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Utilizing mindfulness-based practices in a pediatric emergency department

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UTILIZING MINDFULNESS-BASED PRACTICES IN

A PEDIATRIC EMERGENCY DEPARTMENT

by

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DEDICATION

I dedicate my doctoral project to my beloved wife and three children. Your unwavering

support and understanding have made this endeavor achievable. I express my gratitude

for your belief in me, your support, and your encouragement in the development of this

project.

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ABSTRACT

Mental health conditions affect one in five children with only half of these children receiving proper treatment (CDC, 2022). This is partly due to the continued shortage of trained pediatric psychiatric providers in the community (American Academy of Child and Adolescent Psychiatry, 2019). In addition to the shortage of providers, there remains a shortage of pediatric psychiatric beds (Kraft et al., 2021). These combined factors have led to the pediatric boarding crisis in America (Leyenaar et al., 2021; McEnany et al., 2020; Nash et al., 2021).

When adolescents are admitted to the emergency department due to a mental health crisis, their ability to rest and sleep is often disrupted. The "Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department" program offers occupational therapy practitioners a framework to help these adolescents regain a sense of normalcy in their daily routines and purposeful activities. Through the incorporation of mindfulness-based practices and comprehensive education, adolescents can work on re-establishing a healthy balance in their rest and sleep patterns.

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CHAPTER ONE – Introduction

Mental health is as important as physical health for any individual. According to the Centers for Disease Control and Prevention (CDC), mental health is comprised of emotional, psychological, and social well-being (*About Mental Health*, 2023). The foundations of mental health begin in childhood as developmental and emotional milestones are reached. A mentally healthy child is one who reaches developmental and emotional milestones with appropriate social skills, coping strategies, and has a positive quality of life engaged in their home, school, and community (CDC, 2023).

Mental health challenges often start in childhood as evidenced by one in six children aged two to eight years of age being diagnosed with a mental or behavioral disorder (CDC, 2022). Pediatric mental health conditions are often unseen diseases that have been underdiagnosed and under-treated in the American healthcare system. Some of the barriers connected to pediatric mental health conditions include the lack of universal screening, lack of participation in mental healthcare services, decreased availability of licensed and trained mental health providers, lack of access to effective treatment, and the stigma of living with a mental health condition (Toure et al., 2022).

With mental health conditions often starting in childhood and adolescent years, there has been a lack of screening to properly identify these issues early on and provide resources and treatment options (Toure et al., 2022). Insurance reimbursement for mental health treatment continues to be lower than the rates for other health conditions (Herndon et al., 2020). The closure of mental health hospitals and the loss of beds to provide psychiatric treatment has been an ongoing issue in the American healthcare system ("The

Psychiatric Bed Crisis in the United States: Understanding the Problem and Moving Toward Solutions," 2022).

Most recently there has been an emphasis placed on screening adolescents for mental health issues in both the primary care and school settings. This screening is to identify mental health conditions early on before they grow into more significant mental health illnesses. Earlier identification will in theory lead to improved health outcomes for children and adolescents. Yet, even with earlier screenings and identification, there remain difficulties in accessing pediatric mental health services in the community setting. A recent study conducted by Toure et al., (2022) found five significant barriers to accessing pediatric mental health services. These barriers included 1) inadequate training and limited knowledge of primary and school-based providers, 2) limited resources within the community for staffing, language barriers, and referral issues, 3) restrictive guidelines and limited funding in current programs, 4) distance traveled and financial resources to seek services, and 5) parental mental status. Even though this added emphasis on earlier identification of mental health conditions exists, the greater problem has not been addressed. There remains a lack of treatment providers and treatment options for mental health conditions beginning as early as two years old and into the adolescent years (Toure et al., 2022).

According to a report by the CDC (CDC, 2022), it has been estimated that one in five children suffer from a mental health condition, and only half of the children identified with a mental health disorder receive proper treatment. This creates a major challenge for millions of children going without treatment each year. The COVID-19

pandemic has only added to this problem with the closure of schools, the loss of occupational engagement with peers, loss of social engagement with peers, loss of daily structure and sleep schedules, and increased isolation leading to an occupational imbalance among adolescents.

The American healthcare system is not geared toward preventative medicine regarding mental health. The lack of proper mental health treatment and resources in adolescent years often results in adults who continue to struggle with mental health issues. Often parents of these adolescents turn to the emergency department (ED) when their child is in crisis. This has led to the ED becoming the first stop on the way to receiving treatment, yet the ED is not set up to handle this type of care. The ED is structured to triage, stabilize, and mobilize the patient onto their next steps in receiving further care or being discharged home.

Problems to Address and Outcomes Sought

This project proposes to address the use of mindfulness-based interventions in conjunction with self-regulation tools to support adolescents in the ED with their ability to calm and rest during their admission for mental health issues. The current problems addressed by this project are as follows: Pediatric ED boarding, the current length of time spent in ED without intervention, and the lack of training and resources for providers in the ED. The aim of this project is to produce several outcomes. Among those outcomes sought are 1) improvements in the adolescents' mental health as measured by a self-report, 2) the ability to rest and sleep while in the ED as measured by the Pittsburgh Sleep Quality Index (PQSI) (Buysse et al., 1989), and 3) reduction in the readmission rate for a

mental health crisis.

Pediatric boarding occurs when an adolescent is admitted to the ED for a mental health crisis while waiting for treatment. During this process, they are triaged and if the crisis is not life-threatening, they are made to wait long hours and in some cases days in the ED. In a recent study, published in the journal *Pediatrics*, average ED boarding times ranged from five to 41 hours, whereas median inpatient boarding times ranged from two and three days for patients awaiting transfers to a psychiatric bed (McEnany et al., 2020). During this long wait for treatment, children are often placed in a small room on a stretcher with little or nothing to occupy their time.

This process is a long one and has only gotten longer in the past several years. According to Nash, et al., (2021), more than 21% of mental health stays lasted more than six hours, compared with fewer than 5% of non-mental health visits to the emergency department, while stays of more than 12 hours occurred in 7.7% of mental health visits versus just 1.2% of other visits.

Providing training and resources for the ED providers would be a positive step in addressing stress levels and long hours spent in the ED. The environmental conditions in the ED, not only impact the providers they also impact the children and adolescents awaiting treatment. ED conditions can be noisy, hectic, and bright (Wood et al., 2019). These conditions may lead to the escalation of behaviors (Dolan & Fein, 2011). Behavior is defined as patient actions that may or may not result in physical contact with another individual, and often includes, hitting, kicking, throwing objects, yelling, biting, spitting, and pushing. The most common behaviors were found to be hitting and kicking

(Derscheid & Arnetz, 2020). Long hours under these conditions may intensify anxiety and fear in an already stressful situation.

Pediatric boarding in the ED has become increasingly commonplace. This is not just a regional issue; it is a widespread issue across the country. The current practice of boarding in the ED is a short-term solution and does not address the long-term problem. Providing interventions in the ED is a step in the right direction to address this problem.

Importance of the Problem and Consequences to the Clients

When an adolescent has been admitted to the ED for mental health crisis the effects are not just on the individual. The impact is felt by the family, friends, and loved ones of the adolescent. The occupations, roles, and routines of everyday life are fundamentally disrupted. Every day spent in the ED is a day of missed school or work, a day of missed social and leisure activities, and a day of missed opportunities. Multiply this impact across every ED in the country and the scope of this problem is significant.

Occupational therapy practitioners understand the importance and interaction of purposeful activity, occupations, leisure activities, and social interactions in an individual's daily life. How the loss of independence in any or all of these affects the individual in their daily living skills. While admitted to the ED, there is a fundamental loss of independence and disruption to daily life leading to occupational imbalance.

What is the role of occupational therapy in the pediatric ED for these adolescents waiting for treatment? Should occupational therapy have a role in the pediatric ED regarding improving mental health outcomes? According to the Occupational Therapy Practice Framework (OTPF), 4th Edition, "Achieving health, well-being, and participation

in life through engagement in occupation" is interconnected to the domain and process. (Gibbs et al., 2020). Within the domain of occupational therapy reside occupations, contexts, performance patterns, performance skills, and client factors. The occupational therapy practitioner understands the interconnection between all these elements. There must be a balance, with no single element greater than another to promote optimal health and wellness.

According to the CDC, 7.1% of children ages 3–17 have been diagnosed with anxiety, and 3.2% of children ages 3–17 have been diagnosed with depression (Bitsko et al., 2022). Children and adolescents who have anxiety and depression struggle with sleep (Johnson et al., 2000). The occupation of rest and sleep is an important element in the overall well-being and promotion of health in children and youth.

This demonstrates a need for occupational therapy interventions and treatments in the ED to support the occupations of rest, sleep, and activities of daily living (ADL). The OTPF-4 illustrates how occupations are influenced by performance patterns, performance skills, and client factors. Admission to the ED is a fundamental disruption in the adolescents' performance patterns, performance skills, and client factors. McEnany et al., (2020) stated that "no research published to date has been focused on the development, implementation, or evaluation of mental or behavioral health interventions for boarding youth." The introduction and application of mindfulness-based interventions by occupational therapists to ED providers and patients in conjunction with self-regulation tools can be instrumental in improving rest and sleep in the ED.

The very nature of being admitted to the ED creates a fundamental disruption in

multiple areas of daily life, which can lead to dysfunction. The occupation of rest and sleep as defined by the OTPF-4 is needed for optimal performance and engagement in daily life skills. The environmental conditions inside the ED may affect sleep due to the level of noise, lighting, and long hours of laying on an uncomfortable stretcher (Chauny et al., 2019). The regular habits and routines are disrupted with the removal of street clothing and wearing of a hospital gown. The comfort of personal belonging and linens is replaced with hospital-issued items. The ability to independently use and access a bathroom for relief and comfort is replaced with a call button to alert the nurse of your needs. It is not uncommon in some instances for personal devices to be taken away or limited in their use, thereby decreasing the individuals' social interaction and connection to family and friends, which leads to further feelings of isolation. There are many factors to consider when addressing the impact of the ED on the individual. This project will focus on the factors of rest and sleep.

Causes and Contributing Factors

Causes and contributing factors to adolescent mental health ED admissions include the continued shortage of trained pediatric mental health providers, a continued shortage of beds at psychiatric facilities, and most recently the impact of COVID-19 on the mental health of children and adolescents.

The shortage of trained pediatric mental health providers in the community setting is not a new problem. This problem has been identified as a workforce crisis in 2019 by the American Academy of Child and Adolescent Psychiatry (AACAP). Many communities across the United States do not have enough providers, which would lead

families to travel long distances to see a provider (CDC, 2019) The AACAP states that there are approximately 8,300 practicing child and adolescent psychiatrists in the United States and over 15 million children and adolescents who need their expertise (American Academy of Child and Adolescent Psychiatry, 2019). When a family does find a provider that will accept their insurance, there are often long waitlists to be seen. This is a classic supply and demand issue; not enough providers in the community and a high number of adolescents need a provider.

This shortage of trained providers is leading families to seek care in the ED. This then leads to increased time spent in the ED for adolescents with mental health issues as more adolescents are seeking care through the ED. (Axelson, 2019) found "there has been a 21% increase in the number of psychiatric providers, yet this increase still does not meet the current needs."

Once an adolescent has been seen by a licensed provider and the decision is made to transfer to an in-patient psychiatric facility, an appropriate bed may not be available. This shortage of pediatric psychiatric beds has been an ongoing issue (Gellar 2006; Kraft et al., 2021). There are multiple factors that have continued to exacerbate this shortage of psychiatric beds. These include decreased reimbursement, the continued rise in the number of children and adolescents with diagnosed mental health conditions, facility closures without offsetting these closures with new facilities opening, and the ongoing shortage of trained and licensed providers to staff these facilities. These issues are not new and have been long-standing.

An important factor to consider during this prolonged ED boarding while

awaiting admission to a psychiatric facility is the lack of attention to important daily routines on the part of the ED staff. These adolescents are not receiving interventions that will help them to structure their days, improve their sleep, promote calming or support daily occupations. As a profession, occupational therapy understands the importance of these factors and the consequences when they are not met.

Further exacerbation of this problem of prolonged ED admissions occurred with the emergence of COVID-19. From the spring of 2019 to the fall of 2020 there was a 31% increase in adolescent mental health visits to ED's across the United States (Leeb et al., 2020). There continue to be adolescents dealing with increased fear, separation from family and friends, loss of loved ones and friends, and loss of social interaction and engagement. The majority of schools across the nation were closed for some if not all of 2020 with various school districts using a wide variety of virtual learning. The disruption of in-person schooling resulted in the loss of social engagement and structure to daily occupations, roles, routines, and habits. The feelings of hopelessness, depression, anxiety, fear, and isolation have been common themes among adolescents since the start of the pandemic. A recent systematic review found that high rates of depression and anxiety are more likely following forced isolation events (Loades et al., 2020) such as the COVID-19 lockdowns and closures.

These problems combine to create a significant barrier to the overall mental health of adolescents in the ED. There are many challenges facing adolescents admitted to the ED for a mental health crisis. This project aims to address occupational therapy's role in

the ED in supporting adolescents during a mental health crisis to improve health and wellness.

Proposals to Address the Problem

As part of an interdisciplinary team of licensed mental health providers, physicians, nurses, social workers, and case managers occupational therapists can work in a consultant's role by training the ED staff on the benefits of mindfulness and providing a toolbox of mindfulness and self-regulation strategies that can be utilized in the ED and beyond the ED setting. This project has four core elements, which are listed as follows:

- Training adolescents and their familial caregivers for the independent use of mindfulness-based apps on an iPad, such as Calm (*Calm.com*, 2013), Headspace (*Headspace: Mindful Meditation*, 2023), and Smiling Mind (*Smiling Mind: Meditation App*, 2023), would be utilized by adolescents in the ED setting. The goal of this intervention would be to promote rest and sleep.

- Occupational therapy in a consultation role for the purpose of training ED staff in the benefits of mindfulness. The training would include mindfulness practices to address stress management and promote wellness, rest, and sleep techniques. The goal of this training is to improve the ED staff's understanding of how mindfulness practices will benefit the adolescents as well as their own health and sleep practices.

- Occupational therapy education with the family/caregiver and the adolescent on the importance of carrying over these routines to create daily habits to promote rest and sleep in the home environment. The establishment of healthy habits and

routines in the home setting is an important step in reducing the readmission rates for mental health issues.

- The creation of a self-regulation toolbox that would be utilized in the ED to assist adolescents in calming and reducing behaviors by engaging in purposeful activities. The toolbox would include hand-held fidgets, breathing exercises, and movement options for adolescent use. Written explanations and suggestions for how to utilize these tools would be included in the toolbox.

These four core elements come together to form a comprehensive proposal that is intended to address the issues of rest and sleep, and the ability to calm and engage in purposeful daily habits and routines for adolescents admitted to the ED. This project will demonstrate the unique perspective that occupational therapy brings to enhancing the health and promotion of wellness in the daily lives of adolescents.

CHAPTER TWO-Theoretical and Evidence Base to Support the Proposed Project

Overview of the Problem

This project focuses on providing training in the use of mindfulness practices for ED providers and additional self-regulation tools, and strategies to be utilized in the ED setting with adolescents. The model below outlines the external and internal variables that are contributing to the extended time adolescents are spending in the ED without intervention.

The model's left side details the community-based reasons for the ongoing mental health crisis in adolescents. As noted previously, this has been an ongoing public health issue that has only become worse with the rise of COVID-19. These community-based reasons have only added to the cycle of increased admissions to the ED for mental health crises among adolescents.

The model's right side details the internal difficulties in the ED experienced by adolescents who have been admitted for a mental health crisis. The disruption of occupations and the effects on adolescents. Prolonged admission to the ED results in boarding due to community-based shortages of proper placement. Additionally, the cyclical nature of readmission is due to the ongoing mental health crisis and the community-based shortages of treatment.

Occupational therapists have the potential to positively impact adolescents in the ED by providing training and education to ED providers on the benefits of mindfulness practices and self-regulation tools.

Figure 2.1

Logic Model
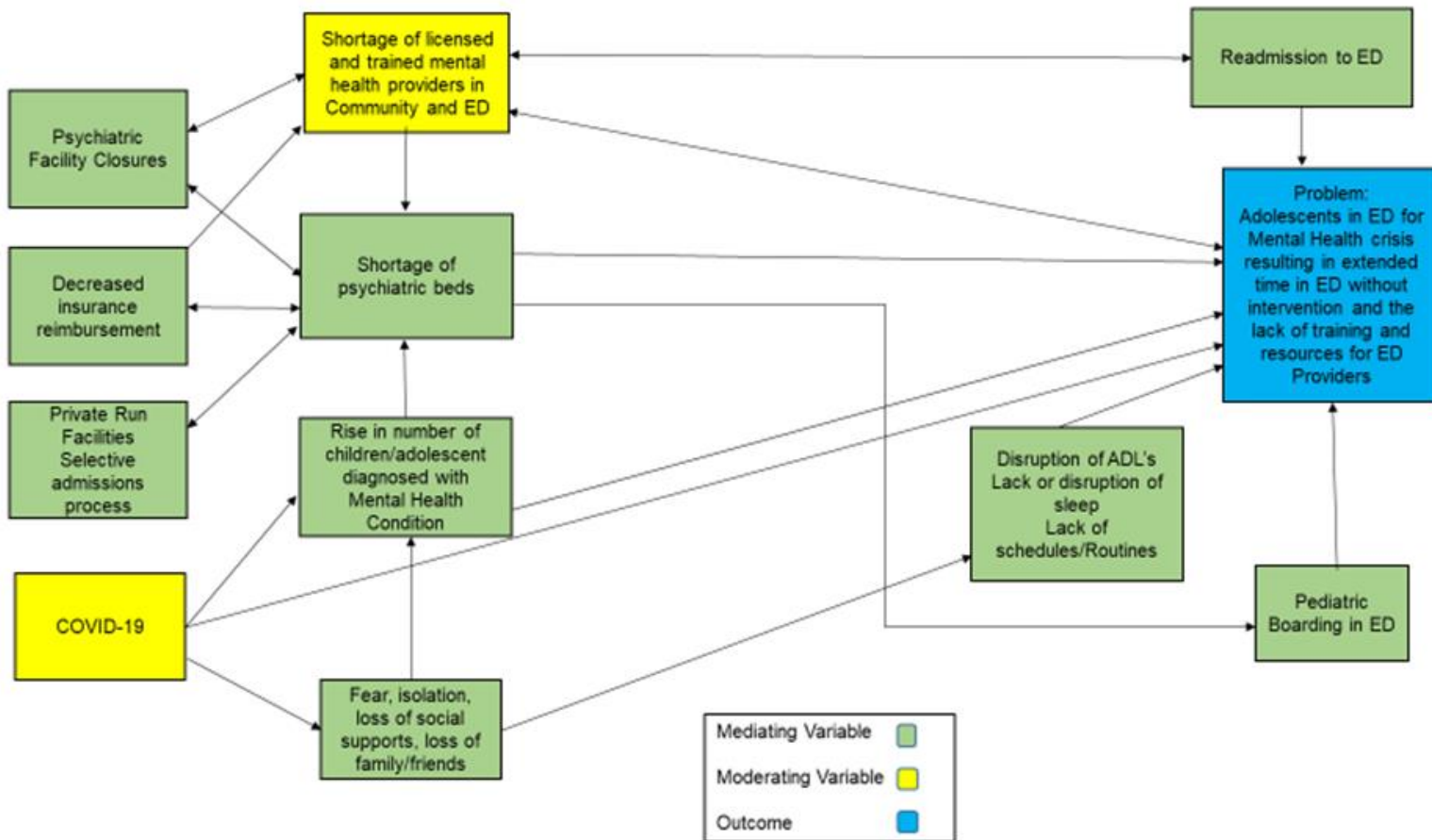
Presenting the Theoretical Framework

The theoretical basis for this project is Transformative Learning Theory (Mezirow, 1991), which involves the process of changing our frames of reference or deep-held beliefs. This occurs through critical reflection on our assumptions, beliefs, and expectations that change the way we view the world around us. This doctoral project is focused on the occupational therapist, in a consultant role providing education to the ED providers. The education on the benefits of mindfulness practices for ED providers would assist them in understanding how these practices would benefit them in their daily lives in both personal and professional settings. Through these individual transformations in experiencing the benefits of Mindfulness, providers will be able to understand how these practices are beneficial to improve health outcomes for adolescents admitted for a mental health crisis.

Transformative Learning Theory is a good match for the project as a central component of this theory is that adults experience an epoch or major event that transforms their perspective and would lead to learning and critical discourse in this learning process. In the case of COVID-19, this is indeed an epoch that would cause an individual to undergo a perspective transformation and lead them to undergo a learning process that would change their roles, habits, and beliefs. More broadly it relates well to occupational therapy as a lens in which we view change as an individual, and the impact of those changes upon our roles, habits, and beliefs of daily life.

