Inpatient Psychiatric Sleep Care: Prevalence and Barriers to Implementation

A Thesis

Submitted to the Faculty

of

Drexel University

by

Steven M. Smith

in partial fulfillment of the requirements for the degree of

Master of Science in Psychology

June 2016
Acknowledgements

I would like to express my greatest gratitude to my mentor, Dr. Mary V. Spiers, for her continuous support of my research interests, for her patience, wisdom, and endearing personality. I would like to thank the remaining members of committee, Dr. Pamela A. Geller, and Dr. Dawn M. Filmyer for their assistance and expertise throughout this research project. I would also like to thank Dr. Cathy Bolton for her indispensable mentorship and encouraging me to explore alternative career paths. Additionally, many thanks to Dr. Leslie Ashburn-Nardo for accepting me into her lab with open arms.

Finally, I would like to thank my family: my parents, Paul and Teresa Smith, my brother, Michael Smith, my grandparents, Miles and Nancy Tudor and Robert and Ruth Smith, without their unconditional love and support, I would not be where I am today.
Table of Contents

List of Tables .................................................................................................................................................. iv

Abstract ......................................................................................................................................................... v

1: INTRODUCTION .......................................................................................................................................... 1
  1.1: Mood Disorders: Sleep and Mental Health................................................................. 2
  1.2: Anxiety Disorders and PTSD: Sleep and Mental Health.................................... 4
  1.3: Schizophrenia: Sleep and Mental Health............................................................... 5
  1.4: Treatment of Sleep and Mental Health Disorders ............................................. 6
  1.5: Knowledge of Inpatient Mental Healthcare Workers: Sleep Disorders .......... 8
  1.6: Measuring Sleep Knowledge .................................................................................... 10
  1.7: Measuring Barriers to Sleep Education Implementation .................................. 11
  1.8: Rationale for Investigation ...................................................................................... 12
  1.9: Aims & Hypotheses ........................................................................................................ 14
  1.10: Exploratory Aims ...................................................................................................... 14

2: METHODS .................................................................................................................................................. 16
  2.1: Participants ......................................................................................................................... 16
  2.2: Inclusion Criteria ............................................................................................................. 17
  2.3: Measures ............................................................................................................................ 18
    2.3.1: Demographic Questionnaire ................................................................................ 18
    2.3.2: Personal Attitudes and Knowledge .................................................................... 18
  2.4: Procedure ............................................................................................................................ 19
    2.4.1: Recruitment ................................................................................................................ 19
    2.4.2: Survey ......................................................................................................................... 20
    2.4.3: Gift Card Compensation ........................................................................................ 21
  2.5: Data Management and Statistical Procedures ....................................................... 22

3: RESULTS .................................................................................................................................................. 25
  3.1: Aim 1 The Prevalence of Formalized Sleep Education ........................................... 25
  3.2: Aim 2 Barrier to Sleep Education .............................................................................. 29
  3.3: Exploratory Aims ............................................................................................................. 31

4: DISCUSSION ............................................................................................................................................ 37
  4.1: Limitations ......................................................................................................................... 43
  4.2: Conclusions ......................................................................................................................... 45
List of References .................................................................................................................. 46
Appendix A: Inpatient Psychiatric Sleep Care Survey .......................................................... 49
Appendix B: Adaptations from Boerner et al., 2015 ............................................................. 60
Appendix C: Sleep Education Questionnaire (Meltzer, 2009) .............................................. 61
Appendix D: Sleep and Mental Health Knowledge Questions ............................................... 64
Appendix E: Results Tables .................................................................................................. 65
List of Tables

Table 1: Prevalence of Sleep Education ............................................................... 65
Table 2: Group Comparisons of Population Density .............................................. 65
Table 3: Group Comparisons on Age Served ......................................................... 65
Table 4: Group Comparisons on Mental Health Disorder Population .................. 66
Table 5: Sleep Subjects Covered for Clients - FSE Units .................................... 67
Table 6: Sleep Subjects Covered for Clients – NSE Units ....................................... 67
Table 7: Barriers to Client Sleep Education .......................................................... 68
Table 8: Method of Handling Problematic Sleep Behaviors – Day ................. 68
Table 9: Method of Handling Problematic Sleep Behaviors – Night ................... 69
Table 10: Unit’s Effectiveness in Educating About Sleep and Mental Health .......... 69
Abstract

