

Cognitive Behavioral Therapy in a Primary Medical Home

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Abstract

People with insomnia experience difficulty falling asleep (sleep latency), wake throughout the night (sleep maintenance), or wake up earlier than desired (wake after sleep onset deficiency) (Perez & Salas, 2020). They do not sleep effectively, experience daytime fatigue, develop mood disorders, decrease their work efficiency, and increase their risk of physical harm due to reduced attention and concentration skills (Reynolds & Ebben, 2017). Cognitive-behavioral therapy for insomnia (CBT-I) provides gold-standard treatment for patients who have insomnia (Van Straten et al., 2018). The overwhelming evidence for this modality is well documented; however, there are many challenges in providing this therapy to the general public. The purpose of this quality improvement project is to develop a sustainable process for screening adult patients at their primary medical home via the validated insomnia severity index (ISI) tool. In this improvement project, all new patients received insomnia screening, and the appropriate patients received a referral for CBT-I treatment. Lastly, the patients completed a post-CBT-I ISI to substantiate no operational difference in receiving CBT-I in a medical home versus a behavioral health setting. Future studies within this setting will seek to determine the potential advantages of having CBT-I in the medical home, including having providers nearby, collaborative efforts with medication management, and opportunities to quickly expedite subsequent testing for medical conditions associated with chronic insomnia.

Keywords: cognitive behavioral therapy for insomnia, medical home, increase access, quality improvement project, insomnia severity index tool

Introduction

Problem Description

Practice guidelines produced from meta-analyses with randomized control trials unanimously place cognitive behavioral therapy for insomnia (CBT-I) as the number one recommended treatment for chronic insomnia (Baglioni et al., 2020; Chesson et al., 2000; Davidson, Dickson & Han, 2019; Fox, Nashelsky & Jack, 2018; Gabara et al., 2018; Jiang, He & Gae, 2019; Koffel, Koffel & Gehrman, 2015; Martin et al., 2020; Mitchell et al., 2019; Morin et al., 2006; Perez, 2020; Sateia et al., 2000; Tempesta et al., 2020; Van der Zweerde et al., 2019; Van Straten et al., 2018). CBT-I research demonstrates long-term remission rates and higher than expected treatment response rates. Even though there is overwhelming evidence to support CBT-I, the treatment modality is underutilized due to the lack of awareness about its efficacy (Reynolds & Ebben, 2017).

The lack of accessibility of CBT-I treatment is a significant deficit in the United States healthcare system. The US healthcare industry allocates \$92.45-\$107.53 billion per year to treat insomnia (Reynolds & Ebben, 2017). There is a significant overlap between insomnia and mental health disorders; an estimated 50% of people with anxiety or depression also experience insomnia (NAMI, 2020). Up to 22-31.6% of the population sleeps poorly; thus, the need to increase CBT-I management availability is brazenly apparent (CDC, 2014; Reynolds & Ebben, 2017). An improvement in sleep can mitigate the severity of co-occurring illness and reduce overall healthcare costs associated with ongoing mental health treatment (NAMI, 2020).

The access points for referring patients to CBT-I are limited, with most patients learning about CBT-I in behavioral health settings (Perlis, Posner, & Ellis 2015). While the behavioral healthcare setting reaches the portion of individuals seeking mental illness help, many people

find it challenging to address mental health problems due to internal and public stigma (Chan & Fung, 2019). People who go to their primary care provider (PCP) for unrelated issues may serendipitously find treatment for their inability to get restful sleep. PCPs who are aware of CBT-I treatment are in a strategic location to boost the number of screenings and referrals; thus, these actions can decrease barriers to care.

CBT-I demonstrates superior efficacy; however, PCPs fail to refer patients to treatment (Reynolds & Ebben, 2017). A recent qualitative study reports 29% of practitioners will refer patients for insomnia therapy, and 70% prescribe hypnotic medication under the assumption patients prefer a quick solution to the problem (Do, 2020; Koffel et al., 2020a; Koffel, Bramoweth & Ulmer, 2018). This study outlines a lack of understanding regarding when to refer patients, knowledge deficits regarding CBT-I, and the limited comprehension of the overwhelming evidence supporting CBT-I (Koffel et al., 2020b; Koffel, Bramoweth, & Ulmer, 2018).