In Transformative Learning Theory the process of change is seen through the individual's self-directed actions through critical self-reflection on their previously held

beliefs and assumptions. This would lead the individual to seek out discourse with their peers to understand. Mezirow (1991) laid out his ten-step process in which this change would occur through 1) a disorienting dilemma; 2) self-examination; 3) critical reflection on assumptions; 4) recognition of one's dissatisfaction with a situation or current public issue; 5) exploration of options; 6) plan for action; 7) acquiring new knowledge; 8) experimentation with new roles and relationships; 9) building competence; 10) reintegration of new perspectives into one's life in society.

Transformative Learning Theory is based upon how individuals interpret their experiences, and how they see the world is based upon these perceptions and experiences. The individual would go through life expecting things to be as they always were until they were to encounter a situation that is not consistent with their expectations. This would then result in a change in their perspective or lead to a transformative experience. The two key components of this theory are critical reflection and critical discourse. Critical reflection is a conscious decision to become more self-aware of previously held beliefs, habits, and deeper thoughts about life experiences. This critical reflection is what leads an individual to change their frames of reference on previously held beliefs or points of view. Through this learning process, critical discourse would be necessary to understand new perspectives and potential outcomes. These discussions would allow the individual to engage in a logical and rational process to identify previously held biases, inconsistencies, and identification of blind spots to then make a conscious decision to change and improve.

The role of the educator in transformative learning is to assist learners in

becoming aware and critical of their own assumptions or beliefs. The educator would facilitate the need to engage in critical discourse to arrive at a new understanding of previously held beliefs. The education on the benefits of mindfulness practices for ED providers would assist them in understanding how these practices would benefit them in their daily lives in both personal and professional settings. Through these individual transformations in experiencing the benefits of Mindfulness, providers will be able to understand how these practices are beneficial to the adolescents under their care in the ED. These two key components mesh well with the current state of affairs in addressing both the community and ED issues surrounding the ongoing pediatric mental health crisis.

Our current medical model for the treatment of mental health problems continues to come up short. There is a need for critical reflection and discourse on the status quo of how mental health issues are handled which has led to the continued barriers to adolescents receiving proper mental health services in the community setting. This status quo is continuing the constant cycle of admissions and readmissions in the ED for mental health crises. Furthermore, there is a need for critical discourse around what interventions are currently available inside the ED for these individuals and what else can be done to improve their outcomes. The use of Mindfulness practices can be utilized by adolescents daily to transform their health outcomes.

The difficulties which surround pediatric mental health are not new, yet the arrival of COVID-19 can be seen as a transformative event that would hopefully lead to a significant change in the way we view pediatric mental health in both the community and

ED settings.

As occupational therapists, we view the individual's mental health as fundamental to their physical health and overall well-being. To achieve personal goals and participate in meaningful occupations, adolescents must have the necessary tools to address their own mental health in the context of the environment they find themselves in.

Review of Existing Evidence Regarding the Problem

Clinical Question

Is there evidence that pediatric boarding is a widespread problem in the United States?

Summary of the Evidence Base

A literature search was conducted using EMBASE, CINAHL, PsycINFO, and PubMed. The search terms used for the search were "prevalence", "rates of", "incidence of", "frequency of", "pediatric boarding", "pediatric mental health boarding", "boarding", "widespread", "problem", "United States", "America", and "U.S.".

Limits were set for publications within the last twelve years, English text only, and availability of linked full text. Exclusion criteria included publications older than twelve years and articles that did not relate to pediatric boarding within the United States.

Ten studies were located that were relevant to the clinical question. Nine studies were selected for review. One study was excluded due to boarding occurring outside of North America. Criteria for selection included: 1) pediatric or adolescent boarding, 2) boarding occurred in the emergency room (ER)/emergency department (ED), 3)

admission for mental health diagnosis, 4) located within the United States, 5) English

publications with full text available. Criteria for exclusion were: 1) publication date more

than twelve years from the present, 2) ED boarding occurred outside of North America.

Broadly these nine articles suggest that pediatric boarding is a widespread

problem within the United States. Four articles in this review focused on the whole of

the United States covering all regions (McEnany et al., 2020; Nash et al., 2021; Nolan et

al., 2015; Pitts, S et al., 2014) reporting on the nature of pediatric boarding. Three

articles (Gallagher et al., 2017; Hoffman et al., 2018; Leyenaar et al., 2021) reported on

the problem of pediatric boarding over the span of time from 2013 to 2020 in a large

pediatric hospital in the Northeast. One article reported on pediatric boarding in both

rural and urban settings in the Southeast.

Common themes that emerged from this review were: 1) mental health related

admissions experienced a longer length of stay than non-mental health admissions

(Mapelli et al., 2014; McEnany et al., 2020; Nash et al., 2021; Nolan et al., 2015; Pitts et

al., 2014; Smith et al., 2019), 2) mental-health-related admissions experienced boarding

in the ED at a higher rate than non-mental health admissions (Mapelli et al., 2014;

McEnany et al., 2020; Nash et al., 2021; Nolan et al., 2015; Smith et al., 2019), 3)

boarding durations differed greatly depending on the region and if the setting was rural,

urban, or suburban (Leyenaar et al., 2021; McEnany et al., 2020; Nolan et al., 2015; Pitts

et al., 2014; Smith et al., 2019), 4) the incidence of pediatric boarding in the ED has

steadily been increasing over the past 10 years (Gallagher et al., 2017; Hoffman et al.,

2018; Mapelli et al., 2014; Nash et al., 2021), and 5) the annual number of pediatric

mental health visits to the ED has increased at a higher rate than non-mental health related visits (Gallagher et al., 2017; Hoffman et al., 2018; Mapelli et al., 2014; McEnany et al., 2020; Nash et al., 2021).

Clinical Bottom Line

Overall, there is considerable evidence that pediatric boarding is widespread across the United States. This trend has been occurring for greater than twenty years and has only become more prevalent in the past ten years. The percentage of pediatric boarding for mental health-related admissions continues to rise with one study demonstrating a 24% increase over an eight-year period (Hoffman et al., 2018). Pediatric ED boarding times for mental health-related diagnoses occurred at a higher rate and for a longer duration than non-mental health diagnoses. One study found that mental health-related boarding occurred 4.78 times higher than non-mental health and for 2.78 hours longer than non-mental health admissions (Nolan et al., 2015). Hospitals in the Northeast had higher rates and longer duration of pediatric boarding in the ED compared to all other regions in the United States (Leyenaar et al., 2021; Nolan et al., 2015; Pitts et al., 2014).

This problem falls under the domain of occupational therapy due to the potential impact that pediatric boarding has on the adolescents' engagement in occupations, client factors, performance skills, performance patterns, and contexts and environments as defined by the Occupational Therapy Practice Framework - 4th Edition (OTPF-4th edition), (Gibbs et al., 2020). There are potential fundamental disruptions in the adolescents' ADL's, rest and sleep, play, leisure, and social participation while boarding

in the ED. The OT practitioner is uniquely qualified to address these imbalances that are created in an adolescent's occupations, client factors, performance skills, and performance patterns due to boarding in the ED environment.

Similarities and Differences

Similarities

All studies found that the incidence rate of pediatric boarding in the ED for mental health-related diagnoses has continued to increase over the past ten years and for longer durations than non-mental health diagnoses. Seven of the ten studies utilized large data sets from national/regional sources that covered both rural and urban hospital settings demonstrating that pediatric boarding for mental health-related diagnoses is affecting all communities (Leyenaar et al., 2021; McEnany et al., 2020; Nash et al., 2021; Nolan et al., 2015; Pitts et al., 2014; Smith et al., 2019). Nine out of ten studies utilized retrospective data for analysis in their research design (Gallagher et al., 2017; Hoffman et al., 2018; Mapelli et al., 2014; McEnany et al., 2020; Nash et al., 2021; Nolan et al., 2015; Pitts et al., 2014; Smith et al., 2019).

Differences

Two research studies were completed at the same hospital site (Gallagher et al., 2017 & Hoffman et al., 2018). One study showed in two years a 50% increase in pediatric boarding in the ED for mental health-related diagnoses (Gallagher et al., 2017). The definition of what was considered boarding varied from >2 hours (Pitts et al., 2014) to >6 hours (Nolan et al., 2015). Two studies (Nash et al., 2021 & Smith et al., 2019) found that Hispanic ethnicity was associated with a longer ED length of stay.

Quality and Limitations of Current Research

The evidence presented in this review is peer reviewed, which represents a high standard of quality. All articles included in this review were published in academic journals.

The evidence presented is generalizable to both urban and suburban settings for the pediatric ED population.

While the articles found to support the evidence that pediatric boarding in the ED is widespread, the majority of data utilized is retrospective in design with the most recent data from 2015. One article included for review (Leyenaar et al., 2021) was based upon a web-based survey conducted in March 2021 with limitations of under-representation of rural and community hospitals as well as the survey relying on self-report and absence of administrative codes. While several articles involved single sites (Gallagher et al., 2017; Hoffman et al., 2018; Mapelli et al., 2014), these sites were free-standing children's hospitals in urban centers with high volumes of ED patients seen each year.

Recommendations

The amount of quantitative studies on this research area is robust, yet there remains room for continued quantitative studies that include more rural and community hospital ED settings with the most current data available.

Clinical Question

Is there evidence that adolescents and/or young adults with mental health issues experience lengthy ED visits without intervention?

Summary of the Evidence Base

A search of the literature was conducted using EMBASE, CINAHL, PsycINFO, and PubMed. The search terms used for the search were "adolescent", "median", "length of stay", "waiting for treatment", "ED" or "Emergency Department", "mental health visits", "psychiatric", "without intervention", and "left before seen".

Limits were set for publications within the last twelve years, English text only, and availability of linked full text. Exclusion criteria included publications older than twelve years, articles that did not relate to mental health lengthy ED stay and interventions, and articles that did not relate to ED stay within the United States.

Eight studies were located that were relevant to the clinical question. All eight studies were selected for review. Criteria for selection included: 1) pediatric or adolescent ED stays greater than four hours, 2) admission for mental health diagnosis, 4) located within the United States, and 5) English publications with full text available. Criteria for exclusion were: 1) publication date more than twelve years from the present, 2) ED stays which occurred outside of North America.

The majority of the evidence suggests that adolescents are experiencing lengthy ED visits without intervention (Case et al., 2011; Hoffman et al., 2019, Mapelli et al., 2015; O'Neil et al., 2016; Smith et al., 2019). The three remaining studies in this review (Casher et al., 2022; Gallagher et al., 2017; Kraft et al., 2021) presented evidence that treatment was provided during lengthy ED visits that often resulted in boarding in either the ED or on an in-patient unit while awaiting transition to psychiatric hospitalization.

Common themes that emerged from this review were: 1) lengthy ED visits for

adolescent mental health-related visits were a consistent theme across all articles (Case et al., 2011; Cashier et al., 2022; Gallagher et al., 2017; Hoffman et al., 2019; Kraft et al., 2021; Mapelli et al., 2015; O'Neil et al., 2016; Smith et al., 2019), 2) rural and suburban ED are under-represented in the data (Case et al., 2011; Smith et al., 2019), 3) the length of stay varied depending on the region in the United States (Case et al., 2011; Kraft et al., 2021; O'Neil et al., 2016; Smith et al., 2019), and 4) longer ED visits were seen in urban Northeast hospitals (Case et al., 2011; Gallagher et al., 2017; Hoffman et al., 2019; Mapelli et al., 2015).

Clinical Bottom Line

Most of the evidence demonstrates that adolescents experience lengthy ED stays without interventions for mental health admissions. Only three of the eight articles specifically addressed the use of interventions. As previously established, the trend of pediatric boarding in the ED has been occurring for greater than ten years, yet adolescents continue to experience lengthy ED stays without intervention.

This problem falls under the domain of occupational therapy due to the potential impact that lengthy ED stays have on the adolescents' occupations, client factors, performance skills, performance patterns, and contexts and environments as defined by the OTPF-4th edition (Gibbs et al., 2020). The unique lens that occupational therapy applies in viewing the individual's needs, values, and daily living skills that are disrupted during lengthy ED stays positions the OT practitioner to deliver meaningful interventions in the promotion of health, wellness, and regaining independence in their habits, roles, and routines.

Similarities and Differences

Similarities

All studies reported on lengthy ED stay for pediatric/adolescent mental health admissions. Three studies that were conducted in the same pediatric hospital setting in the Northeast all reported lengthy ED stays (Gallagher et al., 2017; Hoffman et al., 2019; Mapelli et al., 2015). Six studies utilized retrospective data for analysis in their research design (Case et al., 2011; Gallagher et al., 2017; Hoffman et al., 2019; Kraft et al., 2021; O'Neil et al., 2016; Smith et al., 2019).

Differences

The three studies that were conducted at the same pediatric hospital in the Northeast that reported lengthy ED stays varied in their reporting on interventions. One article (Gallagher et al., 2017) reported on specific interventions; the second article (Hoffman et al., 2019) advocated for interventions in the ED, yet was not the focus of the study and referred to the Gallagher article; the third article reported on the lengthy ED stay and made no mention of the need for interventions in the ED (Mapelli et al., 2015). The only study conducted in the Midwest reported both prolonged waiting time and distance traveled for care being greater for adolescents than adults (O'Neil et al., 2016).

Quality and Limitations of Current Research

The evidence presented in this review is peer reviewed, which represents a high standard of quality. All articles included in this review were published in academic

journals. The evidence presented is generalizable to both urban and suburban settings for the pediatric mental health patient experiencing lengthy ED visits. The data utilized for analysis in this review spanned from 2001 to 2019 and demonstrated the scope of the problem of lengthy ED stays without intervention.

Of the two most recent articles (Casher et al., 2022 & Kraft et al., 2021) included in this review, reporting on the use of interventions for adolescents with mental health admissions, the Casher et al., (2022) article had a small sample size (n=71) in the intervention group and was unable to detect the effect of their intervention. Kraft et al., (2021) utilized both pediatric (n=15) and adults (n=24) with an overall small sample size (n=39) in their intervention group with difficulty to generalize results due to this factor. The reliance on retrospective analysis in six of the studies presented limitations of potentially incomplete data due to extraction of data from the EMR, and a heavy reliance on ICD-9/10 codes which may have resulted in misclassification of mental health admissions.

Recommendations

The number of studies on this research area is robust, yet there remains room for continued studies that include the most current data available as well as the inclusion of rural and community hospital ED settings. Future studies to include larger sample sizes of interventions in the ED to determine effect size and ability to generalize these interventions across pediatric settings.

Clinical Question

Is there evidence that ED providers have the necessary training to address mental health crisis in the ED?

Summary of the Evidence Base

A search of the literature was conducted using EMBASE, CINAHL, PsycINFO, and PubMed. The search terms used for the search were "Emergency Department", "ED", "emergency room", "ER", "mental health providers", "perceptions", "training", "education", "development or learning", "resources", and "mental health interventions".

Limits were set for publications within the last twelve years, English text only, and availability of linked full text. Exclusion criteria included publications older than twelve years and articles that did not relate to ED providers.

Nine studies were located that were relevant to the clinical question. All Nine studies were selected for review. Criteria for selection included: 1) ED providers educational or training programs, 2) psychiatric providers or medical providers working in ED, 3) mental health services provided in ED, 4) perceptions of providers working in ED having necessary training or knowledge, and 5) English publications with full text available. Criteria for exclusion were: 1) publication date more than twelve years from the present, 2) article did not relate to the mental health crisis in an ED setting.

Most of the evidence suggests that providers in the ED setting do not feel they have the necessary training to provide the specific care and interventions to address the current mental health crisis (Brasch et al., 2014; Carubia et al., 2016; Egolf et al., 2019; Kerns et al., 2016; Margaret & Hilt, 2018; Robinson et al., 2013; Sivakumar et al.,

2011). One article presented evidence that a trained psychiatric team in the ED had positive outcomes (Hamm et al., 2010). In the final article, a systematic review identified that specialized models of pediatric mental health care have positive outcomes in the ED. There was no evidence presented on the training received by providers in the models of care (Newton et al., 2017).

Common themes that emerged from this review were: 1) structured learning objectives and training for psychiatric residents and ED providers are needed (Brasch et al., 2014; Carubia et al., 2016; Egolf et al., 2019; Sivakumar et al., 2011), 2) training provided to ED providers improved confidence and skills (Robinson et al., 2013), 3) ED staff did not feel they have the adequate training or knowledge to treat mental health patients in the ED (Robinson et al., 2013; Sivakumar et al., 2011), 4) there is a need for continuity of education and more evidenced based training needed at the university level for providers (Brash et al., 2014; Carubia et al., 2016; Egolf et al., 2019; Kerns et al., 2016), and 5) the pharmacological management and triage of mental health patients are prevalent in the literature (Hamm et al., 2010; Margaret & Hilt, 2018; Newton et al., 2017).

Clinical Bottom Line

Most of the evidence demonstrates that providers in the ED do not feel they have adequate training to address the mental health crisis in the ED. Four of the nine articles discuss the specific need for improved continuity between academic institutions and focus on evidenced-based treatment for mental health during academic instruction. Only one article addressed how training improved both provider confidence and skill level in

addressing mental health patients in the ED setting.

This problem falls within the domain of occupational therapy as outlined by the OTPF- 4th Edition, (Gibbs et al., 2020). Appropriate skills and knowledge are necessary for occupational performance to occur for ED providers to complete their jobs with a high degree of skill. The potential for imbalance and disruption in the performance of occupation would have an impact on the ED providers' own performance skills and performance patterns in their daily lives. The unique lens that occupational therapy applies in viewing the individual's needs, values, and daily living skills may also be applied to ED providers. The OT practitioner would be able to deliver meaningful interventions in the promotion of health, wellness, and regaining balance in their habits, roles, and routines.

Similarities and Differences

Similarities

Four studies focused on the knowledge base of what mental health providers in the ED should know as part of their education and residency (Brasch et al., 2014; Carubia et al., 2016; Egolf et al., 2019; Kerns et al., 2016). Two studies focused on the need for training for current ED providers in addressing mental health patients' needs (Robinson et al., 2013; Sivakumar et al., 2011). Three studies reviewed the current practices of providing care by highly trained or specialized mental health providers for patients admitted to the ED for mental health diagnoses yet did not specifically address what that training should be (Hamm et al., 2010; Margaret & Hilt, 2018; Newton et al., 2017).

Differences

Of the four studies that focused on the knowledge base of what mental health providers in the ED should know, each study presented a different approach to this knowledge base. Brach et al., 2014, gave an overview of what psychiatric residents and providers in the ED should know and focused on a diagnostic-developmental approach for pediatrics. Carubia et al., 2016, demonstrated the limited scope of training of providers in the ED and advocated for standards of care and evidence-based models for practice. Egolf et al., 2019, demonstrated that there is variability in what psychiatric providers in the ED are exposed to in their education and training dependent upon which program they are enrolled in. Advocating for a more universal curriculum at both the academic and residency levels. Kerns et al., 2016, demonstrated the increased drive at a specific academic institution for evolving the education base with more evidenced-based treatment lecture series for graduate and Ph.D. level students entering the field of mental health.

Of the two studies focused on the need for training of current ED providers in addressing mental health patients' needs, only one study reported on the outcome of the three-day training that was provided and the positive outcomes of perceived self-efficacy in the dealing with aggressive behaviors and knowledge for providing care with medium to large effect sizes (Robinson et al., 2013). The article by Sivakumar et al., 2011, reported on the findings of a survey of both doctors and nurses treating mental health conditions in the ED with a perceived knowledge deficit in the assessment and treatment of patients with self-harm, need for chemical restraint, management of aggressive or

violent patients, and alcohol or drug intoxication.

Quality and Limitations of Current Research

Overall, the evidence presented in this review is peer-reviewed, which represents a high standard of quality. All articles included in this review were published in academic journals. The evidence presented is generalizable to both urban and suburban settings for pediatric mental health providers in the ED setting. The data utilized for analysis in this review spanned from 2010 to 2019 and demonstrated the overall picture of educational programs, residency, on-the-job training, and the continued need for continuity between academic programs and resident programs.

There appears to be a focus on antipsychotic drug use in the ED setting as evidenced by the number of studies that included this information in their articles (Carubia et al., 2016; Margaret & Hill, 2018; Newton et al., 2017; Sivakumar et al., 2011). Of the four studies that discussed the knowledge base of what mental health providers in the ED should know, each study presented a different approach to this knowledge base with no consensus on what specific changes to the curriculum would be beneficial to address this problem (Brasch et al., 2014; Carubia et al., 2016; Egolf et al., 2019; Kerns et al., 2016). One of the nine articles was an initial needs assessment conducted as a guide for the initiative (Kerns et al., 2016), and not as a rigorous research study.