Inpatient Psychiatric Sleep Care:
Prevalence and Barriers to Implementation
Steven M. Smith
Mary V. Spiers, PhD

Sleep disorders are more likely to affect those with psychiatric disorders than the general population (Ford & Kamerow, 1989; Ohayon, 2002). This likely results in more stress within the individual than the effect of sleep disorders or mental illness alone. Mood disorders account for the majority of mental health related hospitalizations (HCUP, 2015) and of those with mood disorders there are also high rates of insomnia (Soehner & Harvey, 2012). Additionally, a wide variety of sleep disorders (sleep disturbance, sleep onset, etc.) are associated with disorders such as bipolar disorder, major depressive disorder (MDD), obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), and schizophrenia. Evidence suggests treating sleep disorders may also improve psychiatric symptomatology but it is unclear to what extent treatment programs address sleep disorders within inpatient psychiatric settings. This study examined the prevalence of sleep disorder treatment in inpatient psychiatric settings, identified knowledge gaps of mental health care workers, and determined barriers to the implementation of sleep education programs within inpatient psychiatric settings. It was found that 55.6% of units had formalized sleep education (FSE) while 44.4% of units did not have formalized sleep education (NSE), and larger psychiatric units had reported less sleep education than smaller units. This study also showed that NSE units served conduct disorder populations more frequently than FSE units. All units surveyed reported they may benefit from
education related to sleep and mental health, sleep hygiene, stimulus control, and relaxation techniques. Additionally, knowledge of nursing directors was demonstrated to be lacking and barriers for sleep education were largely similar across units (e.g., lack of resources, time constraints, and not a priority). These findings outline how effective sleep education programs within inpatient psychiatric settings may be developed in the future.
1: INTRODUCTION

It is known that sleep disorders, most notably insomnia, are more common in individuals diagnosed with mental health disorders (Benca, Obermeyer, Thisted, & Gillin, 1992; Ohayon, 2002). Under DSM-III criteria in the general population, 40% of clients with insomnia presented a mental disorder in the previous 6 months compared to just 16% of clients without insomnia (Ohayon, 1997). While these exact numbers may have changed in recent years, there are a wide array of sleep disorders that occur within these populations as well. As a result, individuals who are diagnosed with a mental illness and a sleep disorder, are likely at a higher risk for health complications than those not in this population (Harvard Health Publications, 2009). Within this population, mood disorders tend to account for the majority of mental health hospitalizations further compounding the recovery process for individuals with both a sleep disorder and a mood disorder (HCUP, 2015). Due to this, the relationship between sleep and mood disorders has been studied most among mental health disorders but findings on the role of sleep in mental health have been varied within and across mental health disorders. In disorders such as bipolar, treating sleep disorders resulted in an improvement in mental health symptoms (Wehr et al., 1998) but when treating sleep disorders in schizophrenia it is unclear to what extent treatment may alleviate mental health symptoms. As demonstrated by a lack of research in the area and studies failing to address mental health symptomatology, it is not known to what extent treatment of sleep disorders may mitigate mental health symptoms. Due to this phenomenon, understanding to what extent sleep is addressed within psychiatric treatment is critical to ensure the best quality of care is being delivered to clients. In addition to this, identifying factors that will ease or prevent sleep
treatment implementation is also critical. Many times the treatment of mental health begins within the emergency department or within an inpatient psychiatric setting. Because it is not known at what point sleep is being addressed in the treatment trajectory, inpatient settings will be examined due to the role they play in early treatment efforts. Within inpatient psychiatric settings a wide variety of disorders are represented but the disorders highlighted in this review are those represented most frequently by mental health hospitalizations. The most common mental health disorders among adult inpatient stays with a primary mental or substance use disorder as of 2012 were mood disorders (52.9%), anxiety disorders (65.1%), adjustment disorders (57.7%), and schizophrenia (57.8%). Within these categories, disorders that have also been researched from a sleep treatment perspective are major depressive disorder (MDD), obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), and schizophrenia (HCUP, 2015). As a result, specific mental health disorders (bipolar disorder, MDD, OCD, PTSD, and schizophrenia), the treatment of sleep within these disorders, and mental healthcare worker’s knowledge of sleep disorders will be highlighted in this review.