Rationale

CBT-I demonstrates effective long-term management of chronic insomnia. Research identifies continued sleep control at three, six, and twelve months post-treatment (Bastian et al., 2004; Bramoweth et al. 2020; Cronlein et al., 2019; Morin et al., 2006; Van der Zweerde et al., 2019). The prolonged results may occur from the combination of behavioral and cognitive aspects of the therapy (Van der Zweerde et al., 2019). People who do not receive restorative sleep react to neutral faces with increased negativity and demonstrate a negative emotional bias (Kjørstad et al., 2020; Park et al., 2012; Tempesta et al., 2020; Thakral et al., 2020). They are less productive, less motivated, and may adopt a sleep-deprived external locus of control; thus, strong sleep cognitive distortions place people at higher risk for severe insomnia (Kjørstad et al.,

2020; Lancee et al., 2020; Park et al., 2012; Tempesta et al., 2020; Thakral et al., 2020).

Addressing cognitive distortions and replacing them with more realistic perceptions increase positive outcomes with CBT-I (Cronlein et al., 2019; Janku et al., 2020; Okajima et al., 2017).

Furthermore, there is a statistically significant risk for developing depression, anxiety, and alcohol misuse with persistent insomnia; shockingly, some studies suggest a two to seven-fold increased chance of experiencing a mental health disorder along with insomnia (Baglioni et al., 2011; Dopheide, 2020; Gebara et al., 2018; Ong, Kuo, & Manber, 2008; Redeker et al., 2020). Also, patients who sleep poorly miss work, have an increased risk of accidents, and can make costly errors due to fatigue (Perlis, Posner & Ellis, 2015). These statistics illuminate the critical need for prevention measures, which can offset the downstream financial burden of new-onset mental illness associated with chronic insomnia (Natsky et al., 2019; Wickwire, Shaya & Scharf, 2016).

Lastly, the medical home is a novel place to increase access to insomnia care. Not only is the medical home able to refer more patients, but there is also the promising aspect of having the CBT-I therapist and PCP work together on the treatment plan. Sleep medication can co-occur in the beginning of CBT-I treatment; however, sleep medications may need dosage changes or may be discontinued altogether by the end of therapy (Perlis, Posner & Ellis, 2015). Moreover, a patient may need to have a sleep study to rule out obstructive sleep apnea, which can be addressed by the PCP. The patient receives the benefit of having a care team responding to their clinical needs promptly.

Specific Aims

The forthcoming quality improvement project's specific aim includes two crucial objectives:

1. 80% or more of patients receiving primary health care at the Medical Home receive a referral for treatment if their insomnia severity index (ISI) scores a seven or more, symbolizing an affirmative screen for insomnia.
2. 60% of the patients leaving CBT-I therapy have an ISI score of seven or below after four weeks of treatment.

Methods

Context

The evidence-based literature supports using CBT-I for chronic primary insomnia; however, some inclusion and exclusion criteria exist. People with new-onset obstructive sleep apnea, people with total sleep time less than 3.65 hours per night, people who are experiencing chronic psychosis, seizure disorders, severe parasomnias, and people who cannot restrict sleep due to daytime sleepiness do not meet the criteria for CBT-I therapy (Cheng et al., 2020; Clarke, 2020; Grandner, 2020; Littner et al. 2003; Mitchell et al., 2019; Ong, Kuo, & Manber, 2008; Waters et al., 2020). The patients in this improvement project restricted their sleep, experienced daytime fatigue, and filled out a daily sleep diary; thus, people who cannot tolerate these requests may choose to find other treatment modalities for chronic insomnia.