Recommendations

The number of studies on this research area is robust, yet there remains room for continued studies that include the most current data available on what the curriculum of

academic and resident programs for mental health providers in the ED includes. Future research studies to include data on both pre-knowledge and post-knowledge and the impact on provider knowledge after specific training for mental health care is conducted.

Clinical Question

Is there evidence that the necessary community resources exist to address adolescent mental health issues?

Summary of the Evidence Base

A search of the literature was conducted using EMBASE, CINAHL, PsycINFO, and PubMed. The search terms used for the search were "adolescent", "mental health", "mental health services", "community resources", "community-based services", "barriers", and "psychiatric".

Limits were set for publications within the last twelve years, English text only, and availability of linked full text. Exclusion criteria included publications older than twelve years and articles that did not relate to community-based resources for adolescent mental health.

Nine studies were located that were relevant to the clinical question. All nine studies were selected for review. Criteria for selection included: 1) community-based mental health care services, 2) access or barriers to access to community-based mental health care, 3) effectiveness of community-based mental health care services, 4) limitations to receiving mental health care in the community setting, and 5) English publications with full text available. Criteria for exclusion were: 1) publication date more than twelve years from the present, and 2) article did not relate to community-based

mental health care services.

Much of the evidence suggests that there are multiple barriers and limitations to adolescents receiving mental health care in the community setting (Garland et al., 2012; Merikangas et al., 2011; Myers & Comer, 2016; Nesper et al., 2015; Oruche et al., 2013; Radez et al., 2020; Sanchez et al., 2018; Servant et al., 2010). The percentage of adolescents receiving community-based services for mental health disorders is 36.2% according to Merikangas et al., 2011. Many adolescents with mental health disorders are not receiving the care needed in community-based settings (Garland et al., 2012; Merikangas et al., 2011; Myers & Comer, 2016; Oruche et al., 2013).

Common themes that emerged from this review were: 1) majority of adolescents with mental health disorders are not receiving the necessary care in community-based settings (Garland et al., 2012; Merikangas et al., 2011; Myers & Comer, 2016; Oruche et al., 2013), 2) there is an insufficient number of child mental health specialists in community-based settings (Myers & Comer, 2016; Nesper et al., 2015; Oruche et al., 2013; Radez et al., 2020), 3) adolescents are now receiving mental health care supports in the school setting (Myers & Comer, 2016; Sanchez et al., 2018), 4) additional barriers of cost, distance traveled, staff turnover, and excessive wait times for appointments lead to adolescents dropping out of mental health care services in community-based settings (Myers & Comer, 2016; Oruche et al., 2013; Radez et al., 2020), and 5) new models of care are needed to address adolescent mental health care in community-based settings (Garland et al., 2012; Merikangas et al., 2011; Myers & Comer, 2016; Oruche et al., 2013; Radez et al., 2020; Sanchez et al., 2018; Servant et al., 2010).

Clinical Bottom Line

Most of the evidence demonstrates that adolescents are not receiving the mental health care they need in community-based settings. Four of the nine articles discuss the insufficient number of child mental health specialists in community-based settings as a barrier to receiving care, with two of these articles also identifying additional barriers of cost, distance traveled, staff turnover, and excessive wait times for appointments.

This problem falls within the domain of occupational therapy as outlined by the OTPF-4th Edition, (Gibbs et al., 2020). The lack of access to appropriate and necessary mental health care has the potential for fundamental disruptions to an adolescent's occupations, client factors, performance skills, performance patterns, and contexts and environments. These potential disruptions may occur in the adolescents' ADL's, rest and sleep, play, leisure, and social participation and engagement in meaningful occupational performance. The OT practitioner is uniquely qualified to address these imbalances that are created in an adolescent's occupations, client factors, performance skills, and performance patterns due to the lack of sufficient and adequate access to necessary mental health care in community-based settings. The unique lens that occupational therapy applies in viewing the individual's needs, values, and daily living skills would allow for the delivery of meaningful interventions in the promotion of health, wellness, and regaining balance in their habits, roles, and routines.

Similarities and Differences

Similarities

Five studies demonstrated that many adolescents with mental health disorders are not receiving the necessary care in community-based settings (Garland et al., 2012; Merikangas et al., 2011; Myers & Comer, 2016; Oruche et al., 2013; Whitney & Peterson, 2019). Four studies demonstrated that adolescents are not receiving the necessary care due to the insufficient number of child mental health specialists in community-based settings (Myers & Comer, 2016; Nesper et al., 2015; Oruche et al., 2013; Radez et al., 2020). Three studies (Myers & Comer, 2016; Oruche et al., 2013; Radez et al., 2020), provided additional barriers to receiving care that included cost, distance traveled, staff turnover, and excessive wait times for appointments that led to adolescents dropping out of mental health care services in community-based settings. Two studies reported on adolescents now receiving mental health care support in the school setting (Myers & Comer, 2016; Sanchez et al., 2018).

Differences

Only one study reported on the disparities between racial groups in receiving services for mood and anxiety disorders (Merikangas et al, 2011). The Myers & Comer (2016), study discussed the potential of Telemental Health as a potential service model to improve access to mental health care services in both urban and rural settings due to the insufficient numbers of mental health specialists. Whereas the article by Sarvet et al., (2010) reported on the model of a primary care center having access to mental health specialists available via a hotline to meet the needs of adolescents with mental health

issues, reporting effectiveness in meeting these needs rising from 8% to 63%. Of the two

studies reporting on adolescents receiving mental health care support in the school

setting, only Sanchez et al., (2018) reported on the effect sizes of different types of

interventions with only contingency management strategies accounting for significant

variances in child mental health outcomes. Of the five studies reporting that the majority

of adolescents with mental health disorders are not receiving the necessary care, only the

article by Whitney & Peterson (2019), reported the national prevalence as 49.4% with a

low range of 29.5% in Washington, DC to a high of 72% in North Carolina.

Quality and Limitations of Current Research

Overall, the evidence presented in this review is peer-reviewed, which represents

a high standard of quality. All articles included in this review were published in academic

journals. The evidence presented is generalizable to both urban and suburban settings for

pediatric mental health in community-based settings. The articles presented in this

review ranged from 2010 to 2020, yet some of the data utilized in these studies dated as

far back as 1999. This review demonstrated both the diversity in community-based

mental health services as well as the barriers and limitations to accessing and receiving

care in a community-based setting.

The differences in each state's regulations and health benefits for mental health

care services and delivery of services have an impact on the ability to generalize the data

presented on a state-to-state level. Of the nine articles included in this review only one

article was a systematic review (Radez et al., 2020), and one article was a meta-analysis

(Sanchez et al., 2018). The remaining articles presented ranged from a qualitative study

(Oruche et al., 2013), retrospective analysis (Nesper et al., 2015) to a letter published in the Journal of the American Medical Association (Whitney & Peterson, 2019).

Recommendations

The number of studies on this research area is robust, yet there remains room for continued studies that include the most current data available on the emerging trends of community-based mental health care being provided in school settings that demonstrate fidelity, feasibility, and efficacy across school settings across the United States. Additionally, the problem of limited providers and barriers to accessing mental health care continues to persist in community-based settings. Future research studies need to include data that demonstrates which evidenced-based treatment approaches in community-based settings have high levels of fidelity, feasibility, and efficacy to address the ongoing problem of adolescent mental health care.

Conclusion

While this review has provided supporting evidence to these questions, there is room for further high-quality research into the areas of pediatric boarding in the ED, interventions in the pediatric ED setting during lengthy stays, knowledge base, and the need for increased specific training for mental health providers in the ED setting, and the status of community-based resources for adolescent mental health continues to be needed to grow the body of evidence for these areas in question.

Studies that focus on the impact of changing the curriculum for medical students, psychiatric residents, and mental health providers in the ED setting should reflect what evidenced-based treatments are being utilized, and report on the outcomes of these

changes. There is a need for continued research into how rural and community hospital ED's are addressing pediatric mental health. As the shortage of hospital and community-based psychiatric providers for pediatric mental health continues, there is a need for OT practitioners to demonstrate what solutions and interventions are effective in addressing this problem. The issue of pediatric mental health is not a new problem and should continue to be a high priority in both research and occupational therapy practice.

CHAPTER THREE: Overview of Current Approaches and Methods

Previous Attempts to Address the Problem

Clinical Question

What current interventions exist for adolescents in the emergency department (ED) for mental health issues to promote calming and sleep. Is there evidence that these interventions are effective?

Summary of the Evidence Base

A literature search was conducted using EMBASE, CINAHL, PsycINFO, PubMed, AJOT, JSTOR, and OJOT. The search terms used for the search were "interventions", "treatment", "mental health", "pediatric boarding", "emergency department", "ED", emergency room", "ER", adolescents", "calming", "sleep", and "promote".

Limits were set for publications within the last twelve years, English text only, and availability of linked full text. Exclusion criteria included publications older than twelve years, non-English text, and articles that did not present information on interventions in the ED.

Eight studies were located that were relevant to the clinical question. Seven studies were selected for review. One study was excluded due to the lack of verifiable data on presented interventions. Criteria for selection included: 1) interventions that occurred in the ED/ER, 2) adolescent to young adult age range, 3) admission for mental health diagnosis, 4) intervention addressed calming and/or sleep, and 5) English publications with full text available. Criteria for exclusion were: 1) publication date more

than twelve years from the present, 2) no mental health diagnosis, 3) no mention of calming and/or sleep, and 4) missing data or lack of reported measures utilized in the study.

These seven articles broadly represent the current state of the evidence for interventions targeting calming and sleep in the ED for mental health admissions. The articles have been categorized according to the intervention type. Three articles represent interventions commonly practiced by occupational therapists (Adams-Leask et al., 2018; Arbesman et al., 2013; Ikiugu & Nissen, 2016). Two articles represent mental health professionals' lack of interventions utilized in the emergency department setting when targeting calming and sleep (Johnston et al., 2019; Walker et al., 2021). The remaining two articles demonstrate the utilization of digital health interventions (Hollis et al., 2017; Lehtimaki et al., 2021), which is a relatively new practice in the ED setting for mental health.

Common themes that emerged from this review were: 1) Cognitive Behavioral Therapy (CBT) is commonly utilized as an intervention for anxiety and sleep disturbance (Arbesman et al., 2013; Hollis et al., 2017; Lehtimaki et al., 2021), 2) client-centered approaches are commonly utilized by occupational therapists in mental health settings (Adams-Leask et al., 2018; Ikiugu & Nissen, 2016), 3) interventions for sleep in the ED is lacking in current research (Adams-Leask et al., 2018; Arbesman et al., 2013; Hollis et al., 2017; Ikiugu & Nissen, 2016; Johnston et al., 2019; Lehtimaki et al., 2021; Walker et al., 2021).

The utilization of sensory modulation (SM) tools (Adams-Leask et al., 2018) to

promote calming demonstrates the effectiveness of these self-directed tools. As

highlighted by the authors, "Consumers identified SM as a helpful and positive

experience, providing distraction, calming strategies and self-management of distress and

emotions during psychiatric crisis". The use of sensory modulation tools falls within the

domain of occupational therapy and the scope of practice of occupational therapists with

the ability to promote calming in a stressful environment.

Occupational therapists' promotion of health is an intervention with strong

evidence as highlighted in this systematic review (Arbesman et al., 2013). Highlighting

the effectiveness of health promotion and its positive effects on adolescent mental health

for improved stress management and coping skills in adolescents.

Clinical Bottom Line

The main themes of the articles used to answer the question are CBT is commonly

utilized for anxiety and sleep disturbance, occupational therapists utilize a client-centered

approach in the promotion of health in mental health settings, and there is a lack of

evidence for effective sleep interventions in an ED setting for mental health

admissions. The promotion of health is an important intervention that occupational

therapists may use to impact adolescent mental health and wellness on an individual,

group, and population level.

Similarities and Differences

Similarities

All seven articles addressed interventions utilized in mental health. Four of the

seven articles are systematic reviews (Arbesman et al., 2013; Hollis et al., 2017;

Lehtimaki et al., 2021; Walker et al., 2021). Two articles highlight the importance of client-centered approaches in the delivery of interventions for mental health admissions (Ikiugu & Nissen, 2016; Johnston et al., 2019). Two articles demonstrated the effectiveness of digital health interventions (DHI) on mental health (Hollis et al., 2017; Lehtimaki et al., 2021). All seven articles represent the lack of evidence for interventions targeting sleep interventions in the ED setting (Adams-Leask et al., 2018; Arbesman et al., 2013; Hollis et al., 2017; Ikiugu & Nissen, 2016; Johnston et al., 2019; Lehtimaki et al., 2021; Walker et al., 2021).

Differences

The three articles focused on interventions typically utilized by occupational therapists (Adams-Leask et al., 2018; Arbesman et al., 2013; Ikiugu & Nissen, 2016). Of these three articles, the systematic review (Arbesman et al., 2013) provided the strongest evidence with the other two articles being a pilot study (Adams-Leask et al., 2018) and a retrospective cohort and grounded theory design study (Ikiugu & Nissen, 2016). Two articles focused on the use of digital health interventions with one article (Hollis et al., 2017) utilizing an older evidence base and the other (Lehtimaki et al., 2021) utilizing a more recent evidence base demonstrating the effectiveness of this intervention approach. In the two articles reporting on interventions in the ED for mental health admissions, (Johnston et al., 2019) advocated for a comprehensive approach to building the capacity of the ED staff and integration of specialty care, whereas (Walker et al., 2021) acknowledged that ED initiated mental health interventions for adolescents is a relatively new practice.

Quality and Limitations of Current Research

Overall, the evidence presented in this review is peer-reviewed, which represents a high standard of quality. All articles included in this review were published in academic journals. The evidence presented is generalizable to support client-centered health promotion for adolescent mental health in an ED setting. The data utilized for analysis in this review spanned from 2006 to 2020 and demonstrated a wide scope of intervention approaches utilized in mental health settings. The effectiveness of the mental health interventions on calming and sleep is not discussed in several of the articles (Adams-Leask et al., 2018; Arbesman et al., 2013; Hollis et al., 2017; Lehtimaki et al., 2021; Walker et al., 2021). The small sample size was a factor in several studies (Adams-Leask et al., 2018; Walker et al., 2021). With the utilization of apps for digital health interventions, the limitation identified is the rapidly changing technology, which then limits the effectiveness of the reviews as measured by tech standards with newer versions replacing those previously reviewed by the time of publication (Hollis et al., 2017; Lehtimaki et al., 2021). While CBT (Arbesman et al., 2013; Hollis et al., 2017; Lehtimaki et al., 2021) is seen as an effective intervention for anxiety and sleep, there are limitations. These limitations include the need for advanced and highly trained providers, the long duration of treatment needed to be effective, and the relatively high cost to implement this intervention. There remains a lack of evidence for interventions targeting sleep interventions in the ED setting (Adams-Leask et al., 2018; Arbesman et al., 2013; Hollis et al., 2017; Ikiugu & Nissen, 2016; Johnston et al., 2019; Lehtimaki et al., 2021; Walker et al., 2021).

Recommendations

The availability of studies on mental health interventions regarding the promotion of calming and sleep is sparse. There remains a need to further study the effectiveness of mental health interventions on calming and sleep in adolescents suffering from mental health issues. This highlights the importance of the current project proposal for utilizing mindfulness and self-regulation strategies in an ED setting to promote calming and sleep for adolescents during admission to the ED for a mental health crisis. Future studies to include how effective mental health interventions are regarding sleep, as this is fundamental to the overall health and well-being of adolescents.

Clinical Question

Is there evidence that mindfulness-based practices reduce stress and aid in calming and sleep?

Summary of the Evidence Base

A literature search was conducted using EMBASE, CINAHL, PsycINFO, PubMed, AJOT, JSTOR, and OJOT. The search terms used for the search were "mindfulness", "mindfulness-based stress reduction", "MBSR", "mental health", "emergency room", "ER", "emergency department", "ED", "adolescents", "calming", and "sleep".

Limits were set for publications within the last twelve years, English text only, and availability of linked full text. Exclusion criteria included publications older than twelve years, non-English text, and articles that did not present information on mindfulness or the use of mindfulness regarding calming and sleep.

Eleven studies were located that were relevant to the clinical question. All eleven studies were selected for review. Criteria for selection included: 1) mindfulness, MBSR, or mindfulness-based practices 2) adolescent to adult age range 3) intervention aided in calming and sleep 4) intervention addressed calming and/or sleep 5) English publications with full text available. Criteria for exclusion were: 1) publication date more than twelve years from the present 2) no mention of mindfulness, MBSR, or mindfulness-based practices 3) no mention of calming and/or sleep 4) missing data or lack of reported measures utilized in the study.

These eleven studies broadly represent the current state of evidence on the use of mindfulness or mindfulness-based practices for calming and sleep as an intervention approach. Ten of the eleven studies (Butt et al., 2022; Chan et al., 2022; Cheng et al., 2019; Diaz-Gonzalez et al., 2018; Garrido et al., 2019; Janssen et al., 2018; Li et al., 2021; Seabrook et al., 2020; Weaver & Darragh, 2015; Weekly et al., 2018) studied the use of mindfulness or mindfulness-based practices for calming and sleep. The remaining article, (Blake et al., 2017) studied the use of cognitive behavioral therapy (CBT) as a sleep intervention to improve anxiety and depression. This study continues to demonstrate that CBT is the most widely utilized sleep intervention approach. The inclusion of this study is to provide a contrast to the use of mindfulness as a sleep intervention.

Common themes that emerged from this review were: 1) active engagement and preference-driven interactions with mindfulness-based practices had a positive effect on reducing anxiety and aiding in calming (Butt et al., 2022; Cheng et al., 2019; Garrido et

al., 2019; Seabrook et al., 2020; Weaver & Darrah, 2015; Weekly et al., 2018), 2)

Mindfulness or MBSR is an effective intervention in improving sleep (Chan et al., 2022;

Janssen et al., 2018; Li et al., 2021), 3) practicing mindfulness or MBSR is effective in

reducing anxiety (Butt et al., 2022; Chan et al., 2022; Diaz-Gonzalez et al., 2018; Janssen

et al., 2018; Li et al., 2021; Weaver-Darragh, 2015), practicing mindfulness was found to

have a protective factor on mental health (Janssen et al., 2018; Weaver & Darragh, 2015).

Clinical Bottom Line

The main themes of the articles used to answer the question are mindfulness is an

effective intervention approach to improve sleep and promote calming, mindfulness is

effective in reducing anxiety, and practicing mindfulness have been found to provide a

protective factor on individuals' mental health. Addressing sleep difficulties is within an

occupational therapist's scope of practice. The inclusion of rest and sleep in the

Occupational Therapy Practice Framework-4th Edition (OTPF-4) as a fundamental

occupation highlights this importance in occupational therapy practice (Gibbs et al.,

2020).

Similarities and Differences

Similarities

Five of the articles in this review were systematic reviews (Blake et al., 2017;

Chan et al., 2022; Janssen et al., 2018; Li et al., 2021; Weaver & Darragh, 2015) with

three articles also including a meta-analysis (Blake et al., 2017; Chan et al., 2022; Li et

al., 2021). Two studies utilized virtual reality as an intervention tool for practicing

mindfulness (Butt et al., 2022; Seabrook et al., 2020). Two studies focused on the use of

apps for reducing anxiety (Garrido et al., 2019; Weekly et al., 2018). Seven studies

participants were adolescents (Blake et al., 2017; Butt et al., 2022; Cheng et al., 2019;

Diaz-Gonzalez et al., 2018; Garrido et al., 2019; Weaver & Darragh, 2015; Weekly et al.,

2018).

<div align="center">*Differences*</div>

Of the two articles that included CBT as a sleep intervention (Blake et al., 2017;

Li et al., 2021), the later authors found that mindfulness-based interventions can be

utilized with a similar effect as CBT. One article (Janssen et al., 2018) specifically

focused on the benefits of mindfulness for calming and sleep on employees with positive

benefits demonstrated for both calming and sleep. Only three articles included in this

review were completed exclusively inside the United States (Butt et al., 2022; Cheng et

al., 2019; Weekly et al., 2018).

<div align="center">**Quality and Limitations of Current Research**</div>

The evidence presented in this review is peer-reviewed and includes five

systematic reviews and one randomized control trial which represents a high standard of

quality. All articles included in this review were published in academic journals. The

oldest article included in this review is seven years old, with most articles published

within the last four years. The evidence presented in this review represents seven

different countries and cultures demonstrating the ability to generalize this research to a

wide group of individuals and populations.