1.1: Mood Disorders: Sleep and Mental Health

Among mood disorders, the most common sleep impairment symptom is daytime sleepiness (Plante & Winkelman, 2008). There are many avenues and possible explanations for why this occurs, but it is difficult to tease apart this relationship effectively, however it is clear that sleep hygiene is an important part of managing bipolar disorder specifically (Plante & Winkelman, 2008), and likely important for managing other mental health disorders as well. Within the context of bipolar disorder there are mixed findings in terms of how sleep may relate to symptoms of mania but it
has been noted that both bipolar depression and unipolar depression are associated with sleep disturbances related to timing of sleep onset and sleep duration (Plante & Winkelman, 2008). In terms of treatment, it has been demonstrated that by instituting a regular routine that fostered nightly sleep symptoms related to bipolar disorder, specifically mania, improved greatly (Wehr et al., 1998). Not only has this demonstrated an ability to improve symptoms but other treatments utilized for the bipolar population, such as psychotherapy and cognitive behavioral therapy (CBT), have been used successfully when incorporating a psychoeducational component to emphasize the identification of prodromal symptoms (e.g., sleep disturbance, circadian rhythms, and lifestyle regularity) and may be more effective than pharmacotherapy (Plante & Winkelman, 2008).

Another mood disorder that has been investigated a great deal is that of MDD. In a United Kingdom sample it was found that baseline insomnia was a significant risk factor for depression (risk ratio 2.71) and anxiety (risk ratio 2.28) at a 12 month follow up (Morphy, Dunn, Lewis, Boardman, & Croft, 2007). In addition to this, a longitudinal study in Zurich found that in a sample of individuals who had never had depression developed a new onset of depression developed in approximately 17 to 50% of clients with persistent insomnia (Sateia, 2009). Notably, a comorbid diagnosis of insomnia and depression was a more reliable predictor of diagnosis in the future than pure depression alone (Sateia, 2009). These studies provide evidence that insomnia and depression are highly related to one another but are also unique and identifiable disorders due to their individual predictive power. While depression and bipolar disorder do share some of the same similarities in sleep disturbance the relationship between sleep disorders and
depression appears a bit more convoluted (Jindal & Thase, 2004). While it would make logical sense that by treating insomnia, depressive symptoms are likely to improve, it was found that via melatonin treatment in those with depression that while sleep symptoms improved drastically, this treatment did not improve depressive symptoms (Dolberg, Hirschmann, & Grunhaus, 1998). As the findings from this study indicate, simply treating sleep disorders on a physiological level may not be enough to improve symptoms related to mental health disorders. While it has been found that regular routines and psychoeducation contribute to the successful management of bipolar disorder, even more so than pharmacological treatments (Plante & Winkelman, 2008), there is still an intricate relationship between sleep and depression that requires more research in order to be fully understand the implications of treating sleep within MDD (Jindal & Thase, 2004).

1.2: Anxiety Disorders and PTSD: Sleep and Mental Health

In addition to mood disorders, there is also a significant association between anxiety disorders and sleep disorders. It is estimated that around 60-70% of individuals with a primary anxiety diagnosis also have a mood disorder diagnosis and also report insomnia symptoms more frequently (Soehner & Harvey, 2012). Due to this, it is possible that a client’s symptoms may be compounded and become more severe with time if sleep and mental health symptoms are not treated. As the literature has demonstrated, anxiety is often linked with delayed sleep onset and poor sleep continuity but interestingly obsessive compulsive disorder (OCD) is highly correlated with sleep disorders in rapid eye movement sleep (REM) and literature seems to suggest that by treating sleep impairments in those with OCD, that physicians can more effectively treat their clients (Paterson, Reynolds, Ferguson, & Dawson, 2013). Additionally, within the context of
OCD, another complicated relationship exists. Symptom severity has been consistently related to disturbances in sleep patterns within OCD (Paterson et al., 2013) but at this point in time, review of the literature indicates, there are no studies examining treatment that targets specific sleep disorders associated with OCD. However, it is logical to surmise that if sleep disturbance can be mitigated then symptom severity would decrease as a result. Along with OCD, another disorder that has proven difficult to understand the relationship with sleep disorders is that of PTSD. This disorder has also been linked to sleep disorders such as delayed sleep onset and poor sleep continuity, but while associated, it has proven difficult to determine what factors of PTSD are due to sleep disorders or if sleep disorders are a byproduct of PTSD (Sateia, 2009). In terms of treatment, similar to OCD, due the relationship between sleep disorders and mental health it would be reasonable to direct treatment in the direction of sleep disorders in hopes of decreasing symptom severity in PTSD, but more research is still needed in this area. Within anxiety disorders, there is a strong relationship with mood disorders around 60-70% (Soehner & Harvey, 2012) and literature suggests that by treating sleep symptoms within OCD that we can improve mental health symptoms (Paterson et al., 2013). PTSD on the other hand presents a very confusing relationship and more research is needed to understand this relationship effectively (Sateia, 2009).

