or test a hypothesis and is **NOT** intended to develop or contribute to generalizable knowledge.	**X**	
The project does **NOT** follow a research design (e.g., hypothesis testing or group comparison [randomization, control groups, prospective comparison groups, cross-sectional, case control]). The project does **NOT** follow a protocol that over-rides clinical decision-making.	**X**	
The project involves implementation of established and tested practice standards (evidence-based practice) and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards.	**X**	
The project involves implementation or care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience.	**X**	
The project has been discussed with the QA/QI department where the project will be conducted and involves staff who are working at, or patients/clients/individuals who are seen at the facility where the project will be carried out.	**X**	

The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research**.**	**X**	
The clinical practice unit (hospital, clinic, division, or care group) agrees that this is a QI project that will be implemented to improve the process or delivery of care.	**X**	
The project leader/DNP student has discussed and reviewed the checklist with the project Course Faculty. The project leader/DNP student will **NOT** refer to the project as research in any written or oral presentations or publications.	**X**	
ANSWER KEY: If the answer to **ALL** of these questions is **YES**, the activity can be considered a Clinical Quality Improvement activity that does not meet the definition of human research. **UMB IRB review is not required**. **Keep a dated copy of the checklist in your files.** If the answer to ANY of these questions is NO, the project must be submitted to the IRB for review.		