Several studies noted limitations due to small sample sizes (Blake et al., 2017;

Butt et al., 2022; Chan et al., 2022; Cheng et al., 2019; Garrido et al., 2019; Janssen et al.,

2018; Li et al., 2021; Seabrook et al., 2020). One article (Weekly et al., 2018) conducted a review of patient preferences when utilizing apps for calming yet did not conduct outcome measures to demonstrate the effectiveness of their approach. One article (Weaver & Darragh, 2015) utilized an evidence base spanning 1990–2014 with several articles included in the systematic review using non-controlled trials lacking rigor.

Recommendations

The growing number of studies involving mindfulness and mindfulness-based practices for calming and sleep has grown in recent years. There remains a need for continued research into this area to address the increasing number of mental health issues in the adolescent population. Future research studies to include larger sample sizes to determine the effect size of mindfulness and mindfulness-based practices on calming and sleep for the adolescent population suffering from mental health issues.

Clinical Question

Is there evidence that occupational therapists can play a role in improving adolescents calming and sleep for mental health admissions?

Summary of the Evidence Base

A literature search was conducted using EMBASE, CINAHL, PsycINFO, PubMed, AJOT, JSTOR, and OJOT. The search terms used for the search were: "occupational therapy", "OT", "occupational therapist", "mental health", "mental health admissions", emergency department", "ED", "emergency room", "ER", and "adolescents", "calming", and "sleep".

Limits were set for publications within the last twelve years, English text only, and availability of linked full text. Exclusion criteria included publications older than twelve years, non-English text, and articles that did not relate to mental health.

Eight studies were located that were relevant to the clinical question. All eight studies were selected for review. Criteria for selection included: 1) occupational therapy role in mental health 2) mental health 3) calming and sleep 4) English publications with full text available. Criteria for exclusion were: 1) publication date more than twelve years from the present 2) no mention of occupational therapy 3) no mention of calming and/or sleep 4) missing data or lack of reported measures utilized in the study.

Five of the eight studies broadly represent the current role of occupational therapy in mental health settings (Arbesman et al., 2013; Bazyk et al., 2015; D'Amico et al., 2018; Ikiugu et al., 2017; Read et al., 2018). The remaining three studies addressed the importance of calming and sleep (Aschbrenner et al., 2022; Faulkner & Mairs 2015; Gutman et al., 2017).

Common themes that emerged from this review were: 1) occupational therapy has a role in the promotion of health for adolescents with mental illness (Arbesman et al., 2013; Bazyk et al., 2015; Faulkner & airs, 2015; Ikiugu et al., 2017; Read et al., 2018), 2) occupational therapy has a role in sleep promotion and education (Aschbrenner et al., 2022; Gutman et al., 2017; D'Amico et al., 2018; Faulkner & Mairs, 2015), 3) occupational therapists as a whole lack knowledge of effective sleep interventions (Arbesman et al., 2013; Bazyk et al., 2015; Faulkner & Mairs, 2015).

Clinical Bottom Line

The main themes of the articles used to answer the question are occupational therapists have a role in the promotion of sleep to support adolescent mental health, increased knowledge of effective sleep interventions is important to occupational therapy practice, and the promotion of health is fundamental to occupational therapy practice. The body of evidence for occupational therapists addressing calming and sleep during a mental health admission is sparse. Occupational therapy recognizes the importance of rest and sleep as a fundamental occupation as previously referenced in this review. Occupational therapists play an important role in the promotion of sleep during mental health admissions, yet there is a limited knowledge and research base to help address this problem (Faulkner & Mairs, 2015).

Similarities and Differences

Similarities

Three articles in this review are systematic reviews (Arbesman et al., 2013; D'Amico et al., 2018; Read et al., 2018). Five articles in this review addressed the role of occupational therapy in mental health settings (Arbesman et al., 2013; Bazyk et al., 2015; D'Amico et al., 2018; Faulkner & Mairs, 2015; Ikiugu et al., 2017). Two studies demonstrated that mindfulness-based practices improved sleep (Gutman et al., 2017; D'Amico et al., 2018). Two articles discuss the need for further knowledge translation in the field of occupational therapy regarding mental health and sleep (Bazyk et al., 2015; Faulkner & Mairs, 2015).

Differences

Of the three articles addressing sleep, one article is a focus group study of

occupational therapists working in mental health settings (Faulkner & Mairs, 2015). Of

the eight articles in this review, only three articles are focused on adolescents (Arbesman

et al., 2013; Bazyk et al., 2015; Read et al., 2018).

Quality and Limitations of Current Research

Overall, the evidence presented in this review is peer-reviewed and included three

systematic reviews and one meta-analysis which represents a high standard of quality. All

articles included in this review were published in academic journals.

One article included in this review utilizes an older evidence base dating from

1980 to 2012, with many older studies cited (Arbesman et al., 2013). Several studies

noted small sample sizes (Gutman et al., 2017; D'Amico et al., 2018; Faulkner & Mairs,

2015; Read et al., 2018). Multiple studies included in this review do not directly address

calming and sleep (Arbesman et al., 2013; Bazyk et al., 2015; Ikiugu et al., 2017; Read et

al., 2018).

Recommendations

The number of studies on the role of occupational therapy in the promotion of

calming and sleep during a mental health admission is limited. There is a need for future

research studies to address this shortcoming. Future research studies need to include data

demonstrating the effectiveness of occupational therapy sleep interventions during

adolescent mental health admissions. The number of adolescents admitted for mental

health issues continues to rise and the evidence base for occupational therapy's role in

addressing calming and sleep during these admissions is limited. There remains a

definitive role for occupational therapy to provide education and promote health and

wellness in the areas of calming and sleep for adolescents with mental health issues.

CHAPTER FOUR: Description of the Proposed Program

The project is broken into two separate phases. In the first phase, the

occupational therapist working in a large urban pediatric hospital setting will provide

educational training to the emergency department (ED) physicians, physician assistants,

nurse practitioners, nurses, social workers, and child life specialists on the benefits of

mindfulness-based stress reduction (Butt et al., 2022; Chan et al., 2022; Diaz-Gonzalez et

al., 2018; Janssen et al., 2018; Li et al., 2021; Weaver-Darragh, 2015), for the promotion

of health and wellness in stress reduction and improved sleep. Through this training, the

ED providers will develop an understanding of the benefits of mindfulness-based

interventions and the importance of providing these types of interventions for adolescents

boarding in the ED. The program's second phase is to provide adolescents and

caregivers with mindfulness-based interventions in the form of tablet apps for self-

directed exploration of calming activities through music, games, and guided sleep stories

(Butt et al., 2022; Cheng et al., 2019; Garrido et al., 2019; Seabrook et al., 2020; Weaver

& Darrah, 2015; Weekly et al., 2018). Additional resources for self-regulation (Adams-

Leask et al., 2018) activities in the form of fidgets and simple physical exercises that can

be performed in the confines of their room will be provided as recorded videos on the

tablets.

Problems Being Addressed

This program addresses the following problems: 1) Adolescents boarding in the

ED waiting for intervention (McEnany et al., 2020; Nash et al., 2021; Nolan et al., 2015;

Pitts, et al., 2014), and 2) the lack of training in mindfulness-based interventions for

providers in the ED (Robinson et al., 2013; Sivakumar et al., 2011). Pediatric boarding is

not uncommon, according to Nash et al., (2021) more than 21% of mental health stays

lasted more than six hours, compared with fewer than 5% of non-mental health visits to

the emergency department, while stays of more than 12 hours occurred in 7.7% of mental

health visits versus just 1.2% of other visits. The arrival of the COVID-19 pandemic has

only exacerbated this problem. According to Ibeziako et al., (2022) the length of

boarding at Boston Children's Hospital has more than doubled from 2.1 days pre-

pandemic to 4.6 days twelve months after the pandemic onset. The author found that

more adolescents with severe mental illness and less availability to treatment contributed

to the boarding problem.

Impact of COVID-19

The circumstances that have worsened this problem during the COVID-19

pandemic (*Capturing a Crisis: MHA's Weekly Behavioral Health Boarding Reports*, n.d.)

can be seen in Figure 4.1.

Figure 4.1

Capturing a Crisis: MHA's Weekly Behavioral Health Boarding Reports.
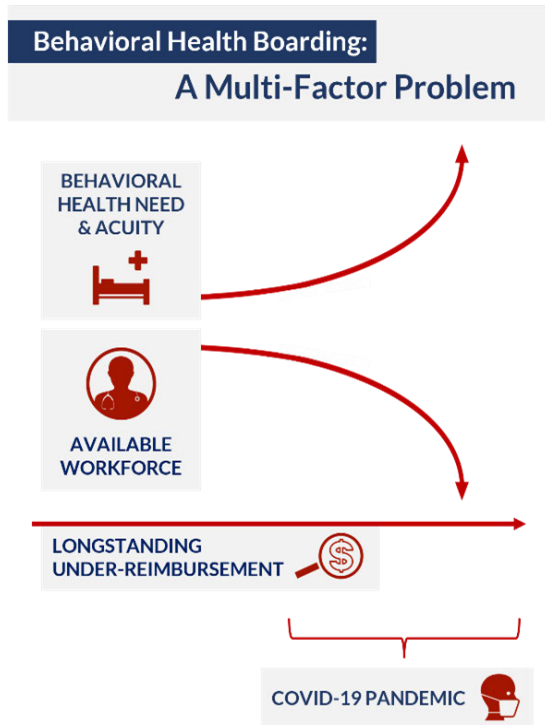
The emergence of COVID-19 has contributed to a 31% increase in adolescent mental health visits to ED's across the United States (Leeb et al., 2020). The disruption of in-person learning resulted in the loss of social engagement and structure to daily occupations, roles, habits, and routines. Adolescents have experienced increased feelings of hopelessness, depression, anxiety, fear, and isolation since the start of the pandemic (Loades et al., 2020).

Emergency Department Providers

Currently, ED providers do not have the necessary training to address the current mental health crisis (Robinson et al., 2013; Sivakumar et al., 2011). Currently there are multiple factors contributing to the increase in mental health visits including COVID-19,

the perceived lack of training to address mental health issues in the ED, the shortage of

psychiatric providers (Axelson, 2019), and a shortage of pediatric psychiatric beds

(Gellar, 2006; Kraft et al., 2021). These factors alone would cause increased stress levels

for ED providers. Providing educational training and resources for ED providers would

be a positive step in addressing their stress levels and long hours spent working in the

ED. The environmental conditions in the ED not only impact the providers but also

impact the adolescent's awaiting treatment. ED conditions can be noisy, hectic, and

bright, leading to increased stress levels and sleep deprivation (Wood et al., 2019). These

conditions may lead to the escalation of behaviors (Derscheid & Arnetz, 2020; Dolan &

Fein, 2011). Behavior is defined as patient actions that may or may not result in physical

contact with another individual, yet often includes, hitting, kicking, throwing objects,

yelling, biting, spitting, and pushing. The most common behaviors were found to be

hitting and kicking (Derscheid & Arnetz, 2020). Long hours under these conditions may

intensify the anxiety, stress, and fear. The lack of sleep and the ability to pursue daily

occupations will further impact the health and well-being of adolescents boarding in the

ED.

Shortage of Mental Health Providers

There is a shortage of treatment providers (Axelson, 2019) and treatment options

for mental health conditions (Hamm et al., 2010; Margaret & Hilt, 2018; Newton et al.,

2017) beginning in the adolescent years. According to a report by the Centers for Disease

Control and Prevention (CDC), (2022) it has been estimated that one in five children

suffer from a mental health condition, and only half of the children identified with a

mental health disorder receive proper treatment.

The lack of proper mental health treatment and resources (Garland et al., 2012; Merikangas et al., 2011; Myers & Comer, 2016; Oruche et al., 2013) in adolescent years results in adults who continue to struggle with mental health issues. Often parents of these adolescents turn to the emergency department (ED) when their child is in crisis (Hoge et al., 2022). This has led to the ED becoming the first stop on the way to receiving treatment, yet the ED is not set up to handle this type of care.

Explanatory Model

The explanatory visual model seen in Figure 4.2 outlines the external and internal variables that are contributing to the extended time adolescents are spending in the ED without intervention.

The left side of the model details the community-based reasons for the ongoing mental health crisis in adolescents. As noted previously, this has been an ongoing public health issue that has only become worse with the rise of COVID-19. These systemic factors have only added to the cycle of increased admissions to the ED for mental health crises among adolescents.

The right side of the model details the internal difficulties in the ED experienced by adolescents who have been admitted for a mental health crisis. The disruption of occupations and the effects on adolescents. Prolonged admission to the ED results in boarding due to community-based shortages for proper placement. Additionally, the cyclical nature of readmission is due to the ongoing mental health crisis and community-based shortages for treatment.

Figure 4.2

Logic Model
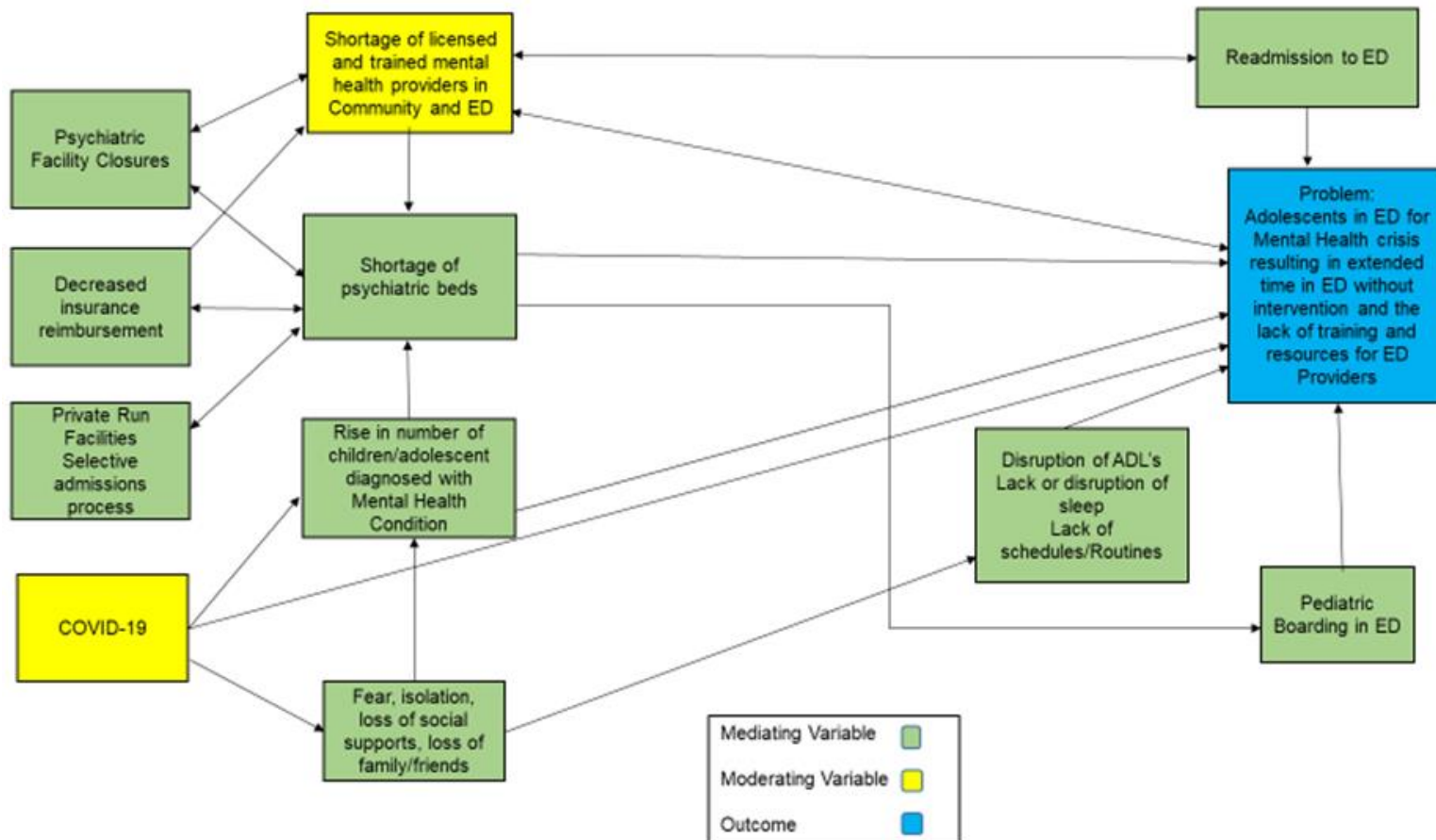
This program provides education on mindfulness-based practices to the ED staff and the resources to utilize with adolescents while boarding in the ED. The application of Transformative Learning theory is utilized for this program with the intent that ED providers will be able to utilize the educational training to change their perspective on how mindfulness-based interventions will be meaningful and impactful for their own health and well-being and in doing so apply this perspective to the adolescents admitted to the ED for a mental health crisis.

Key Stakeholders

The physicians, physician assistants, nurse practitioners, nurses, social workers, and child life specialist in the ED are key stakeholders that will benefit from the implementation of phase one of this program. The adolescents admitted to the ED for mental health crisis and their families are key stakeholders who will benefit from phase two of this program. Additionally, ED leadership and nursing leadership will benefit from both phase one and phase two of this program with improvements seen in both staff and adolescent calming and sleep.

Case Scenarios

The following scenarios illustrate the current situation in the ED for providers and adolescents during a mental health admission.

Figure 4.3

Impact for Emergency Department Providers

The weekend is just starting in a large urban pediatric hospital with a 100-bed emergency department. The waiting room is overflowing, and beds are filling up quickly. Of the 100 beds in the ED, 40 of these are already occupied by adolescents admitted for a mental health crisis. Resources and staff are already stretched thin, and each of these adolescents needs a sitter to ensure their safety while they await further evaluation by one of the psychiatric team providers. The psychiatric team is short-staffed, to begin with, there are more adolescents in need than there are providers to complete the assessments. Each adolescent needs to be seen to determine if they are safe to be discharged home, need inpatient psychiatric care, or need a referral to a community outpatient mental health provider. Each assessment takes time, and each case is complex. Several of the adolescents waiting to be assessed have been re-admitted due to the inability to find a community provider to address their mental health issues. The psychiatric team's stress levels are high, and shifts are long. The ability to stop and take a moment before starting the next assessment is a luxury that is just not available. The noise levels in the ED continue to build as rooms fill faster than they empty. In a recent training on mindfulness-based practices, the ED staff learned several breathing techniques to calm and center. This is a good time to utilize this training in between patients.

Figure 4.4

Impact for Adolescents

Thomas is a 15-year-old male who suffers from depression and anxiety and has been struggling in school both academically and socially. He has been waiting to see a mental health counselor for months, yet his family cannot get an appointment as there are no openings with local providers. He has stopped taking the medication prescribed by his doctor for his depression and anxiety. He has trouble sleeping and spends most of his day on his phone and computer consuming social media. Thomas has always struggled to make friends and the past two years of isolation due to COVID-19 have only made this worse. His mother became worried when Thomas started talking about hurting himself. She does not know whom to turn to, so she takes Thomas to the children's hospital ED to get help. Upon arrival, his mother reports that Thomas is talking about hurting himself. Admitted to the ED for suicidal ideation, Thomas is placed in a single room with only a bed, the door is left open, and he has been assigned a sitter who sits in the hallway and watches him. His clothing and phone have been removed for safety reasons and he is now wearing a hospital gown with pajama bottoms and slipper socks. Thomas and his mother begin their long wait to be seen by a psychiatric team member. They have no idea how long they will have to wait. All the staff seem to be in a hurry, the hours pass and the noise in the ED grows as more individuals are admitted. If only they could close the door, if only they could be seen and given the help they need if only this sitter would stop staring at him. Where is the doctor? How much longer will it be? There is nothing to do but wait in bed. Thomas is unable to sleep, and his anxiety is growing; he is becoming agitated as he is not allowed to leave the room. After a three-hour wait, Thomas is assessed by a physician on the psychiatric team, and the decision is made to send Thomas to a psychiatric unit for treatment. There are no beds currently available for Thomas and he will now begin boarding in the ED until an inpatient psychiatric bed opens up. A child life specialist knocks on the door and asks Thomas if he would be interested in participating in a new program developed by an occupational therapist for adolescents admitted to the ED for a mental health crisis. Thomas meets the criteria for this program with an age between twelve to eighteen, ED admission for mental health crises, and boarding in the ED. The child life specialist explains that Thomas will be able to use the tablet for three hours after breakfast and three hours after dinner. He will have the ability to engage with mindfulness-based apps, listen to music, and follow along with exercise videos. All the apps are free versions which would allow Thomas and his mother to be able to use these same ones at home. Thomas and his mother agree to participate in this new program. He would like to explore the tablet with mindfulness-based apps now. The child life specialist hands Thomas a tablet and then explains to his mother that he can request to use it each day he is boarding in the ED. Upon discharge, his mother will be given a packet with instructions on where to download the same apps for Apple and Android products. Thomas likes to listen to music and explores the other apps that help him to calm down. He opens another app and selects a sleep story. His mother sees that Thomas can calm down and settle; she is hopeful that he will be able to sleep tonight. Once Thomas is asleep the sitter retrieves the tablet, and it is charged for the next day's use.