1.3: Schizophrenia: Sleep and Mental Health

Another mental health disorder that has demonstrated sleep complications is schizophrenia. In individuals with schizophrenia it has been found that impairments related to sleep latency (how long it takes to fall asleep), total sleep time, and sleep efficiency (a measure of initiating and maintaining sleep) are more likely to occur
(Chouinard, Poulin, Stip, & Godbout, 2004). In addition to displaying impairments related to these sleep variables, it was also found that those who had never been treated for schizophrenia with neuroleptics, also known as antipsychotics, showed more total awake time and diminished stage 2 sleep (Chouinard et al., 2004). From these findings, it can be concluded that clients with schizophrenia have sleep disorders that are not a result of treatment effects but are rather a naturally occurring phenomenon within the disorder of schizophrenia (Chouinard et al., 2004). While OCD and PTSD appear to have a more complex relationship with sleep disorders, treatment of sleep disorders in schizophrenia has proven beneficial. When treating sleep disorders within schizophrenia on a physiological level with melatonin, symptoms related to sleep improve significantly (Shamir et al., 2000) but symptoms more commonly associated with schizophrenia did not improve. At this point it is unclear but still reasonable to hypothesize that sleep disorders, most likely circadian rhythm disruption, may play a significant role in the manifestation of schizophrenia related symptoms (Wulff, Dijk, Middleton, Foster, & Joyce, 2012). From these findings, a complex relationship between sleep and schizophrenia has been demonstrated. By treating sleep disorders, sleep symptoms improve but not schizophrenia symptoms (Chouinard et al., 2004) and it is unclear if treating any other aspects of sleep may also improve schizophrenia symptoms but more research needs to be done in this area to understand treatment implications.

1.4: Treatment of Sleep and Mental Health Disorders

With support from the literature indicating the comorbid relationship between sleep disorders and various mental health diagnoses, it is only logical to wonder how treating these sleep disorders might impact the symptoms related to each mental health
diagnoses discussed above. As demonstrated by this literature, sleep impairments are very common among those with mental health disorders and treatment of sleep disorders in MDD and bipolar disorder provide optimism that by treating sleep impairments, both on a physiological and behavioral level, physicians will be able to treat their clients with mental health disorders more effectively. It is entirely possible that by treating sleep disorders and impairments within the inpatient psychiatric setting that problematic issues such as length of stay and frequent readmissions may be reduced as well. At the present time however, it is unclear to what extent inpatient psychiatric care addresses sleep disorders and impairments in the treatment of mental health disorders. As a result, examining to what degree sleep disorders and/or impairments are addressed within inpatient settings allows for an opportunity to research, improve, and create a more holistic treatment plan within inpatient psychiatric settings.

While it has been demonstrated that sleep is an important facet of health in both those with and without mental health disorders, an emphasis on sleep treatment has been adopted in parallel fields which may demonstrate the observable improvements that may occur from structured sleep education programs. One area in which sleep treatment has resulted in large improvements for patients is in intensive care units (ICU). Prior studies focusing on intensive care unit (ICU) recovery have demonstrated that individuals who lack healthy sleep during their ICU stay, are more likely to have a longer recovery time and experience more readmissions (Tembo & Parker, 2009). By promoting healthy sleep in this setting physical health improved. It is also a possibility that mental health may benefit from a similar treatment approach but due to the fact that ICUs likely treat more
physical ailments than inpatient settings it cannot be stated with one hundred percent certainty.