This project's practice guidelines are from Penn Psychiatry, the Veterans Association, the American Academy of Sleep Medicine, and the European Academy for Cognitive Behavioral Therapy for Insomnia (Baglioni et al., 2020; Chesson, et al., 2000; Martin et al., 2020; Morgenthaler et al., 2006; Perlis, 2008; Qaseem et al., 2016). Further educational insight came from the seminar titled *Principles and Practice of CBT-I: Cognitive Behavioral Therapy for Insomnia* and the book *Cognitive Behavioral Treatment of Insomnia: A Session-by-Session Guide* (Perlis, Posner, & Ellis, 2015; Perlis, 2008). These resources are easily obtained and

useful to any mental health professional who wants to master and implement CBT-I in their practice.

The project location is at an urban Family Medical Home Center that is a tier four patient-centered primary care medical home. The clinic serves patients on Oregon Medicaid, a group that remains consistently underserved (OHA, 2017). This quality improvement project promoted equitable care for low-income patients and reduced the stigma associated with mental illness. The ISI is a validated screening tool. This form's attachment to the pre-appointment paperwork given to patients is simple and electronic; thus, there is little additional work for the staff, who already experience a busy workload in the clinic (Gagnon et al., 2013).

Interventions

This quality improvement project includes the following three separate interventions:

1. The pre-appointment electronic paperwork for each patient at the urban Medical Home Clinic included the ISI. If the patient's score on the ISI was seven or above, they acquired a referral with an educational handout regarding CBT-I with steps on how to start treatment.
2. The project leader presented education to the five licensed medical providers and the ancillary staff at the clinic to answer basic questions about CBT-I. This CBT-I education strengthened engagement in the project and aligned all the participants with the same knowledge base. The team leader furnished each provider with a one-minute speech meant to pique the interest of eligible patients.
3. Patients received education on how to download the CBT-I Coach application on their phone and decided to proceed with an electronic sleep diary or paper version.

4. The Medical Home's psychiatric mental health nurse practitioner (PMHNP) conducted one cycle of CBT-I's four-week program for individual patients in the primary care setting with chronic insomnia.

Measures

The ISI index scores provide quantified data regarding the effectiveness of CBT-I in the medical home setting. A score of seven or below established no clinically significant insomnia, a score of eight to fourteen equated to subthreshold insomnia, a score of fifteen to twenty-one meant clinical insomnia was present in moderate severity, and a result of twenty-two to twenty-eight qualified as severe clinical insomnia. The project leader evaluated the ISI of all the newly established patients over the age of eighteen for three weeks and documented which individuals received a referral.

The final measure was the ISI index at the end of the CBT-I program. The number of patients with a score of seven or below determined the percentage of patients no longer experiencing insomnia. Additionally, each patient was solicited for feedback during each session to ascertain qualitative information.

Results

The compiled data during the three-week chart review showed sixty-three patients had an ISI of seven or more, and twenty-five of these patients were referred to CBT-I (40%). The patients' pre-treatment interviews helped determine eligibility for CBT-I, and ten patients subsequently met the criteria for treatment; ultimately, four of these patients completed CBT-I therapy. Figure 1 below shows the reader a visual breakdown of the previously mentioned data and allows the reader to see that many of the patients did receive referrals when indicated; however, many were eliminated due to not meeting the criteria for treatment. The feedback from

providers and medical assistants disclosed that the process works; every day the providers at the clinic examined around fifty to sixty patients, and the built-in electronic ISI permitted new patients to fill out the screening tool. Furthermore, the investigator prompted providers and patients to give real-time feedback, and Table 1 outlined the findings.

Table 1
Qualitative Feedback from Patients and Providers

Providers:

- Reported finding the process is working; however, they need reminders to look at the ISI. They requested email reminders every few weeks.
 - Requested additional pamphlets for the waiting room or in the exam rooms.
 - Wondered if they could continue to prescribe medication for sleep.
 - Queried about the established patients; need to include this population in the screening.
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Patients:

- Prefer the use the application and seem to forget with the paper version.
- Discussed how the CBT-I application has so much useful information, the thought cloud exercise worked.
- Some got nervous when thinking about meditating; this is a feature in the application.
- Appreciated the process of thinking ahead to figure out what may get in the way of following the sleep prescription.
- Relayed loving to have extra time in the day.
- Wondered about falling asleep before the prescribed bedtime; strategized what do if this continues to happen.
- Reported waking up less during the night and this is a welcomed change.
- Valued the coaching aspect of treatment; liked having the application to review areas of uncertainty.