Main Aims of Program

In phase one of the program, the main aim is the education of ED providers on the benefits of mindfulness-based practices. This will be achieved through six one-hour educational sessions and measured by a pre-test and post-test survey on comfort and current use of these concepts. In phase two of the program, there are three aims: 1) Improvement of adolescent mental health as measured by a self-report, upon discharge using the Generalized Anxiety Disorder 7-item scale (GAD-7) (Mossman et al., 2017), 2) the improved ability to rest and sleep while in the ED as measured by the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989) and 3) a reduction in the ED readmission rate for a mental health crisis.

Full Logic Model

The logic model seen in figure 4.5 is a visual representation that illustrates the relationship between program components. These include the anticipated program resources, activities, and outcomes. The outcomes are broken down into short-term, intermediate, and long-term.

Figure 4.5

Utilizing Mindfulness-Based Interventions in a Pediatric Emergency Department

Inputs	Problem, Theories	Activities, Outputs	Outcomes	

Inputs

Program Clients
- ED providers
- Adolescents admitted to ED for mental health crisis.

Program Resources
- iPads with mindfulness-based apps
- Mobile charging cart for secure storage of iPads
- Educational resources for ED providers
- Physical ED space

Problem, Theories

Nature of the Problem
- Pediatric ED boarding, the current length of time spent in ED without intervention.
- Lack of training and resources for providers in the ED for calming and sleep interventions

Program Theories
- Transformative Learning Theory

Activities, Outputs

Interventions and Activities
- Six one-hour long in-person & recorded training on mindfulness-based practices to the ED staff and the resources to utilize with adolescents while boarding in the ED.
- Promotion of health & wellness for ED providers
- adolescents able to explore and engage with mindfulness-based activities on tablets and engage in self-regulation tools and physical exercises.

Program Outputs
- # of ED providers trained in the benefits of mindfulness-based practices
- # of adolescents utilizing tablet-based apps and self-regulation tools in the ED
- #of adolescents able to calm and sleep without chemical restraint
- # of adolescents utilizing mindfulness to target calming and sleep at home and community settings

Outcomes

Short-Term Outcomes
ED Providers will demonstrate:
- Post training, ED providers will understand the benefits of daily mindfulness practices on work-related stress.
- Understand the benefits of mindfulness practices for sleep.
- Identify at least two mindfulness practices that can be utilized in ED setting and two for home the setting.

Adolescents in ED will demonstrate:
- Understand how mindfulness, self-regulation tools, and physical activity can promote calming and sleep while in ED.
- Continue to utilize at least two practices of mindfulness, self-regulation or physical activity when discharged from ED.

Intermediate Outcomes
At 1 month post
- ↑ Knowledge of mindfulness practices and self-regulation tools
- ED providers & adolescents will complete a numerical rating scale survey on which mindfulness practices and self-regulation tools are still being utilized & what frequency.
- collect pre/post surveys of ED staff knowledge of mindfulness practices & self-regulation tools using a numerical rating scale of self-perceived competence in techniques.

Long-Term Outcomes
- Improvements in adolescents' mental health as measured by a self-report.
- Health & wellness promotion for decreasing stress and increasing sleep.
- Reduction in readmission rate for a mental health crisis

External/Environmental Factors: (facility issues, economics, public health, politics, community resources, or laws and regulations): 1) Need for full support of ED and Nursing Leadership for educational training, 2) Education/training of staff is non-billable time, 3) Lack of buy-in from ED staff to utilize mindfulness strategies and tools, 4) ED environment is overwhelming (lights, noise, small rooms, no windows), 5) Not enough iPads to meet demands during surge capacity, 6) iPads expensive to replace if damaged or stolen.

Program Participants and Resources

In phase one of the program, the participants will include ED physicians, physician assistants, nurse practitioners, nurses, social workers, and child life specialists. These participants will be identified from their work in the ED environment. Recruitment will occur via targeted email communication, printed flyers in the staff areas of the ED, and stakeholder engagement meetings with ED leadership and members of each of the groups. In phase two of the program, the participants will include adolescents and their caregivers admitted to the ED for a mental health crisis. Recruitment in phase two of the program will utilize a convenience sample with informed consent obtained prior to participation in the program.

The author will carry out the six educational training sessions in phase one of the program. The training sessions will be conducted on-site in the hospital conference room. The in-person training sessions will be recorded for those participants that are not able to attend at the scheduled times. Additional Zoom training sessions will also be recorded to offer increased flexibility in scheduling around ED staffing schedules. In phase two of the program, the author will engage the child life specialist department to carry out the daily program interactions with participating adolescents and their caregivers. The training that child life specialists received in phase one of the program will be the foundation of their participation in phase two. The inclusion of child life specialists in the daily structure of the program will coincide with the structure already set in place in the ED setting. Child life specialists have previously established daily routines and schedules for adolescents boarding in the ED to include them in daily activities that allow for participation in

individual or group activities. Phase two of the program will occur in the adolescents'

room in the ED setting. Each participating adolescent and their caregiver will have

access to the program iPads.

Interventions and Activities

In phase one of the program, the six educational training sessions led by the author

will be broken down into themes. The six themes are as follows:

1) Introduction to mindfulness: origins of mindfulness, Jon Kabat-Zinn, current

   practical applications.

2) Meditation practice: an overview of different types of meditation with practice

   (seated, standing, walking, supine)

3) Mindfulness in the workplace versus home: differences between settings, how to

   apply at home and work.

4) Mindfulness-based applications: an overview of using technology versus in-

   person guided (Me Moves, Mindful Powers, Smiling Mind, Calm, Stop Breathe &

   Think, Super Stretch Yoga)

5) Mindfulness and sleep: an overview of research in adult and adolescent

   populations.

6) Overview of phase two program: Mindfulness & Self-Regulation in a Pediatric

   ED Setting: utilizing mindfulness-based interventions with self-regulation tools

   for adolescent mental health.

The length of each of the six training sessions will be one hour with a direct lecture

format, demonstrations, and participants' hands-on learning. Printed handouts of lecture

slides along with an overview of all resources discussed and practiced in each session

will be included for both in-person and online synchronous and asynchronous instruction.

See Appendix A for examples of handouts.

In phase two of the program, the occupational therapist (OT) will act in

coordination with the child life specialist department to implement the intervention

approach for adolescents in the ED for a mental health crisis. Minimal training sessions

will be required as this material will be previously covered in session six of training from

phase one. This phase will be focused on the training and increased independent use of

mindfulness-based practices in the form of tablet apps for self-directed exploration of

calming activities through music, games, and guided sleep stories. Additional resources

for self-regulation activities in the form of fidgets and simple physical exercises that can

be performed in the confines of their room will be provided as recorded videos on the

tablets. Adolescents admitted to the ED for a mental health crisis, except for a suicide

attempt, will be eligible to participate. Printed flyers with key details of the intervention

will be posted in the ED waiting area with a QR code to learn more. Once an adolescent

and their caregiver are admitted to the ED a brochure will be made available to further

explain the intervention and the requirements for participation.

The first interaction with the adolescent and their familial caregivers will include

a step-by-step overview of the program while in the ED. This will include obtaining

consent for participation in the intervention and choosing a fidget tool to utilize during

their admission, daily structure and schedule, introduction to iPad and the content, and

printed education sheets for use in the ED and after discharge.

The types of fidget tools available will include spinners, stress balls, Play-Doh, and fidget push-pop. Initial education is provided on how and when the iPads with self-regulation apps will be available to participants with additional education follow-up during admission. Initial demonstration on how to use each of the mindfulness-based apps, music app, and recorded exercise videos will occur during the initial meeting. Additional demonstrations and guidance on how to use each app will be provided on an as-needed basis throughout the admission. Scaffolded learning principles will be utilized to establish the learning with future interactions and use building upon this initial education.

As the child life specialists in the ED set the schedule for interactions with each adolescent, the occupational therapist will coordinate with child life to ensure that all participating adolescents can engage and participate. Each adolescent is assessed by the ED mental health team daily to determine if they will be able to participate in the various groups that child life holds during the day. If an adolescent is in a behavioral escalation, they will not be able to participate in activities outside of their room. In this instance, the decision will be made if this adolescent is safe enough to engage with the iPad in their room independently or will need the assistance of their familial caregiver. The iPad is encased in an Otterbox Defender series case that is impact resistant to ensure that it will continue to function if dropped or thrown. Each adolescent admitted for mental health is assigned a sitter that monitors their safety and can intervene if needed to summon assistance from nursing. The sitter will be able to hold onto the iPad and play the adolescent's preferred music or sleep story if the familial caregiver is not present at that

time.

All mindfulness-based apps will be free to ensure that cost is not a barrier to implementation and continued carryover of this intervention approach on adolescents' own devices in the home and community setting upon discharge. Some apps on the iPad will include Fluid Simulation (*Fluid Simulation*, 2022), Calm (*Calm.com*, 2013), Mindshift CBT (*MindShift CBT - Anxiety Relief*, n.d.), Nature Sounds: Music to Relax, Sleep, Meditate, Calm and Soothe (*Nature Sounds: Music to Relax, Sleep, Meditate, Calm and Soothe*, 2018), and Jango (*Jango Radio - Streaming Music*, 2022).

The Fluid Simulation app is visually engaging, by allowing the adolescent to move fluids with the touch of their fingers. By engaging with the movement of the swirling visual patterns the adolescent can control the patterns and decrease their stress levels. This app is intended for self-exploration and will not require the occupational therapist or child life specialist to direct the user.

The Calm app allows the adolescent to practice mindfulness and learn the skills of meditation through guided exercises. To further the engagement and exploration of this app, the occupational therapist will provide additional guidance and suggestions for the various types of meditations, sleep stories, and breathing exercises. During group activities with child life specialists, the Calm app will also be utilized to engage in breathing and calming activities at the start and end of each group session to assist in the transitions to and from the group setting in the ED.

The Mindshift CBT app uses scientifically proven strategies based on cognitive behavioral therapy (CBT). This app will be introduced to the adolescent and familial

caregiver by the occupational therapist. This app is included on the iPad to support

adolescents that may have already started to utilize CBT prior to admission.

The Nature Sounds: Music to Relax, Sleep, Meditate, Calm and Soothe app is

intended to be used during the evening to assist with calming and the promotion of sleep.

This app is intended for self-exploration and can be supported by the familial caregiver.

This app provides an alternative to using the sleep stories on the Calm app for those

adolescents who find it difficult to fall asleep to a narrated story.

The Jango app is a personalized radio service that plays the preferred music of the

user. Adolescents will be able to create a customized station that plays their favorite

artists. The use of this app is ideal for self-exploration in their room. Additionally, this

app can be utilized by the occupational therapist or the child life specialist with the

adolescent to establish rapport and provide a means of regulation and calming during

initial education sessions with the adolescent and familial caregiver.

The exercise videos on the iPad will consist of body weight and movement-based

exercises that will give structured movement breaks and the ability to self-regulate and

reduce stress, and anxiety. The occupational therapist will utilize these videos to

introduce the concept of mindfulness-based movement to the adolescent and their

familial caregiver. These simple exercises will consist of exercises such as jumping jacks,

planks, wall sit, fast feet (running in place), and core exercises of alternating dead-bug

and crunches. The adolescent will be able to follow along with each video that will

demonstrate how to complete each exercise and then be followed by a 30-second timed

instruction to follow along and perform the exercise. A Yoga mat will be provided by a

child life specialist to engage in these exercises daily for the duration of their admission.

The adolescents will be given a printed schedule that will be posted in their room for when they can engage daily with child life specialists and the occupational therapist in either individual or group settings while admitted to the ED. This schedule will indicate the time the adolescent will be able to use the iPad in the morning and evening. The ideal frequency for adolescent participation with the iPads loaded with mindfulness-based apps will ideally be two times a day. Once in the morning to start their day and once in the evening to end their day and assist with sleep. If the adolescent is deemed unsafe to interact with the iPad, the fidget tools will be provided, and the iPad can be held by the sitter to play preferred music if the familial caregiver is unavailable. These instances may include a sudden escalation of behaviors and attempts to break the iPad or self-injury. The length of time in the morning will not be predetermined as self-exploration and engagement in mindfulness-based practices will take time to explore and engage with each app. The amount of time in the evening for engaging with the iPad will be set at no more than two hours. This will ensure that the device does not become a barrier to sleep and help to set healthy habits for using technology before sleep. Due to the nature of ED boarding, there is no set duration of the intervention as this will be dependent upon the length of stay in the ED.

Program Outputs and Outcomes

The program outputs sought are 1) the total number of ED providers trained in the benefits of mindfulness-based practices, 2) the number of adolescents utilizing tablet-based apps and self-regulation tools in the ED, 3) the number of adolescents able to calm

and sleep without chemical restraint, and 4) the number of adolescents utilizing

mindfulness to target calming and sleep at home and community settings. The outcomes

sought have been broken down into short-term, intermediate, and long-term outcomes.

The short-term outcomes sought for ED providers are 1) post educational training, ED

providers will understand the benefits of daily mindfulness-based practices on work-

related stress with the ability to identify two mindfulness-based practices, 2) ED

providers will understand the benefits of mindfulness practices for sleep with the ability

to identify two practices for sleep, 3) ED providers will be able to identify at least two

mindfulness practices that can be utilized in the ED setting and two for the home. The

short-term outcomes for adolescents sought 1) to understand how mindfulness, self-

regulation tools, and physical activity can promote calming and sleep while in the ED

with the ability to identify two practices or tools they find useful, and 2) to continue to

utilize at least two practices of mindfulness, self-regulation, or physical activity when

discharged from the ED.

The intermediate outcomes for ED providers at one-month post-educational

training sought are 1) increased knowledge of mindfulness practices and self-regulation

tools, 2) completion of a survey utilizing a numerical rating scale on which mindfulness

practices and self-regulation tools are still being utilized and at what frequency, and 3)

collection of pre and post surveys of ED providers knowledge of mindfulness practices

and self-regulation tools to understand the perceived competence in these techniques.

The long-term outcomes sought in six months are 1) improvements in the

adolescents' mental health as measured by the Generalized Anxiety Disorder 7-item scale

(GAD-7) (Mossman et al., 2017), 2) the improved ability to rest and sleep while in the ED as measured by the Pittsburg Sleep Quality Index (PSQI) (Buysse et al., 1989) and 3) a reduction in the ED readmission rate for a mental health crisis.

Anticipated Barriers and Challenges

This program is a novel approach to addressing adolescent mental health and sleep in the ED. The general lack of familiarity with mindfulness interventions utilized in the ED setting by providers is a barrier that needs to be addressed (Johnston et al., 2019; Walker et al., 2021). The need to engage primary stakeholders in the early stages of planning and implementation of phase one educational training sessions will be key to a successful launch of phase two. Obtaining early buy-in with provider training on the benefits of mindfulness in their daily lives for both the work and home environments will be needed for the carryover of these principles with adolescents in the ED setting. If providers do not see the benefits of mindfulness-based practices in their daily lives, this may create a barrier to utilizing this approach with adolescents in the ED (Janssen et al., 2018; Li et al., 2021).

To address this barrier, it will be critical for the occupational therapist to engage frequently with primary stakeholders. This engagement will range from informal to formal conversations with written and visual presentations demonstrating the effectiveness and benefits of mindfulness. Occupational therapy has been shown to provide clinically effective client-centered interventions for adolescents in mental health settings (Adams-Leask et al., 2018; Ikiugu & Nissen, 2016), and effective health promotion with positive effects on adolescent mental health (Arbesman et al., 2013).

The barrier of cost in any hospital setting is a significant factor that must be accounted for. The six hours of training is non-billable time, and this program must have the support of ED leadership to account for this lost revenue. Mental health hospitalizations have the lowest reimbursement rate with an average reimbursement of $136 per day. This figure is a significantly lower number than medical hospitalizations, which average $611 per day (Herndon et al., 2020). The scope of the problem is clear with estimates that pediatric mental health issues account for between two to five percent of ED visits with a range of 200,000 to 825,000 visits per year (Holder et al., 2017). At a single tertiary urban children's hospital from 2010 to 2016, the cost of all ED mental health visits was over ten million dollars with over four million of this cost incurred by patients with public insurance (Hoffman et al., 2019). The estimated cost for pediatric behavioral and mental health conditions exceeds thirteen billion dollars a year (McEnany et al., 2020).

To address this barrier the program provides education and training for both the ED providers and the adolescents and their familial caregivers to learn and engage with mindfulness-based interventions. The use of mindfulness apps that are free and easily loaded onto personal devices allows for continued use in the home and community setting. Additionally, utilizing adolescents' preferences for digital health interventions is an effective tool for addressing adolescent mental health (Hollis et al., 2017; Lehtimaki et al., 2021).

The ED environment provides challenges including high noise levels, lights that are always on, the small windowless rooms, and the constant movement of staff and

patients being admitted (Wood et al., 2019). This type of environment is not the ideal place to attempt to practice mindfulness. The use of wireless headphones would be ideal to utilize in such an environment, yet there will be safety and cost considerations that must be accounted for. The cost of replacement for damaged or missing headphones is a long-term barrier to funding the program. The replacement cost of the iPads, if they become damaged or stolen, will likewise prove a barrier to the program long-term. An additional challenge of having enough iPads and program resources during surge capacity in the ED will affect the outcomes of the program.

This program relies on technology and apps that require an internet connection to be able to engage in mindfulness-based practices. To address this barrier, a secure and locked internet connection that does not allow for the downloading of unapproved content will be vital to the adolescent only utilizing the approved apps for maximum exposure to mindfulness-based practices.

To mitigate the identified barriers of costly iPads, lower-cost Android-based tablets may be utilized with the same effectiveness. A locked charging cart for all digital devices will reduce the incidence of theft when the devices are not being utilized. The combination of impact-resistant protective cases and a sitter present while the adolescent is admitted to the ED will further decrease the replacement cost.

Summary and Conclusion

This program addresses a critical need for intervention targeting adolescent mental health in the ED. The boarding and mental health crisis in the United States shows no signs of slowing down and healthcare costs continue to rise. This program provides a

cost-effective, occupational therapy-driven, client-centered approach for the promotion of

health and wellness for both ED providers and adolescents admitted to the ED for a

mental health crisis. Improving the lives of adolescents by addressing their mental health

and sleep using mindfulness-based practices and client and familial caregiver education.

While also addressing improvements in hospital operations by reducing the readmission

rate for mental health in the ED, freeing up hospital beds for acute injuries, and reducing

the incidence of pediatric boarding in the ED.

The short-term outcomes will address ED provider education for using

mindfulness-based practices to address adolescent mental health and provide adolescents

in the ED with tools and strategies to address their increased anxiety and sleep while in

the ED. Adolescents will now have tools and strategies to utilize once they are discharged

from the ED to utilize while they are in their home and community settings to improve

their mental health and sleep. These tools and strategies can further be a bridge while

waiting for community-based mental health services and reduce the need to seek mental

health services from the ED.

The long-term outcomes sought in the program are a reduction in adolescent

anxiety as measured by the GAD-7, and improved sleep as measured by the PSQI. As

adolescents continue to utilize the tools and strategies they have learned while in the ED,

integrating mindfulness-based practices into their daily habits, routines, and roles, there

will be further reduction in anxiety and improved sleep.

The evaluation measures have been previously outlined to address adolescent

anxiety and sleep disturbance using the GAD-7 and PSQI. By analyzing these metrics at

the appropriate pre and post-test intervals, the occupational therapist and ED

administrators will be able to determine the degree to which the program was effective

and use this data in the support of further applications for funding and expansion of the

program to both rural and urban ED's across the country.

As this program is a novel approach to addressing adolescent mental health in the

ED setting, the outcome data will further expand the evidence of mindfulness-based

occupational therapy interventions for adolescent mental health. The use of mindfulness-

based practices as an occupational therapy-driven intervention has the potential to

demonstrate the effectiveness of occupational therapy in addressing adolescent mental

health and expanding the limited research base in this area.