1.5: Knowledge of Inpatient Mental Healthcare Workers: Sleep Disorders

A question at this point is understanding how sleep related factors can be addressed within inpatient mental health settings. There are many ways in which this problem could be resolved, but previous literature points toward sleep education programs as an effective method for teaching clients about sleep that allows for long-term retention of knowledge but there are conflicting findings on if these programs lead to behavior change on their own (Blunden, Chapman, & Rigney, 2012; Gallasch & Gradisar, 2007; Meltzer, Phillips, & Mindell, 2009; Sousa, 2007). While sleep education programs are likely to be beneficial within this population, it is not known to what extent inpatient mental health care addresses sleep within the treatment plan. There is however, a considerable number of studies analyzing knowledge of nurses related to sleep and tailoring educational programs to more adequately address sleep issues. It has been noted that nurse education related to sleep has increased exponentially in recent years due to a concerted effort to address overall medical education within the field (Lee et al., 2004). But review of the literature indicates that it is not known if these educational programs have been effective in translating the education of healthcare workers and in turn facilitating treatment of clients. The same phenomenon is present in the psychiatric treatment literature. There are no studies that have investigated to what extent inpatient psychiatric settings utilize nurse knowledge related to sleep to supplement and facilitate the recovery process. While a concerted effort to increase the knowledge related to sleep within the nursing population has been made, other fields that also require an extensive
understanding of the human body have been shown to lack competency in handling sleep-related cases (Meltzer et al., 2009).

Within physicians it has been suggested that they lack knowledge of sleep and sleep disorders (Meltzer et al., 2009). In 2002 it was reported that on a test of general sleep knowledge the average score was only 34% for primary care physicians (Papp, Penrod, & Strohl, 2002). Additionally, one of four pediatricians scored less than 50% on the same test (Owens, 2001). These results are not entirely shocking when consideration is given to the amount of sleep education received by medical students, residents, and fellows. In 1998, The American Sleep Disorders Association Taskforce of Medical Education estimated that this population received less than 2 hours of sleep training (Rosen et al., 1998). With this lack of education occurring in the medical domain, there existed sufficient evidence to question if a similar phenomenon was occurring within the psychological domain as well. In 2009 Meltzer and colleagues discovered that among surveyed PhD and PsyD programs 41% of respondents did not offer any clinical training in assessment, diagnosis, or treatment of sleep disorders. Among these programs, 47% of PhD programs (n=45), 58% of PsyD programs (n=12), 39% of internship sites (n=142), and 39% of combined programs (n=13) lacked sleep education. On top of this, there were only 33 of 212 programs that reported at least one faculty member with a specialization in sleep or circadian rhythms. Despite these findings that seem to suggest sleep education is an aspect programs do not put a great emphasis on, 68% of program directors stated they would implement a sleep curriculum if such a program already existed (Meltzer et al., 2009). This finding provides support for the idea that creating sleep education programs are likely to be adopted and utilized by various organizations. One way in
which this has been demonstrated is by the recent prevalence of education related to sleep for nurses. There are a variety of resources for nurses to learn about sleep disorders ranging from preparatory material for the National Council Licensure Examination (NCLEX) to books which aim to suggest nursing practices within inpatient settings (Redeker & McEnany, 2011). Some of these materials are quite complex, covering topics from REM sleep disturbance to anatomical brain abnormalities, while others only scratch the surface. Despite the increased availability of education for nurses, specifically in regards to CBT, (Olatunji & Hollon, 2010) there remains a lack of research examining how effective this training may be for inpatient settings. Outside of inpatient settings, evidence indicates that educational programs are effective in educating the public and increasing sleep knowledge as well as retaining that information for an extended period of time (Gallasch & Gradisar, 2007; Meltzer et al., 2009). Since educational programs demonstrate an ability to effectively address the lack of sleep knowledge in the public and in professional domains, the same should be implemented for those specifically with mental illness and problematic sleep behaviors/diagnoses to increase knowledge in this domain among care providers. By educating individuals about both mental illness and sleep factors that may be impacting their recovery, ideally the quality of care given to clients can be improved by treating sleep disorders and will hopefully prevent further exacerbation of symptoms related to mental illness.

1.6: Measuring Sleep Knowledge

Since there are no studies to date that address sleep education and inpatient mental health care specifically, other fields in which similar studies have been completed were drawn upon to determine potential barriers to implementation (Boerner, Coulombe,
& Corkum, 2015). It was found that barriers to evidence based behavioral pediatric sleep care were often identified as a lack of education, lack of resources, time, and qualified personnel (Boerner et al., 2015). Based on these barriers it is also possible that a potential barrier that may impact the ease of sleep education implementation within inpatient mental health settings will be the average length of admissions for the unit. If employees only have a limited amount of time to implement treatment, the most critical components will be addressed first, such as stabilizing a client and eliminating psychotic symptoms. If this is the main goal before a client is discharged from an inpatient unit, education in this domain may not be effective and thus would be more beneficial further along in the treatment process. However, it still remains crucial to determine at what point sleep disorders should be addressed within the mental health treatment plan.