Additionally, figure 2 displays each patient's pre and post sleep latency (time to fall asleep). Figure 3 shows their range of sleep efficiency (total time in bed divided by total time asleep). Figure 4 displays the pre and post ISI scores.

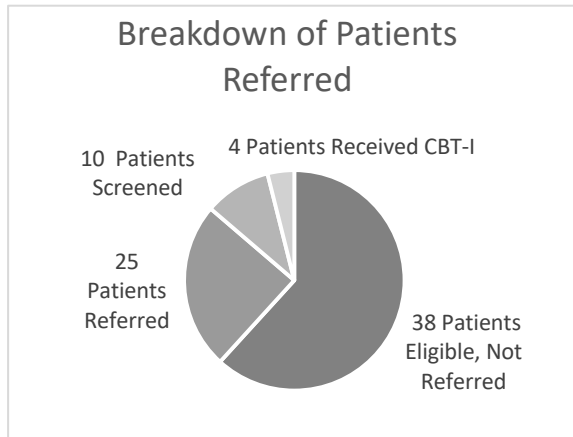


Figure 1. Visual Displays of Referrals Received

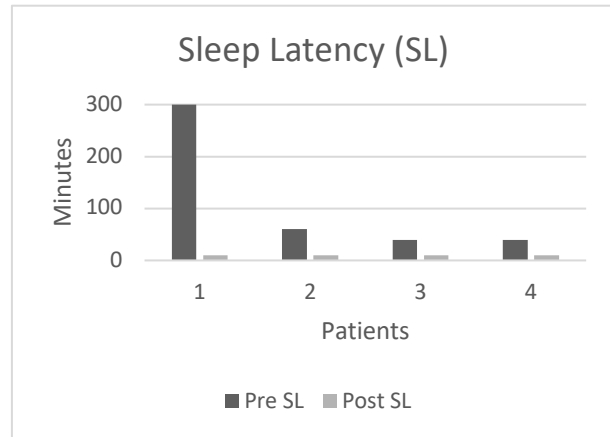


Figure 2. Pre and Post Sleep Latency in Minutes

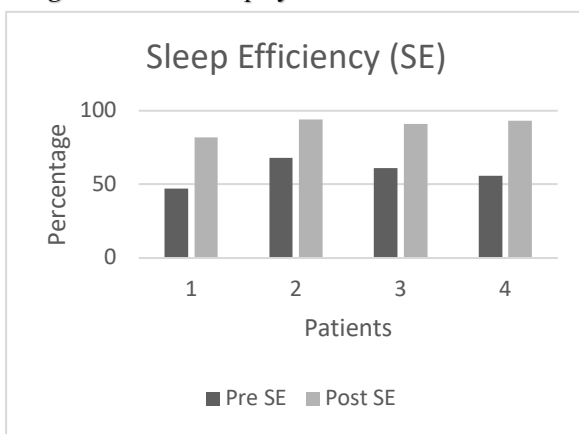


Figure 3. Pre and Post Sleep Efficiency Percentages

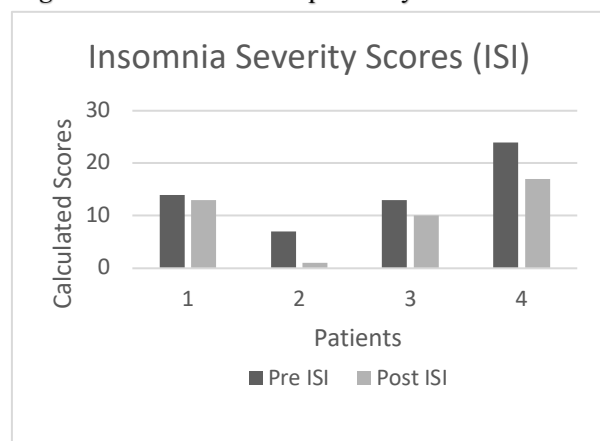


Figure 4. Pre and Post Calculated ISI scores

Discussion

The project’s initial proposed outcome measures were not met; however, a closer look at the results indicates fruitful information. The data show forty percent of patients received a referral; therefore, the goal of having eighty percent is not met. When interviewed, the providers in the clinic gave feedback on how to increase these referrals, which included having more education about CBT-I, additional pamphlets in the clinic for handing out, and quick reminders via email. Additionally, providers commented that a system for having established patients fill out the ISI will assist in increasing the referral rate as well. Future PDSA cycles will mitigate these referral issues and ensure a sustainable process for forwarding patients to treatment.

The pre and post-CBT-I ISI scores and the percentage change exhibited in figure 4 demonstrate the patients' subjective insomnia experience after the course of treatment. The ISI score dropped below seven for one of the four treated patients. The second aim of the project fell short because the reduced ISI scores resulted at twenty-five percent, not the proposed sixty percent. An unexpected benefit of this project, however, was the illuminating qualitative data that was received due to ongoing requests for feedback during the CBT-I iterations. Additionally, as seen in figures 2-4, there were remarkable changes in each patient's sleep latency, sleep efficiency, and ISI scores that are clinically relevant when assessing the data for quality improvement.

During the treatment, the patients' reflections elucidated how to adapt CBT-I to fit the primary care model. The CBT-I process transformed into a mixed methodology by implementing the CBT-I application which allowed users to document their sleep and export the data to the treatment provider. The CBT-I application allowed the project leader to start therapy quickly, obtain the needed sleep diary data, and streamline the process of establishing a sleep prescription with stimulus control education. The CBT-I application tool tab offered all of the imperative educational points needed for CBT-I. The need to become more directive and succinct with the time allotted became clear, and the recommendations from patients specified essential clues for the future success of CBT-I in the medical home.