CHAPTER FIVE: Program Evaluation Research Plan

Program Scenario and Identified Stakeholders

Program Phases

The program will be carried out in two separate phases. In the first phase, the author working in a large urban pediatric hospital setting will provide educational training to the emergency department (ED) physicians, physician assistants, nurse practitioners, nurses, social workers, and child life specialists on the benefits of mindfulness-based stress reduction for the promotion of health and wellness by reducing stress and improving sleep. The intent of this training is to promote in ED providers an understanding of the benefits of mindfulness-based interventions and the importance of providing these types of interventions for adolescents boarding in the ED. In the program's second phase, the focus will be on training and the increased independence of the adolescents and their familial caregivers on how to utilize mindfulness-based interventions using tablet apps, which provide a means for self-directed exploration of calming activities through music, games, and guided sleep stories. Additional resources for self-regulation activities in the form of fidgets and simple physical exercises that can be performed in the confines of their room will be provided to the adolescents.

The theoretical basis for this project is Transformative Learning Theory (Mezirow, 1991), which involves the process of changing our frames of reference or deeply held beliefs. This occurs through critical reflection on our assumptions, beliefs, and expectations that change the way we view the world around us. Transformative Learning Theory for this program is applied with the intent that ED providers will be able

to utilize the educational training to change their perspective on how mindfulness-based interventions will be meaningful and impactful for their health and well-being. This perspective change will allow ED providers to understand the importance of utilizing mindfulness-based interventions with adolescents admitted to the ED for a mental health crisis.

Program Delivery

The program's first phase will be delivered through six one-hour educational training modules, which will be offered both in-person and on Zoom. All sessions will be recorded on the benefits of mindfulness-based stress reduction allowing participants to further reflect and guide their practice of mindfulness practices in each session. These modules will include focused breathing exercises, seated meditations, body scan, and understanding the differences between guided mindfulness-based sleep and sleep stories. Resources and recommendations will be included on incorporating mindfulness into daily routines for calming and decreasing stress while working and the promotion of sleep at home. Through this training, the aim is that ED providers will understand the benefits of mindfulness-based interventions and the potential value of providing these types of interventions for adolescents boarding in the ED.

The second phase of the program is delivered to adolescents admitted to the ED during a mental health crisis. The intervention will focus on training and increasing the independence of the adolescents and their familial caregivers using mindfulness-based apps provided via tablets that include calming activities through listening to music, playing games, and listening to guided sleep stories. Additional resources for self-

regulation activities include handheld fidgets, such as stress balls, infinity cubes, and pop-it toys. Simple physical exercises that can be performed in the confines of their room, will be provided as recorded videos on the tablets. The tablets will be in the ED and can be assigned for use once the adolescent is seen by a child life specialist and a daily routine is established.

The primary stakeholders in the first phase are the ED physicians, physician assistants, nurse practitioners, nurses, social workers, and child life specialists. The primary stakeholders for the second phase are the adolescents admitted to the ED for mental health crisis and their caregivers and service providers. Additionally, ED leadership and nursing leadership will benefit from both phase one and phase two of this program with improvements seen in both staff and adolescent stress reduction and sleep. The following practice scenario in Figure 5.1 highlights how this program would be utilized in rural and community hospitals that do not have a specialized pediatric unit for ED admissions.

Figure 5.1

Application to Rural and Community Hospitals

A fifteen-year-old female is admitted for a mental health crisis in her local community hospital ED. This is not the first time this adolescent has been seen for the same mental health-related issue. The ED staff is already stretched thin with staffing and resources and has struggled to provide the necessary help this adolescent needs to address their ongoing mental health issue. The last admission lasted over a week and the discharge was back home with her parents. There are no local mental health providers in the community and no psychiatric facilities to transfer to. The staff is at a loss of what resources to provide this adolescent. The ED is not set up to accommodate a long-term stay, with curtains separating the bays and no way to block out the noise and lights to lessen the stress and anxiety. The ED staff, adolescents, and family are all stressed.

This program would provide the needed training, education, and resources to the ED staff to address adolescent mental health admissions in their community setting. Providing mindfulness-based interventions that can be learned in the ED and transferred to the home setting would address the lack of community-based mental health providers. This program would provide a low-cost option to address the increased mental health-related admissions seen in every community nationwide.

Vision for the Program Evaluation Research

There are two separate phases to this program, with the vision for each phase provided separately. In the first phase, the author's aim is that the program's findings will demonstrate the extent to which ED providers have learned to benefit from mindfulness-based practices in their daily lives in the work and home settings for calming and sleep. The information gathered from the first phase of the program evaluation will aid in understanding how mindfulness-based practices could be incorporated into daily habits, roles, and routines to manage stress and improve sleep for healthcare providers. Additionally, this information could contribute to the growing evidence base supporting the use of mindfulness-based practices by occupational therapists to improve health and

wellness in the areas of stress management and sleep.

The vision for the second phase of the program is to provide mindfulness-based practices that can be utilized while adolescents are admitted to the ED for mental health crisis and then continue to be utilized throughout their admission and discharge to community and home settings. Through training and increased independence with mindfulness-based practices, adolescents and their familial caregivers will learn valuable tools to continue to address calming and sleep beyond the walls of the ED. Improvements in adolescent mental health will be measured by self-report using the Generalized Anxiety Disorder 7-item scale (GAD-7) (Mossman et al., 2017). While the improved ability to rest and sleep will be measured by the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989).

The long-term vision of the program is to grow the evidence base for utilizing mindfulness-based practices for stress reduction and sleep. McEnany and colleagues (2020) stated that "no research published to date has been focused on the development, implementation, or evaluation of mental or behavioral health interventions for boarding youth" (p. 9). The Occupational Therapy Practice Framework 4th Edition (OTPF-4) (Gibbs et al., 2020), now includes recognition of the importance of rest and sleep as a fundamental occupation. (Aschbrenner et al., 2022; D'Amico et al., 2018; Gutman et al., 2017), yet there is a limited knowledge and research base to help address this problem (Faulkner & Mairs, 2015). While cognitive behavioral therapy (CBT) (Arbesman et al., 2013; Hollis et al., 2017; Lehtimaki et al., 2021) is seen as an effective intervention for anxiety and sleep, there are limitations. These limitations include the need for advanced

and highly trained providers, the long duration of treatment needed to be effective, and the relatively high cost to implement this intervention (Wang et al., 2022). Additionally, there remains a lack of treatment providers and treatment options for mental health conditions beginning in the adolescent years. According to a report by the Centers for Disease Control and Prevention (CDC), (2022) it has been estimated that one in five children suffer from a mental health condition and that only half of the children identified with a mental health disorder receive proper treatment.

The following case scenario in Figure 5.2, highlights the rise in adolescent mental health admissions seen over the past several years. This case scenario demonstrates the real struggles faced daily by adolescents across the country.
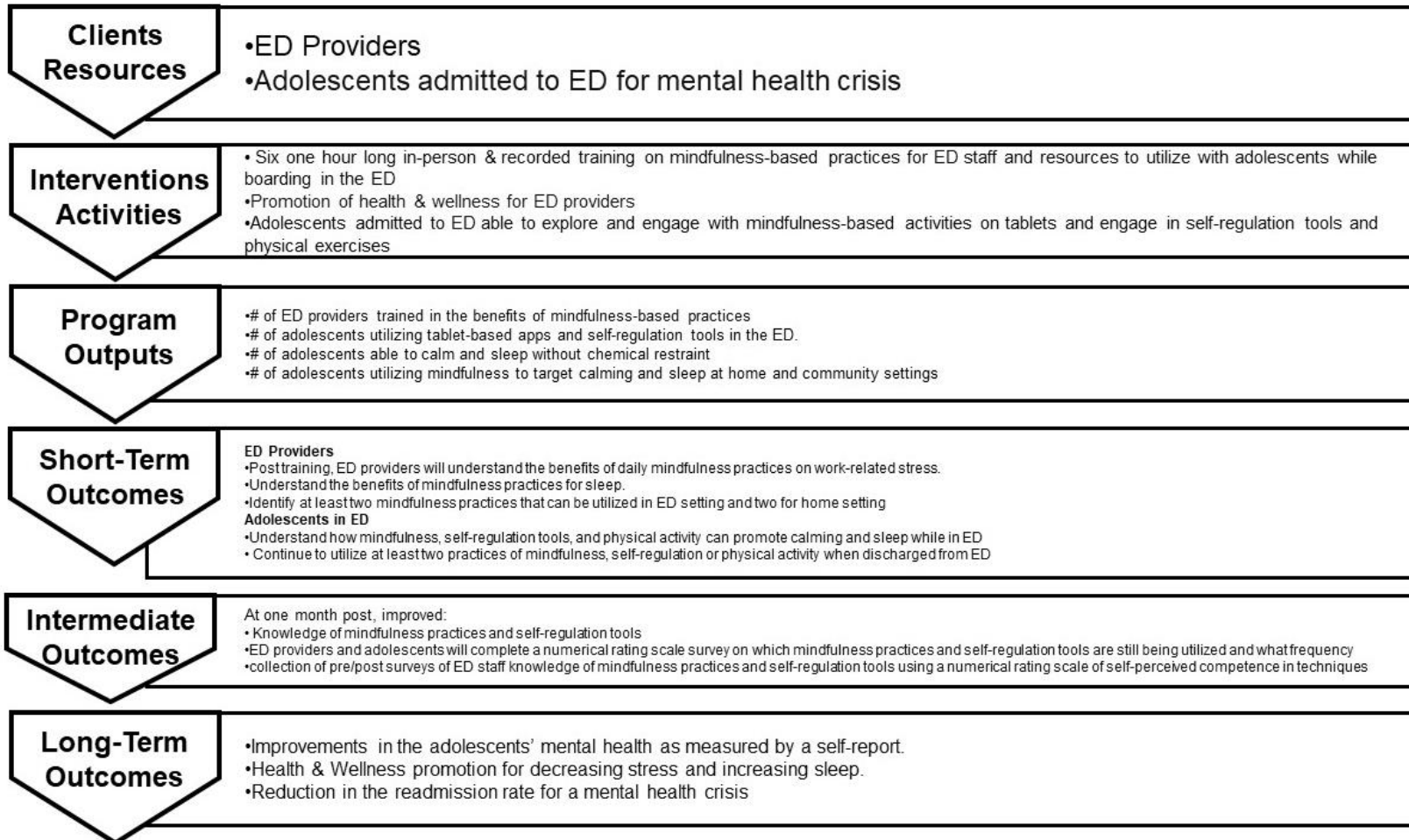
Figure 5.2

Case Scenario

Thomas is a 15-year-old male who suffers from depression and anxiety and has been struggling in school both academically and socially. He has been waiting to see a mental health counselor for months, yet his family cannot get an appointment as there are no openings with local providers. He has stopped taking the medication prescribed by his doctor for his depression and anxiety. He is having trouble sleeping and is spending most of his day on his phone and computer consuming social media. Thomas has always struggled to make friends and the past two years of isolation due to COVID-19 have only made this worse. His mother became worried when Thomas started talking about hurting himself. She does not know whom to turn to, so she takes Thomas to the children's hospital ED to get help. Upon arrival, his mother reports that Thomas is talking about hurting himself. Admitted to the ED for suicidal ideation, Thomas is placed in a single room with only a bed, the door is left open, and he has been assigned a sitter who sits in the hallway and watches him. His clothing and phone have been removed for safety reasons and he is now wearing a hospital gown with pajama bottoms and slipper socks. Thomas and his mother begin their long wait to be seen by a member of the psychiatric team. They have no idea how long they will have to wait. All the staff seem to be in a hurry, the hours pass and the noise in the ED grows as more individuals are admitted. If only they could close the door if only, they could be seen and given the help they need, if only this sitter would stop staring at him. Where is the doctor? How much longer will it be? There is nothing to do but wait in bed. Thomas is unable to sleep, and his anxiety is growing; he is becoming agitated as he is not allowed to leave the room. A child life specialist knocks on the door and asks Thomas if he would like to use a tablet with mindfulness-based apps to explore while in the ED. Thomas likes to listen to music and explores the other apps that help him to calm down. He opens another app and selects a sleep story. His mother sees that Thomas can calm down and settle; she is hopeful that he will be able to sleep tonight.

Simplified Logic Model of the Program and Evaluation Plan to Share with

Stakeholders

The stakeholders will receive a simplified logic model (Figure 5.3) of the program

to enable an understanding of the process and its potential to impact both ED providers

and adolescents admitted to the ED for a mental health crisis. The model provides an

overview of the program's activities and the short, intermediate, and long-term outcomes.

Figure 5.3

Simplified Logic Model for Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department

Clients Resources	•ED Providers •Adolescents admitted to ED for mental health crisis
Interventions Activities	• Six one hour long in-person & recorded training on mindfulness-based practices for ED staff and resources to utilize with adolescents while boarding in the ED •Promotion of health & wellness for ED providers •Adolescents admitted to ED able to explore and engage with mindfulness-based activities on tablets and engage in self-regulation tools and physical exercises
Program Outputs	•# of ED providers trained in the benefits of mindfulness-based practices •# of adolescents utilizing tablet-based apps and self-regulation tools in the ED. •# of adolescents able to calm and sleep without chemical restraint •# of adolescents utilizing mindfulness to target calming and sleep at home and community settings
Short-Term Outcomes	**ED Providers** •Post training, ED providers will understand the benefits of daily mindfulness practices on work-related stress. •Understand the benefits of mindfulness practices for sleep. •Identify at least two mindfulness practices that can be utilized in ED setting and two for home setting **Adolescents in ED** •Understand how mindfulness, self-regulation tools, and physical activity can promote calming and sleep while in ED • Continue to utilize at least two practices of mindfulness, self-regulation or physical activity when discharged from ED
Intermediate Outcomes	At one month post, improved: • Knowledge of mindfulness practices and self-regulation tools •ED providers and adolescents will complete a numerical rating scale survey on which mindfulness practices and self-regulation tools are still being utilized and what frequency •collection of pre/post surveys of ED staff knowledge of mindfulness practices and self-regulation tools using a numerical rating scale of self-perceived competence in techniques
Long-Term Outcomes	•Improvements in the adolescents' mental health as measured by a self-report. •Health & Wellness promotion for decreasing stress and increasing sleep. •Reduction in the readmission rate for a mental health crisis

Engagement of Stakeholders in the Program and Evaluation Research

Stakeholder engagement in phase one of the program will begin with the leadership of each of the represented provider groups in the ED. These include nursing, child life, physicians, physician assistants, and social work. Additionally, individual members of each provider group will be invited to participate in both formal and informal conversations during the first phase and the second phase of the program. This group of stakeholders' feedback is important for the formative evaluation of the first phase of the program evaluation.

The adolescents admitted to the ED for a mental health crisis and their familial caregivers will be engaged during the second phase of the program. This engagement will vary based on their length of stay, interest, and needs during an admission. Their level of engagement will be key to the summative evaluation of phase two of the program. The ED physician assistant in charge of mental health referrals, child life specialists, as well as ED leadership, will be essential to the success of phase two of the program. Their engagement will ensure the program stays relevant, available, and sustainable to meet the needs of the adolescents admitted to the ED for a mental health crisis.

The engagement and support of both the ED leadership team and the leadership of the represented ED provider groups will be necessary for the Internal Review Board (IRB) application. The engagement and participation of the child life specialists will be necessary for the implementation of the phase two intervention with the adolescents. This relationship has been previously established through current work groups within the

organization and the unique relationship between occupational therapy and child life for

the provision of direct services to adolescents during admissions.

Table 5.1

Matrix for Organizing Stakeholder Information

Stakeholder or Stakeholder Group	Type of Involvement (Planning, Implementing, Reflecting)	Possible Role(s)	Specific Interests
Researcher	Planning, Implementing, Reflecting	Overseeing and coordinating logistics	Successful implementation, useable data
ED Leadership	Planning, Implementing, Reflecting, Feedback	Consultation on methodology, analysis, logistics	Design rigor and robust outcomes
ED physician assistant in charge of mental health referrals	Planning, Implementing, Reflecting, Feedback	Coordination and consultation on logistics	Successful implementation, satisfaction
Child Life Specialist	Planning, Implementing, Reflecting, Feedback	Administering program activities and data collection, consultation on logistics	Successful implementation, satisfaction
ED Providers	Planning, Implementing, Reflecting, Feedback	Participating in program activities, consultation on logistics, and possible dissemination	Experience of successful implementation, satisfaction
Adolescents admitted to ED for mental health crisis	Reflecting, Feedback	Participating in program activities	Experience of successful implementation, satisfaction
Caregivers of admitted adolescents	Reflecting, Feedback	Participating in program activities	Experience of successful implementation, satisfaction
Funding agencies, advocacy organizations, policymakers	Reflecting	Consultation on possible dissemination	Research quality stands up to scrutiny and can be used to inform policymaking

Eliciting Stakeholder Involvement and Ensuring Utilization of Evaluation Results

A series of meetings will be set up with options for in-person and virtual via Zoom based on individual preferences. Current workgroups for improvement in the utilization and delivery of services in the ED will be invited to participate in these stakeholder meetings. The current workgroup includes representatives from ED nursing, ED child life specialist, occupational therapy department, ED social work, and ED physician assistant in charge of mental health referrals.

During meetings, information will be shared about the basis of the program. A brief presentation that includes the current program proposal with the budget, logic model, and strategic plan for implementation of phases one and phase two will be shared. The current research on mindfulness-based practices for both healthcare providers and adolescents will be shared during these meetings. To elicit stakeholder input, open dialogue will occur after the presentation. This will be recorded, and the feedback will be coded and used to improve future training. Discussions during feedback sessions will focus on stakeholder perspectives on research questions, design elements, and how the evaluation findings will be used. Categories for coding responses will be perceived barriers, current practices, supports needed, logistics, and implementation.

A separate set of meetings will be hosted at the children's hospital to elicit stakeholder engagement for adolescents with mental health issues and their familial caregivers. During these meetings, the five-minute pre-recorded program proposal presentation will be shown and current research on mindfulness-based practices for adolescent mental health will be shared. The information shared with this stakeholder

group will be presented with adolescent and caregiver-friendly language that minimizes the use of abbreviations and medical jargon. To elicit stakeholder input, open dialogue will occur after the presentation. This will be recorded, and the feedback will be coded and used to improve the program design. Categories for coding responses will be perceived barriers, current mental health support, additional support needed, mindfulness, and implementation at home. Discussions will focus on stakeholder perspectives on research questions, design elements, how the evaluation findings will be used, and the best way to receive the dissemination of program output.

For the stakeholders that are not able to attend meetings in person or virtually, a pre-recorded five-minute presentation that highlights the current program proposal with the budget, strategic plan, and implementation plan for both phases will be sent via email. To elicit stakeholder input from this group, a Qualtrics survey will be sent to allow stakeholders to provide feedback and add additional written feedback. To ensure consensus regarding program implementation and research design there will be flexibility provided on matters that are not deemed key to the implementation of the program.

Program Evaluation Research Questions by Stakeholder Group

The gathering of information from the analysis of the program evaluation research is necessary to be relevant to the stakeholders' interests. In Table 5.2, the potential research questions listed will be answered at the completion of the program evaluation research and data analysis.

Table 5.2

Stakeholder Program Evaluation Research Questions

Stakeholder or Stakeholder Group	Types of Program Evaluation Research Questions
Researcher	**Formative:** • Was the phase one program content and delivery sufficient for ED providers to begin utilizing mindfulness-based practices? • Was the phase two program content and delivery sufficient for adolescents to begin to utilize mindfulness and self-regulation tools to calm and sleep while in ED? **Summative:** • Will the program participants in both phases of the program report increased sleep after utilizing mindfulness-based practices?
Phase one program delivery to ED providers (physicians, physician assistants, nurses, nurse practitioners, child life specialists, social workers)	**Formative:** • Was the information presented relevant? • Was the information presented useful for daily living? • Was the education training delivered in an optimal format for learning? • Was the level of education sufficient for participants to begin using mindfulness practices in daily life? • Was the number and length of educational training sessions in phase one adequate or should they have been longer or shorter? • Is there anything that should be changed to improve the educational training on mindfulness-based practices? **Summative:** • Did participants in phase one gain the needed knowledge for the implementation of the program consistent with program goals? • Did participants in phase one gain perceived competence to utilize mindfulness in addressing work-related stress? • Did participants in phase one gain perceived confidence in their ability to utilize mindfulness to improve sleep?
ED Leadership	**Formative:** • Does the content of the program match organizational goals? • Does phase one education align with current organization training needs for providers? • Is the program delivery format suitable for ED providers' busy schedules? • Does the program content positively affect ED staff stress levels? **Summative:** • Will the research data show the intervention led to improved quality of care for adolescents admitted to ED for mental health crisis? • Has the program positively affected readmission rates for adolescent mental health? • Has the outcome data demonstrated improved sleep for ED providers?