1.7: Measuring Barriers to Sleep Education Implementation

By identifying the barriers to sleep education programs within an inpatient mental health setting, programs can be designed in a way in which they effectively circumvent barriers and increase the likelihood an inpatient mental health unit would implement a successful sleep program. It is also important, when identifying the barriers to implementation that the prevalence or existence of formalized sleep education programs be examined as well. This will help to frame to what extent sleep has been recognized as a critical component of mental illness and addressed accordingly by units and their staff. If it is found that many units acknowledge healthy sleep as an important factor in mental illness recovery but are not addressing sleep in an inpatient setting it either demonstrates a disconnect within the unit’s ability to recognize and address these problems, or simply not being feasible for that unit due to barriers and limitations. If the prevalence and
barriers to sleep education within inpatient psychiatric settings can be established, researchers and medical professionals can work to better address these issues in the future and improve the quality of care given to clients in these settings.

1.8: Rationale for Investigation

While sleep education programs are likely to be beneficial within this population, it is not known to what extent inpatient mental health care addresses sleep within the treatment plan. There are however, a considerable number of studies analyzing knowledge of nurses related to sleep and tailoring educational programs to more adequately address sleep issues. It has been noted that nurse education related to sleep has increased exponentially in recent years due to a concerted effort to address overall medical education within the field (Lee et al., 2004). But at this point, there are no studies that have investigated to what extent inpatient psychiatric settings utilize nurse knowledge related to sleep to supplement and facilitate the recovery process. While a concerted effort to increase the knowledge related to sleep within the nursing population has been made, other fields that also require an extensive understanding of the human body have been shown to lack competency in handling sleep related cases despite receiving education on this subject.

Specifically, it has been demonstrated that medical physicians lack knowledge of sleep and sleep disorders (Meltzer et al., 2009). In 2002 it was found that on a test of general sleep knowledge the average score was only 34% for primary care physicians (Papp et al., 2002). Additionally, one of four pediatricians scored less than 50% on the same test (Owens, 2001). These results are not entirely shocking when consideration is given to the amount of sleep education received by medical students, residents, and
fellows. In 1998, The American Sleep Disorders Association Taskforce of Medical Education estimated that this population received less than 2 hours of sleep training (Rosen et al., 1998). With this lack of education occurring in the medical domain, there existed sufficient evidence to question if a similar phenomenon was occurring within the psychological domain as well. In 2009 Meltzer and colleagues discovered that among surveyed PhD and PsyD programs 41% of respondents did not offer any clinical training in assessment, diagnosis, or treatment of sleep disorders. Among these programs, 47% of PhD programs (n=45), 58% of PsyD programs (n=12), 39% of internship sites (n=142), and 39% of combined programs (n=13) lacked sleep education. On top of this, there were only 33 of 212 programs that reported at least one faculty member with a specialization in sleep or circadian rhythms. Despite these findings that seem to suggest sleep education is an aspect programs do not put a great emphasis on, 68% of program directors stated they would implement a sleep curriculum if such a program already existed (Meltzer et al., 2009). This finding provides support for the idea that creating sleep education programs are likely to be adopted and utilized by various organizations. Evidence also indicates that educational programs are indeed effective in educating the public and increasing sleep knowledge as well as retaining that information for an extended period of time (Gallasch & Gradisar, 2007; Meltzer et al., 2009). Since educational programs demonstrate an ability to effectively address the lack of sleep knowledge in the public and in professional domains, it is reasonable to believe that the same should be implemented for those specifically with mental illness and problematic sleep behaviors/diagnoses to increase knowledge in this domain among care providers. By educating individuals about both mental illness and sleep factors that may be impacting
their recovery, ideally the quality of care given to clients can be improved greatly and will hopefully prevent further exacerbation of symptoms related to mental illness or sleep disorders.

1.9: Aims & Hypotheses

The current study surveyed nursing directors of inpatient psychiatric units to obtain information regarding the demographic population their unit serves and demographic information about the unit itself. Key features of this study included identifying if units offered sleep education to clients as well characterizing identified barriers to carrying out sleep education within the unit.

Aim 1: The first aim was to identify the prevalence of sleep education within inpatient psychiatric settings.

Hypothesis for Aim 1: The prevalence of sleep education programs will be extremely variable across units/participants.

Aim 2: The second aim was to determine barriers to sleep education within inpatient psychiatric settings.