Upon reviewing the findings, CBT-I appears to be a viable and operational source of treatment for insomnia with no notable differences in effectiveness for patients receiving treatment from a provider integrated into a medical home. The primary target for this project is to increase access to care, and the findings of this project suggest the endeavor would be productive with the adaptation of CBT-I to match a medical home environment. The

environmental changes entail using a CBT-I application, having more direct conversations with patients, and continuing the PDSA cycles to accomplish the overall goal of matching the appropriate patients with this insomnia treatment. This quality improvement project adds to the literature data on outcome measures for patients who receive CBT-I in the primary care context, which may offer additional benefits secondary to the collaborative teamwork, the ability to funnel clients to care in a novel way, and the capability to have healthcare reach its full practice potential.

Limitations

A performance improvement project inherently lacks some features associated with research such as reliability or validity; however, this project offers generalizability and supports continued investigation for CBT-I in the medical home. The patients in this undertaking inherently differ from one another; thus, the variation level cannot predict future therapeutic outcomes. The clinic takes Oregon Medicaid and commercial insurance; therefore, there is an unidentified numerical composite of patients. Lastly, the project's timeline did not allow the investigator to complete the traditional six- and eight-week length of treatment implemented in most behavioral environments. This improvement project reduced the length of treatment to four weeks; thus, one can only speculate how the condensed timeframe altered the results.

Conclusion

The Institute for Healthcare Improvement (IHI) calls on professionals to develop four healthcare aims: to decrease costs, improve the patient experience, ensure a higher quality of health outcomes, and develop a personalized goal for each unique individual in the healthcare system (IHI, 2020). The treatment for insomnia can decrease future costs of chronic mental and medical illness, can increase productivity in the workforce, and can decrease financial hardships

associated with accidents related to fatigue. This CBT-I quality improvement project within a medical home aligns with the IHI quadruple aim to advance patient health by delivering increased access to quality treatment with maximum benefit at low costs, with a unique goal of providing the treatment for insomnia with its adverse downstream effects on health (IHI, 2020). This quality improvement project provides a way to open the door to increased access to CBT-I; additional work to adequately adapt the therapy to the fast-paced medical home environment is an important takeaway and will open the door for future explorations.

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