Phase two program delivery to adolescents admitted to ED for mental health crisis and familial caregivers	**Formative:** • Were the tablet-based apps engaging for adolescents? • Were the self-regulation tools engaging for adolescents? • Was there enough direction provided for using tablet-based apps and self-regulation tools during ED admission? • Were the adolescents able to carry over the use of mindfulness-based practices at home for calming and sleep? • Were the adolescents able to carry over the use of self-regulation tools for calming at home? **Summative:** • Did adolescents improve sleep during ED admission as measured by PSQI? • Did adolescents improve sleep in the home one month after ED admission as measured by PSQI? • Did familial caregivers report improved adolescent calming and sleep during ED admission as measured by GAD-7? • Did adolescents and/or familial caregivers report improved mental health six months after ED admission as measured by GAD-7?

Research Design

Formative Design

At the end of the educational training, ED providers will be asked to fill out a survey consisting of open-ended questions. Participant responses to the survey questions will provide a basis for future improvements to the educational training on the benefits of mindfulness-based practices for utilization to reduce work-related stress.

Summative Design

The evaluation research will follow a single-group pretest and posttest non-experimental design. Adolescents or their familial caregiver will complete an initial Pittsburgh Sleep Quality Index (PSQI) and the Generalized Anxiety Disorder 7-item scale (GAD-7) upon admission to the ED. The adolescents and their familial caregivers will be asked to complete a second PSQI and GAD-7 one month after discharge. The PSQI is a nineteen-item, self-rated questionnaire that is designed to measure sleep quality

and sleep disturbance over a one-month period of time. The GAD-7 is a seven-item survey that is used to measure the severity of generalized anxiety disorder over the previous two weeks. This will allow for analysis of what effect mindfulness-based practices have had on stress reduction and sleep.

Methods

For the soft launch of phase one of this program, participants will be recruited from the current ED department leadership of each of the represented provider groups in the ED. These include nursing, child life specialists, physicians, physician assistants, and social workers. These stakeholders will be the first participants to receive the six one-hour educational training modules. For the soft launch of phase two of this program, six participants will be recruited from adolescents admitted to the ED for a mental health crisis. Inclusion criteria will include a suspected or given diagnosis of anxiety, depression, and/or suicidal ideation. Exclusion criteria will include a current suicide attempt, and a diagnosis of cognitive impairment or disorder that limits the ability of the participant to verbally communicate, physically engage or comprehend the program's materials.

Confidentiality

Confidentiality in both phases will be ensured by following the hospital IRB's ethical research protocol. In accordance with this protocol, alphanumeric codes will replace the participant's real names. All data will be stored in an encrypted and secured hard drive that will be stored in a separate location inside a locked cabinet with the author retaining the only key. Participants of both phases will be required to sign an informed

consent form that will describe the program details, the purpose of the program, the

duration of the program, their right to withdraw from the study at any given time, and

their option to access data obtained from the evaluation research. The familial caregiver

of participants in phase two will be able to sign the informed consent form in lieu of the

adolescent if the adolescent is unable to sign. Participants will be informed that risks will

be minimal for participants.

Formative Data Collection

In phase one of the program, the ED providers who completed all six one-hour

training sessions will be asked to complete an open-ended question survey about their

responses to the training. The participants will receive the link to the Qualtrics survey at

the end of the final training module, with a request to complete the survey the same day.

In phase two of the program, adolescents and their familial caregivers will be sent a

survey consisting of open-ended questions on their experiences in the ED while utilizing

the tablets with mindfulness-based apps and the use of self-regulation tools. These

surveys will be sent electronically within two days of discharge utilizing Qualtrics. See

Appendix A for sample questions from the survey. At one-month post-discharge, a

survey consisting of open-ended questions will be sent utilizing Qualtrics to provide

insight into their perceptions of sleep and current mental health status.

Methods for Formative Data Management and Analysis

The use of Qualtrics for formative data collection will allow for secure online data

storage, management, and qualitative data analysis. Qualitative content for data analysis

will be obtained from the open-ended survey questions completed in phase one.

Categories and themes will be established from this data analysis. Qualtrics will enable the data to be exported in multiple methods and run reports to assist in further analysis. Additional use of NVivo will be utilized for qualitative analysis and provide a means for double-checking the data obtained from Qualtrics analysis. The selection of this tool is based upon the ability to complete a mixed methods study and data analysis. Educational training modules will be offered in person and virtually utilizing Zoom meetings. The ability for participants to meet with the principal investigator at the end of each training module to ask questions and engage in conversation will further enhance the level of rigor. Additional methods of having the PT/OT department manager of research and the research committee within the department review the findings will further enhance the level of rigor. All data will be stored confidentially with research program laptops encrypted and password protected to ensure only authorized users will be able to access the data.

Summative Data Collection

Independent Variable. The independent variable in phase one of the program is the educational training modules that will consist of six one-hour sessions delivered over consecutive weeks. The setting will be in hospital conference room utilized for training with the principal investigator conducting all training sessions. Participants will receive printed handouts on the information covered in each training session.

Dependent Variables. The dependent variables in phase one are 1) understanding the benefits of daily mindfulness practices for decreasing stress, 2) understanding the benefits of mindfulness practices for improving sleep, 3) knowledge of mindfulness

practices that can be utilized working in the ED, 4) knowledge of mindfulness practices

that can be utilized at home. This will be measured utilizing a pre- and post-training

knowledge quiz that utilizes self-rating Likert-style questions. The Likert rating scale will

be as follows: 5=Very Good; 4=Good; 3=Fair; 2=Poor; 1=Very Poor. A higher score

will indicate a greater perceived understanding and knowledge of mindfulness practices.

Independent Variable. The independent variable in phase two of the program is

the adolescents admitted to the ED for a mental health crisis who will learn to utilize

tablet-based mindfulness apps and self-regulation tools during the duration of ED

admission.

Dependent Variable. The dependent variables in phase two are 1) the

adolescents' ability to fall asleep in the ED; 2) the number of hours of sleep daily during

admission; 3) the quality of sleep during admission. This will be measured utilizing the

Pittsburgh Sleep Quality Index (PSQI). This will be administered upon admission to the

ED and then a follow-up administration will occur one month following discharge. The

difference in score will indicate the effect of mindfulness practices on sleep. The

administration of the PSQI will be conducted online to optimize internal and external

validity and reliability.

Methods for Summative Data Management and Analysis

The quantitative data in phase one of the program will be obtained from the pre-

and post-training knowledge quiz electronically utilizing Qualtrics. Qualtrics will allow

for the export of the data in multiple methods and reports to assist in further analysis. The

quantitative data in phase two of the program will be obtained from the online

administration of the PSQI upon admission to ED and one month later. Due to the

possible lack of resources to access the electronic version of the PSQI by participants,

there will be an option to send the PSQI as a paper format with pre-paid postage envelope

for return of the PSQI. The data obtained from the PSQI will be analyzed using the

Statistical Package for the Social Sciences (SPSS) for t-tests to determine the differences

between sleep upon admission and sleep one month after using tablet-based mindfulness-

based apps and self-regulation tools. All data will be stored confidentially with research

program laptops encrypted and password protected to ensure only authorized users will

be able to access the data.

Disseminating the Findings of Program Evaluation Research

There are several stakeholders involved in this program and each will require a

different method by which outcome measurements will be disseminated. The survey data

collected in phase one will be for internal hospital use. The results will be disseminated

to the ED leadership as well as the ED providers consisting of physicians, physician

assistants, nurses, nurse practitioners, child life specialists, and social workers. The

method of dissemination for the ED leadership team will be a formal evaluation report.

This will include the number of participants trained in phase one, outcome data from

phase one survey responses from ED providers on which mindfulness practices are being

utilized, and recommendations for program improvement. The method for dissemination

to the ED providers will be infographics shared on the internal hospital webpage. The

infographic will include data on the number of providers trained, which mindfulness

practices are being utilized by providers, the frequency of mindfulness practices, and the

perception of using mindfulness-based practices by providers. The use of infographics will provide contextually rich data in a visual format that will provide the key details in a quick and efficient manner for these busy providers.

The dissemination of outcome measurement data in phase two will require both internal and external dissemination as the key stakeholders include the adolescents and their familial caregivers, the ED providers, and the ED leadership team. The method of dissemination for the adolescents and their familial caregivers will be infographics posted on the external webpage of the hospital. Additionally, the infographics will be sent by email, and/or a paper mailed copy to the adolescents and their familial caregivers to ensure they have access to the data. As in phase one, the data from phase two will be disseminated to ED leadership and ED providers in infographics shared on the internal hospital webpage. These infographics will include the number of participants in phase two, and the outcome data on the GAD-7 and PSQI from phase two. Additionally, evaluation briefs will be made available to ED leadership and ED providers as a hyperlink at the bottom of the infographic for more detailed information if they so choose to investigate further. A formal evaluation report will be disseminated to the ED leadership team on the outcome measurement data for phase two. This report will detail the number of participants, the outcome data on the GAD-7 and PSQI, the frequency of use of mindfulness and self-regulation tools utilized by adolescents, and recommendations for program improvement.

The dissemination of data to all key stakeholders will be important to demonstrate the impact of the program and ensure that the program is functioning as intended.

Keeping key stakeholders up to date on the status of the program will ensure transparency and allow for the program to be modified and improved to ensure that this program remains effective and delivers the outcomes that have been sought.

CHAPTER SIX – Dissemination Plan

Summary

The program, Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department will be delivered in two separate phases. In the first phase, the author working in a large urban pediatric hospital setting will deliver educational training to healthcare professionals in the emergency department (ED). This training will encompass physicians, physician assistants, nurse practitioners, nurses, social workers, and child life specialists. The primary objective of this training is to educate providers on the benefits of mindfulness-based stress reduction in enhancing health and well-being, specifically by reducing stress and enhancing sleep. The goal is to instill in ED providers an understanding of the benefits of mindfulness-based interventions and emphasize their significance in assisting adolescents boarding in the ED.

In the program's second phase, the focus will be on the education and training of adolescents and their familial caregivers. This phase aims to empower them with the skills and knowledge needed for increased independence in engaging in mindfulness-based interventions. The focus will be on promoting rest and improving sleep during a mental health admission to the ED.

Dissemination goals

- *Long-term goal*: The dissemination of the program will lead to improved adolescent mental health through the ability to rest and sleep during an ED admission.

- *Long-term goal*: The dissemination of the program will lead to a reduction in the ED readmission rate for adolescent mental health concerns.

- *Long-term goal:* The dissemination of the program will provide a model for other hospitals to implement within their ED, expanding the reach and influence in addressing adolescent mental health.

- *Short-term goal:* The dissemination of the program will lead to its implementation in the ED at Boston Children's Hospital to address adolescent rest and sleep.

- *Short-term goal*: The dissemination of the program will lead to ED providers understanding the benefits of mindfulness-based interventions for adolescents in an ED setting.

- *Short-term goal:* The dissemination of the program will demonstrate the role of occupational therapy in addressing adolescent mental health in an ED setting.

- *Short-term goal:* The dissemination of the program will lead to adolescents and their caregivers utilizing mindfulness-based apps and interventions with minimal support to promote rest and sleep in an ED setting.

- *Short-term goal:* The dissemination of the program will lead to adolescents establishing healthy habits and routines in their home setting to promote rest and sleep.

Target audiences

The outcomes of the dissemination of this program targets two primary audiences and one secondary audience. One of the primary audiences is ED leadership, while the other primary audience consists of adolescents facing mental health challenges.

Occupational therapy practitioners make up the secondary audience, and they will be the focus when considering the potential future implementation of this program in additional ED settings throughout the United States. This expansion aims to broaden the program's reach and impact to emergency departments in major urban children's hospitals.

Key messages

The two primary key messages have been formulated for ED leadership and adolescents with their caregivers, while the secondary key message is targeted toward occupational therapy practitioners. The key message to ED leadership will highlight the significance of occupational therapy-led interventions, employing mindfulness-based practices to enhance adolescents' rest and sleep during mental health admissions. Additionally, it will underscore that the adoption of mindfulness-based practices by ED providers enhances their capability to reduce stress within a high-stress environment.

The primary message for adolescents and their caregivers is that by incorporating daily mindfulness-based practices and self-regulation tools into their routines, they can effectively address their capacity to rest and sleep. This, in turn, can lead to enhanced health and well-being, helping them to restore balance in their daily activities.

By disseminating this program to the secondary audience of occupational therapy practitioners, the outcomes will contribute to the growth of the evidence supporting the use of mindfulness-based practices in addressing the occupations of rest and sleep among adolescents.

Sources/Messengers

The primary spokesperson for this program is Aaron Grey, MBA, MSW, LICSW, Vice President of Social Work and Family Services. In his role at Boston Children's Hospital, he supports the growth and initiatives involving the Hale Family Center for Families, social work, and psychiatric consult services. Engaging both families and providers in his role makes him an ideal spokesperson for disseminating the results of this program.

The secondary spokesperson of Susan Bazyk, Ph.D., OTR/L, FAOTA, and the founding director of Every Moment Counts, (*Every Moment Counts*, n.d.) is the perfect candidate to convey the program's outcomes to occupational therapy practitioners. Her extensive career as an occupational therapy researcher, educator, and practitioner, with a specific emphasis on addressing mental health challenges in children and adolescents across various environments, makes her the ideal choice for disseminating the program's results.

Dissemination activities, tools/techniques, timing, and responsibilities

- **Written information:**
  - A journal article detailing research findings of program results will be submitted to a peer-reviewed journal (e.g., *Child and Adolescent Mental Health, American Journal of Occupational Therapy)* within six months of the completion of the first year of the program. This dissemination activity will share evaluation results and future implications for mindfulness-based interventions with adolescents.

- **Electronic media**:

  - o The creation of digital infographics with results posted on the hospital's internal and external web pages. The infographics will share phase two evaluation results within six months after completion of year one.

  - o Appearing as a guest on the Boston Children's Hospital podcast sharing evaluation results of phase two of the program will occur six months after completion of year one. This podcast intends to inform the public about the use of mindfulness-based practices that adolescents have successfully carried over into the home environment. Additionally sharing resources and exploring mindfulness-based apps in the home environment with the audience.

- **Person-to-person contact**:

  - o A short course presentation proposal will be submitted to the Massachusetts Occupational Therapy Association conference within six months of completion of year one of the program. The short course will disseminate research outcome findings and implications for occupational therapy practitioners for the use of mindfulness-based interventions with adolescents with mental health concerns to promote rest and sleep.

  - o A short course presentation proposal will be submitted to the American Occupational Therapy Association conference within six months of completion of year one of the program. The short course will disseminate research outcome findings and implications for occupational therapy

practitioners for the use of mindfulness-based interventions with

adolescents with mental health concerns to promote rest and sleep.

Budget

Table 6.1

Dissemination Budget

Activity	Cost
Primary	
Digital infographics for internal and external hospital webpage	Therapist time to create $45 per hour x 4 hours
Printed infographics direct mail to participants	Staples printing $0.20 per page x 200 pages
Stamps for direct mail	$0.66 per stamp x 100
Envelopes	$100 per 250 business envelopes
Secondary	
Registration for state and national OT conferences	American Occupational Therapy Association (AOTA): $480 Massachusetts Occupational Therapy Association (MOTA): $285
Printed handouts for conferences	Staples printing $0.20 per page x 500
Lodging	$175–$200 per night x 3 nights
Airline travel AOTA	$500
Rental car	$500
Travel by car MOTA	$0.65 per mile x 100 miles
Total	$3,550

Evaluation

- **Written information**: The dissemination of information through the submission to a peer-reviewed journal article will be successful if accepted.

- **Electronic media**: The dissemination of information through the hospital's internal and external web pages will track traffic for the number of total views to determine the success rate. The podcast success rate will be determined by the number of downloads across all platforms of Apple, Stitcher, Spotify, iHeart Radio, Google, Pandora, and YouTube that listeners are currently able to access.

- **Person-to-person contact**: The number of attendees will be tracked at each short course conference presentation. Additionally, the number of contacts from the exchange of information following each presentation for further discussion of the program will demonstrate successful dissemination.

Conclusion

Dissemination activities are a crucial element of this program. Since there is a limited body of evidence to support occupational therapy practitioners' use of mindfulness-based interventions in the ED setting for adolescent mental health issues, the outcomes of this program will go towards building this evidence base.

CHAPTER SEVEN – Funding Plan

Project Description

Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department is a project designed to address adolescents' ability to rest and sleep in the emergency department (ED) during a mental health admission. The disruption of daily routines, purposeful activities, and occupations persists throughout the admission process and impacts the adolescent's entire stay. The project's mission and vision statement underscore the significance of re-establishing balance for these adolescents. The mission statement for this project is: To improve adolescent mental health through the promotion of mindfulness-based interventions for the ability to rest and sleep while admitted to the emergency department. The vision statement for this project is: To improve the lives of both emergency department staff and adolescents in the ED during a mental health admission.

The project, which takes place in the emergency room of a large urban pediatric hospital setting, is broken into two separate phases. The first phase focuses on the occupational therapist providing educational training to select ED staff at a large urban pediatric hospital setting. The staff will include physicians, physician assistants, nurse practitioners, nurses, social workers, and child life specialists. The training will focus on the benefits of mindfulness-based stress reduction for the promotion of health and wellness by promoting stress reduction and improved sleep (Butt et al., 2022; Chan et al., 2022; Diaz-Gonzalez et al., 2018; Janssen et al., 2018; Li et al., 2021; Weaver-Darragh, 2015). Through this training, the ED providers will develop an understanding of the

benefits of mindfulness-based interventions and the importance of providing these types of interventions for adolescents boarding in the ED.

The second phase of the program focuses on adolescents admitted to the ED for mental health concerns. Specifically, it aims to improve adolescent mental health through the promotion of mindfulness-based interventions targeting the ability to rest and sleep while admitted to the emergency department. This will be achieved by the occupational therapist providing education and training to adolescents and their familial caregivers on how to utilize mindfulness-based interventions in the form of tablet-based apps. These apps will allow for self-directed exploration of calming activities through music, games, and guided sleep stories (Butt et al., 2022; Cheng et al., 2019; Garrido et al., 2019; Seabrook et al., 2020; Weaver & Darrah, 2015; Weekly et al., 2018). Additional resources for self-regulation (Adams-Leask et al., 2018) activities in the form of fidgets and simple physical exercises that can be performed in the confines of their room will be provided as recorded videos on the tablets.

Available Local Resources

The project's financial support will involve a combination of in-kind resources and grants. Working as an occupational therapist at Boston Children's Hospital (BCH) provides the author with access to various in-kind resources, such as reserving spacious conference rooms for phase one educational training sessions, seeking Information Technology (IT) support for multi-media presentations, utilizing yoga mats from hospital supplies, and collaborating with the volunteer office to arrange volunteers for training session support. The current staffing of child life specialists in the ED and the structure

and existing resources are considered an in-kind resource for this project.

Additional in-kind supports available at BCH include access to the Biostatistics and Research Design (BARD) Center. This in-kind resource provides biostatistical and methodological expertise through a collaborative relationship with BCH investigators. This support will enhance the ability to analyze the data, understand the limitations of the study, control for bias, and ensure the validity of the data.

Needed Resources: Budget

The budget to fund this project is included in Table 7.1. The most significant cost arises from the time dedicated to phase one of the project, which involves creating and delivering six hours of educational training for emergency department providers. This cost is represented as a full-time equivalent (FTE) as the program is run by an occupational therapist employed by a hospital. The calculation of time to implement the program has been calculated as 0.125 FTE. The next largest expense is the purchase of twenty-five iPads along with OtterBox Defender cases to ensure the iPad's protection against damage. Although the program can take advantage of hospital resources for printing, copying, and marketing, these expenses must still be incorporated into the annual budget. It is crucial to have secure storage and charging solutions for the iPads used by adolescents during phase two training and education on mindfulness apps and videos for mindfulness-based practices.

The budget for year two reflects the replacement cost of half of these items due to damage or loss and the expansion of the program. Miscellaneous supplies required for the project account for poster boards, pens, highlighters used during phase one educational

training sessions, and fidgets used by adolescents in phase two. The marketing and

advertising budget is discussed in greater detail in Chapter 6. To account for any

additional expenses associated with hospital chargebacks for the implementation of both

phase one and phase two, an 8% general indirect expense line item is included in the

budget.