Hypothesis 2: The most common barriers to sleep education will be similar to previous literature from other healthcare fields (lack of resources, time, education, cost, etc.). The presence of these barriers will be dependent on the average length of stay of a client admission for each unit.

1.10: Exploratory Aims

In addition to these hypotheses, exploratory questions were included in the survey to determine how effective units believed they taught about sleep and mental health, if
these units would be likely to implement a standardized curriculum for sleep and mental health (if so, what topics would they like to be covered and in what medium), and profiling nursing director’s views on sleep and mental health along with their general knowledge and mental health. By characterizing these factors, we hope to outline effective criteria to create a sleep and mental health education program that may be tailored to the needs of inpatient psychiatric units. Additionally, we can determine if any knowledge gaps are present within nursing directors and if so, examine to what extent this may be responsible for the type and/or quality of sleep education being administered on a given unit.
2: METHODS

2.1: Participants

The current study was approved by the institutional review board of Drexel University. The current study utilized survey data provided by nursing directors of inpatient psychiatric units in the United States of America. Participants were recruited via a mailing list provided by the National Association of Psychiatric Health Systems (NAPHS) and addresses were obtained through a filtered search using the Substance Abuse and Mental Health Services Association (SAMHSA) “Find Help and Treatment” feature. Online advertisements were also posted on Facebook and in LinkedIn groups including the American Psychiatric Nurses Association (APNA), Directors of Nursing, Mental Health and Substance Abuse Professionals, Directors of Nursing (DON), Mental Health and Behavioral Network, Nursing Network, and the Psychology Network. A Total of 558 letters were mailed, 44 participants accessed the survey resulting in a response rate of 7.8% (this does not include any response rate calculations for online postings due to the difficult nature of tracking the number advertisement views). 36 of the 44 participants completed enough of the survey to be included in the study.

In terms of unit demographics, the sample predominately served urbanized areas with a population of more than 50,000 people (60.53% population of more than 50,000 people, 34.21% population of 2,500 to 50,000 people, and 5.26% population less than 2,500 people). Within this sample, units employed a range of 15 to 800 employees ($M=129.14$, $SD=165.32$). Units also reported unit sizes capable of catering 7 to 300 clients ($M=62.62$, $SD=73.98$) and reported length of client stay ranging from 2 to 21 days ($M=8.58$ days, $SD=4.08$).
2.2: Inclusion Criteria

Eligible participants were nursing directors who were at least 18 years of age or older and were currently the nursing director of an inpatient mental health unit. No maximum age cap was included in this study because upon further analyses of older adults who work in nursing, these individuals do not indicate any desire to stop working within the next ten years (US Department, 2010). Many of these individuals were already at the retirement age, or past it, and still wish to continue working if able. In order to best encapsulate this population, sampling older adults was done to obtain the most representative population possible. Participants could have any job title so long as the individual taking the survey was the individual supervising nursing care on the inpatient unit. These individuals were employed directly by the inpatient unit or the hospital in which the unit was based. Participants worked either full-time, part-time, variable shift, or night shift and were based within the United States of America. This was done to focus strictly on how the American healthcare systems address the manner of sleep. Participants were proficient in English and able to read at a minimum of an eighth grade reading level. They also had access to the internet and a computer in order to complete the online survey.
2.3: Measures

2.3.1: Demographic Questionnaire

The demographic questionnaire (Appendix A) for this survey was used to collect information about the unit in which the participant works and/or supervises. In other words, characteristics about any given unit. Responses provided by the participants about themselves only included a job title question to ensure that their job title was appropriate for inclusion criteria of the current study and five knowledge based questions and two opinion based questions at the end of the survey. All other questions pertained to characteristics of the unit for which they oversaw at the time of completing the survey. Items pertaining to the unit addressed the average length of an inpatient stay, if sleep education was present in any form, and if sleep education was not present, if any additional education was offered by the unit.

2.3.2: Personal Attitudes and Knowledge

Additionally, the survey included questions related to personal attitudes and beliefs, how one’s unit addresses sleep, questions adapted from a previous study investigating barriers and facilitators to evidence based practice in pediatric behavioral sleep care (Boerner et al., 2015). These questions can be found in their original form and adapted form for this study in Appendix B. Additionally, questions examining if sleep education were to be implemented, or improved, in what media types do nursing directors believe would be most beneficial to their unit. These items have been taken from Meltzer and colleagues in which they investigated post-doctoral training sites and the types of sleep education they offered. While some of these questions were generalizable, some were adapted to address inpatient settings specifically and was done so with minimal
edits to maintain as much validity and reliability as prior studies. The original questions (6, 7, 9, 16, 17, 18, and 19) can be found in Appendix C and any adaptations can be viewed in the current study’s survey in Appendix A (questions 12, 14, 21, 31, 32, 33, and 34).