Table 7.1

Budget

Budget Item	Year One	Year Two	Justification
Salaries and wages (0.125 FTE)	$11,520	$11,520	Therapist time spent developing and implementing educational training sessions during year 1. Time spent making improvements and training of new residents or staff reflected in year 2.
25 iPads x $329.00 per	$8,225	$8,225	Initial cost in year 1, with the replacement cost of 50% due to damage/loss/theft and expansion of 12 additional iPads in year 2.
25 OtterBox Defender cases x $58.95 per	$1,474	$1,474	Initial cost in year 1, with the replacement cost of 50% due to damage/loss/theft and expansion of 12 additional iPads in year 2
Printing and copying	$3,500	$3,500	Printing and copying for educational training materials and handouts.
Mindful Apps Free versions	$0	$0	Free versions of mindfulness apps for phase two.
Shapes series 30-device charging cart w/ electronic lock & pull-out shelves	$1,000	$1,000	iPad secure storage and charging for the first year and expansion for the second year. https://www.walmart.com/ip/Shapes-Series-30-Device-Charging-Cart-w-Electronic-Lock-Pull-Out-Shelves-Assembled-Black-Cart-Blue-Doors/465206239

Marketing and advertising	$3,550	$3,550	Internal and external marketing for phase one and phase two of the project includes local and national dissemination at the MOTA & AOTA conferences.
Miscellaneous supplies	$1,100	$1,100	Poster boards, highlighters, pens-phase one Fidgets-phase two adolescent use
General operating indirect 8%	$11,192	$11,192	2 Laptops, chargeback on statistical analysis, chargeback on use of space, chargeback on IT support. M. Pinkham (personal communication, September 25, 2023)
Total Expenses	$49,291	$49,291	Year one and Year two total expenses
IDEA Grant	$50,000	$50,000	IDEA grant BCH
Revenue over expenses	-$709	-$709	Amount remaining from IDEA grant after expenses.

Potential funding sources

In addition to in-kind resources, Boston Children's Hospital offers the Inquiry Investment Drives Evidence into Action (IDEA) grant. This grant is available to support novel clinical research conducted by staff that improves the care of pediatric patients and families at Boston Children's Hospital. The IDEA grant is awarded yearly in the amount of $50,000 dollars with continued eligibility for additional years.

Further funding for this project is available through federal grants specific to mental health. The Substance Abuse and Mental Health Services Administration (SAMSHA) provides information on several federal grants that are available to fund hospital-based mental health programs. These include the Community Mental Health Block Grant (CMHBG) and additional grants to expand mental health services for children and adolescents. These grants are detailed in Table 7.2.

Table 7.2

Grants

Grant Title	Funding Source	Funding Criteria
IDEA Grant	• BCH	• Novel clinical research by BCH staff • Awarded annually • Award amount: $50 thousand • https://www.childrenshospital.org/research/icctr/research-resources
Community Mental Health Block Grant	• SAMHSA	• Providing comprehensive community mental health services • Application due by December 1 • Award amount varies by state need • https://www.samhsa.gov/grants/block-grants/mhbg
Grants for Expansion and Sustainability of the Comprehensive Community Mental Health Services for Children with Serious Emotional Disturbance	• SAMHSA	• Improve mental health outcomes ages 0-21 at risk of serious emotional disturbance • Application due by March 21 • Award amount: $1-3 million over 4 years • https://www.samhsa.gov/grants/grant-announcements/sm-23-013
Healthy Transitions: Improving Life Trajectories for Youth and Young Adults with Serious Mental Disorders Program	• SAMHSA	• Must identify and provide for appropriate behavioral health interventions for ages 16–25 • Application due by May 8 • Award amount up $750 thousand up to 5 years • Healthy Transitions: Improving Life Trajectories for Youth and Young Adults with Serious Mental Disorders Program	SAMHSA
Community Programs for Outreach and Intervention with Youth and Young Adults at Clinical Risk for Psychosis	• SAMHSA	• Must provide trauma-informed, evidenced-based interventions to youth no older than 25 • Application due by March 14 • Award amount up to $400 thousand up to 4 years • https://www.samhsa.gov/grants/grant-announcements/sm-23-014

Conclusion

Utilizing mindfulness-based practices in a pediatric emergency department is designed to take place at Boston Children's Hospital, therefore the funding plan encompasses the resources, budget, and potential funding avenues for that setting. The overall project benefits from the existing resources, staffing, and structure in the ED. These factors will lead to the project being cost-effective due to not needing to hire additional staff or re-organize ED structures and resources. Given that this project is intended to complement and bolster ED staff and facilities, the potential for replicating this initiative in other ED settings is very feasible.

CHAPTER EIGHT – **Conclusion**

This program addresses a pressing issue in addressing the mental health of adolescents in the emergency department (ED). The increasing prevalence of boarding and mental health crises in the United States, rising healthcare costs, and continued shortage of trained pediatric psychiatric providers necessitate effective intervention. This program is a cost-effective solution centered around occupational therapy, focusing on the well-being of both ED providers and adolescents seeking care for mental health crises. By educating both clients and caregivers on mindfulness-based practices, it aims to enhance the mental health and sleep of adolescents. Additionally, the program aims to improve hospital operations by reducing the readmission rates for mental health encounters in the ED, thus freeing up hospital beds for acute injuries and reducing the occurrence of pediatric boarding in the ED.

This program introduces a unique and innovative method for addressing adolescent mental health concerns in the ED setting. The outcome data will expand the evidence base of mindfulness-based occupational therapy interventions in addressing adolescent mental health. By incorporating education and training on utilizing mindfulness-based practices as a core component of occupational therapy, this program has the potential to demonstrate the effectiveness of occupational therapy in an ED setting. Furthermore, it has the potential to fill the gaps in the limited research available in this specific area, thereby expanding our understanding and knowledge base.

The mindfulness tools, activities, and exercises advocated in this program can be applied to both adolescents and adults in various settings, such as educational institutions,

community-based hospitals, and the home. By adopting the program's framework, mindfulness-based apps, breathing techniques, and activities can be employed across different environments and with different groups of people. The mindfulness-based apps are affordable or even free, and they can be easily installed on cell phones and tablets, making them accessible and portable for individuals facing mental health challenges caused by stressors.

In community based EDs around the nation where occupational therapists or child life specialists may not be available, social workers, nurses, and other professionals can utilize this program to support adolescents in crisis situations who require mental health assistance. By offering a cost-effective solution, this program addresses the needs of many individuals, especially considering the ongoing shortage of trained pediatric psychiatric professionals available nationally to provide mental health interventions.

As occupational therapists, we possess the knowledge, skill, and occupation-focused perspective to effect meaningful changes in the lives of adolescents facing mental health challenges. This program provides a structured framework for the implementation beyond large urban tertiary pediatric hospitals. By incorporating this program, we can bring about real and significant change in the lives of adolescents seeking mental health support while enduring long waits for proper treatment in emergency departments throughout the nation.

APPENDIX A – Program Document

GUIDE TO PRACTICING
MINDFULNESS

TAKE A SEAT

Find a place to sit that feels calm and quiet to you. Yoga mats or chairs.

SET A TIME LIMIT

Practice each technique for 5 minutes to start. As you practice daily you will find what works best for you.

NOTICE YOUR BODY

Sit in a comfortable spot. Make sure you are stable and in a position you can stay in for a while.

FEEL YOUR BREATH

Follow the sensation of your breath as it goes in and as it goes out.

NOTICE WHEN YOUR MIND HAS WANDERED

When you start to notice this, simply return your attention to the breath.

BE KIND TO YOUR WANDERING MIND

Don't judge yourself when your mind wanders. Be kind to yourself and bring your focus back to your breathe and body.

BODY SCAN

Find a quiet place and close your eyes. Take a deep breath in through your nose, and out through your mouth. Starting at your toes, become aware of how your body feels. Slowly move up your body to the top of your head, noticing how each body part feels.

TAKE 2 STEPS & BREATHE

Before entering a room. Take 2 steps and close your eyes. Breathe in slowly, and as you slowly breathe out, let go of any negative thoughts. Breathe in and focus on the positive thoughts. Open your eyes.

Heart Focused Breathing

Close your eyes. Slowly breathe in your nose and out your mouth. Focus your breath in the area of your heart. Feel the breath slowly enter and exit through your heart. Repeat until you are calm and focused.
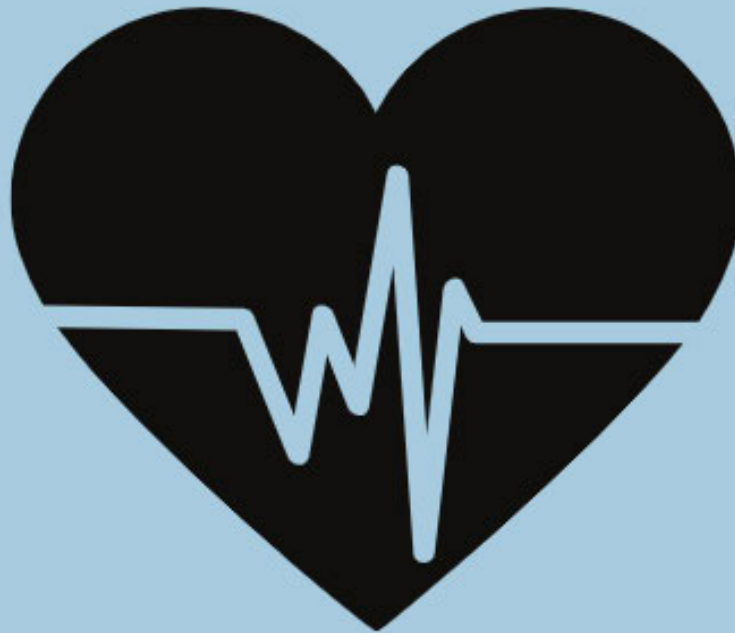
Mindful Breathing

Eyes open or closed. Slowly breathe in through your nose and out your mouth. Focus on your breath entering and flowing effortlessly through your body. Letting go of your thoughts, and releasing the tension in your body as you slowly breathe out.
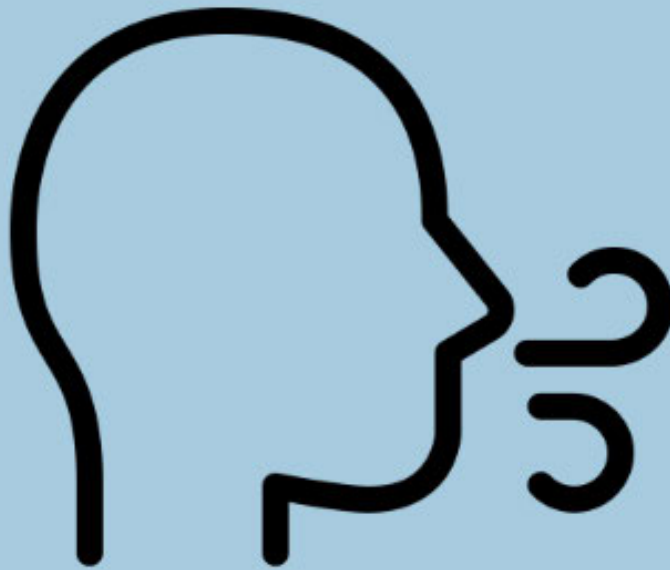
HEART LOCK BREATHING

Focus your attention on the area of your heart. Imagine your breath flowing in and out of your heart, breathing a little slower and deeper in a comfortable rhythm. Activate and sustain a regenerative feeling of appreciation, care, or compassion. Radiate that feeling to yourself and others.

Adolescent Sample Survey Questions

1. How many times each day did you use the mindfulness-based apps on the tablet while in the emergency department?

2. What was your favorite mindfulness-based app that you used in the emergency department?

3. What self-regulation tool or fidget did you use while in the emergency department?

4. What helped you to rest and sleep while in the emergency department?

5. What mindfulness app, activities, or exercises do you still use now that you are home?

APPENDIX B-Executive Summary

Introduction

Mental health challenges often start in childhood as evidenced by one in six children aged two to eight years being diagnosed with a mental or behavioral disorder (CDC, 2022). Some of the barriers connected to pediatric mental health conditions include the lack of universal screening, lack of participation in mental healthcare services, decreased availability of licensed and trained mental health providers, lack of access to effective treatment, and the stigma of living with a mental health condition (Toure et al., 2022). These barriers to accessing adolescent mental health services have been exacerbated by the COVID-19 pandemic. From the spring of 2019 to the fall of 2020 there was a 31% increase in adolescent mental health visits to emergency departments (ED) across the United States (Leeb et al., 2020).

Pediatric boarding occurs when an adolescent is admitted to the ED for a mental health crisis while waiting for treatment. The pediatric boarding crisis has been compounded by inadequate availability of mental health services in the community and a shortage of inpatient psychiatric beds (Axelson, 2019; Kraft et al., 2021). In a recent study, published in the journal *Pediatrics*, average ED boarding times ranged from five to 41 hours, whereas median inpatient boarding times ranged from two and three days for patients awaiting transfers to a psychiatric bed (McEnany et al., 2020). Pediatric boarding is a complex issue and has become more challenging in the past several years. According to Nash, et al., (2021), more than 21% of mental health stays lasted more than six hours, compared with fewer than 5% of non-mental health visits to the emergency department,

while stays of more than 12 hours occurred in 7.7% of mental health visits versus just 1.2% of other visits. According to Ibeziako et al., (2022) the length of boarding at Boston Children's Hospital has more than doubled from 2.1 days pre-pandemic to 4.6 days twelve months after the pandemic onset.

The Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department program is specifically designed to address adolescents' ability to rest and sleep in the emergency department (ED) during a mental health admission at Boston Children's Hospital (BCH).

Program Overview

The Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department program was developed after an extensive review of current interventions, research, and evidence on promoting calming, rest, and sleep in an ED setting during a mental health admission. This program provides education on mindfulness-based practices to the ED staff and the resources to train and utilize with adolescents while boarding in the ED. This program utilizes the Transformative Learning Theory (Mezirow, 1991) with the intent that ED providers will be able to utilize the educational training to change their perspective on how mindfulness-based interventions will be meaningful and impactful for their own health and well-being. Providers will then apply this perspective to the adolescents admitted to the ED for a mental health crisis.

The program will be delivered in two separate phases. In the first phase, the focus will be on the educational training for healthcare professionals working in the BCH ED. This will be achieved through six one-hour educational training sessions encompassing

physicians, physician assistants, nurse practitioners, nurses, social workers, and child life specialists. The primary objective of these trainings is to educate providers on the benefits of mindfulness-based stress reduction in enhancing health and well-being, specifically by reducing stress and enhancing sleep. The goal is to instill in ED providers an understanding of the benefits of mindfulness-based interventions and emphasize their significance in assisting adolescents boarding in the ED.

The program's second phase focus will be on promoting rest and improving sleep during a mental health admission to the ED. This will be addressed by the occupational therapist providing education and training to adolescents and their familial caregivers on how to utilize mindfulness-based interventions in the form of tablet-based apps. These apps will allow for self-directed exploration of calming activities through music, games, and guided sleep stories (Butt et al., 2022; Cheng et al., 2019; Garrido et al., 2019; Seabrook et al., 2020; Weaver & Darrah, 2015; Weekly et al., 2018). Additional resources for self-regulation (Adams-Leask et al., 2018) activities in the form of fidgets and simple physical exercises that can be performed in the confines of their room will be provided as recorded videos on the tablets. This phase aims to empower adolescents with the skills and knowledge needed for increased independence in engaging in mindfulness-based interventions.

Anticipated Program Outcomes

After the successful completion of phase one, the anticipated outcome for all ED providers is an increased understanding of the benefits of mindfulness-based practices for sleep and stress reduction. This will be measured utilizing a pre- and post-training

knowledge quiz that utilizes self-rating Likert-style questions. The anticipated outcome

of phase two of the program will be a clinically significant improvement in adolescent

sleep as measured by the Pittsburgh Sleep Quality Index (PSQI). This will be

administered upon admission to the ED and a follow-up administration will occur one

month after discharge. The difference in score will indicate the effect of mindfulness

practices on sleep. The hypothesis of improving adolescent sleep will result in decreased

ED admissions for mental health crisis as these adolescents will be able to better cope

and address their mental health needs in the community setting.

As the program achieves the positive outcomes expected, the goal is to broaden

the program's reach and impact to additional emergency departments in other major

urban children's hospitals.

Program Funding

Program funding will initially be sought through applying for the BCH Inquiry

Investment Drives Evidence into Action (IDEA) grant. If the grant is not secured,

additional funding sources will be sought through federal grants specific to mental health.

These include the Community Mental Health Block Grant (CMHBG) and the grant for

Expansion and Sustainability of the Comprehensive Community Mental Health Services

for Children with Serious Emotional Disturbance.

Conclusion

The Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department

program addresses a critical need for intervention targeting adolescent mental health in

the ED. The ongoing issues of boarding and mental health crises in the United States

show no signs of slowing down as healthcare costs continue to rise. In this context, this

program provides a cost-effective, client-centered approach led by occupational therapy

practitioners, for the promotion of health and wellness for both ED providers and

adolescents admitted to the ED for a mental health crisis. The program's core goal is to

enhance the well-being of these adolescents by addressing their mental health and sleep

through the application of mindfulness-based practices and comprehensive education for

both client and familial caregivers.

Moreover, the program also contributes to improving hospital operations. It

achieves this by potentially reducing the readmission rate for mental health in the ED,

thus freeing up hospital beds for acute injuries, and concurrently decreasing the incidence

of pediatric boarding in the ED.

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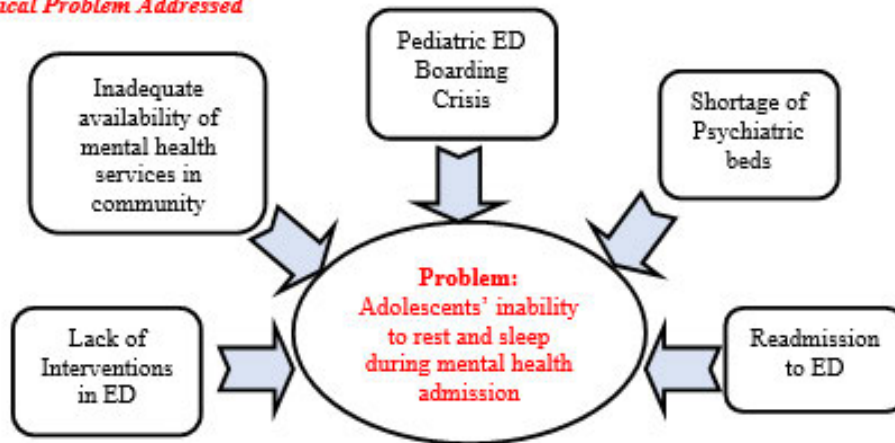**APPENDIX D-Fact Sheet**

BOSTON UNIVERSITY

Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department

Christopher Goodman OTR/L, BCP
OTD Candidate

Introduction

The *Utilizing Mindfulness-Based Practices in a Pediatric Emergency Department* program is specifically designed to address adolescents' ability to rest and sleep in the emergency department (ED) during a mental health admission at Boston Children's Hospital (BCH).

Clinical Problem Addressed

Inadequate availability of mental health services in community

Pediatric ED Boarding Crisis

Shortage of Psychiatric beds

Lack of Interventions in ED

Problem: Adolescents' inability to rest and sleep during mental health admission

Readmission to ED

(Axelson, 2019; Ibeziako et al., 2022; Kraft et al., 2021; McEnany et al., 2020; Toure et al., 2022)

Summary of the Two-Phased Program

Phase One

Overview: OT provides educational training to ED providers.

Contents: Six one-hour educational sessions on the benefits of mindfulness-based stress reduction.

Goals: Enhancing health and well-being, by reducing stress and enhancing sleep. Understand benefits to self & adolescents.

Phase Two

Overview: OT provides education and training to adolescents and familial caregivers

Contents: Utilize mindfulness-based interventions on tablet-based apps. Self-regulation tools, and physical exercise in their room.

Goals: Empower adolescents with skills and knowledge needed for increased independence in engaging in mindfulness-based interventions

Program Funding

- Initial funding of $50,000 sought through applying for the BCH Inquiry Investment Drives Evidence into Action (IDEA) grant. The mission of this grant is to support novel clinical research by BCH staff to improve care for patients and families.
- Additional funding source: Community Mental Health Block Grant or grant for Expansion and Sustainability of the Comprehensive Community Mental Health Services for Children with Serious Emotional Disturbance.

Benefits of the Program

- OT can address an unmet need for the mental health of boarding youth. Currently, there is no research on mental or behavioral health interventions for boarding youth (McEnany et al., 2020)
- Occupational therapists will address the fundamental imbalance created during a prolonged ED stay in an adolescent's routines, rest, and sleep.
- Delivers a cost-effective, occupational therapy-driven, client-centered approach to promote the health and wellness of ED providers and adolescents admitted to the ED.
- There is a potential to improve hospital operations through a reduction of the readmission rate for mental health admissions in the ED.
- It will expand the evidence of mindfulness-based occupational therapy interventions for adolescent mental health.

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