Questions pertaining to personal attitudes and beliefs were included to address to what extent the individual believes treating sleep problems is important when treating mental illness. This served to determine to what extent mental health nursing directors believe that sleep care should be implemented into mental health care. This item was assessed on a 5-item Likert scale (unimportant to very important) modified from Boerner and colleagues (Appendix B). These questions aimed to determine if nursing directors view sleep treatment as an important factor and then delve deeper into the attitudes of the individual dictating care for that unit.

The five knowledge based questions included at the end of the survey were created based on information gathered during the literature review of this field. These questions are content valid related to the knowledge from the literature as it currently stands within the field. It is possible that as time progresses the correct answers to these questions may change as new information is discovered within the field (Appendix D).

2.4: Procedure

2.4.1: Recruitment

The current study surveyed nursing directors of inpatient psychiatric units in the United States of America. Recruiting participants was completed via study information letters distributed via postal mail and online advertisements. Two hundred and ninety-four inpatient psychiatric units, whose information was obtained from the National
Association of Psychiatric Health Systems (NAPHS), were mailed a study information sheet which detailed the study and provided a URL link and QR code that can be typed or scanned into a web browser and completed online. One hundred and thirty-two letters were mailed to a list obtained via a filtered search for “adult inpatient psychiatric units and/or hospitals” via the SAMHSA “Find Help and Treatment” feature. Those on the SAMHSA mailing list (132 recipients) were sent follow up letters for the survey one week after the first mailing. In total, with additional online postings on LinkedIn and Facebook, five hundred and fifty-eight letters were mailed to potential participants. The survey was hosted on Qualtrics.com a website which specializes in online survey formats.

2.4.2: Survey

After receiving the study information letter via postal mail or via an online advertisement, participants then entered the study URL or scanned the QR code to be taken to the online survey. At this point, participants would view an opening page with the study information and waiver of consent of study purpose. After reading this information, participants indicated they agreed to participate in the study by checking a box indicating that they agreed to take part in this research, understood the study was anonymous, and understood the study was entirely voluntary. After indicating they had read and understood what the current study entailed, they were directed to the first question of the survey. Here they provided their job title, this was done to determine participant eligibility for the study, all participant’s job titles met inclusion criteria. The first portion of the survey was for demographic data pertaining to the inpatient psychiatric unit including, number of employees, number of clients, average length of admission, ages served, and types of mental health diagnoses admitted to the unit. At this
point, participants were asked questions related to sleep education prevalence, barriers to implementation, if employees possessed a sleep specialty of any kind, and other factors to help characterize how sleep was addressed by the unit. Depending on participant responses, they were displayed specific questions in order to expedite the survey and only collect information from participants that was relevant to their unit. Display logic can be seen along with the survey in Appendix A. After completing this portion of the study, participants were asked questions to assess self-reported effectiveness in teaching about sleep disorders in mental health, if nursing directors would be likely to implement a standardized sleep curriculum in their unit, and knowledge questions pertaining to sleep and mental health. Participants were then provided the opportunity to provide questions or comments. This concluded the study but participants were also given an additional link where they could choose to enter a raffle for the chance to win a gift card as a form of compensation for their participation in the current study.

2.4.3: Gift Card Compensation

The raffle link was provided at the end of the survey to ensure participants had completed the study. This additional link led to a separate survey where they could provide an email address and be entered in a raffle for the chance to win one of six $25.00 electronic Amazon.com gift cards as a form of compensation for participating in the study. Participants were informed that when providing an email address, it was separate from their responses and could not be connected to them in anyway. Recipients of the Amazon.com gift cards were selected by utilizing a random number generator to assign values to each participant’s email. The emails which received the values one through six were selected as recipients and were emailed an electronic $25.00
Amazon.com gift card. Amazon.com provided confirmation emails when gift cards were received by participants to ensure participants received their compensation.

### 2.5: Data Management and Statistical Procedures

Before any analyses were completed, responses were first examined for inclusion criteria. This was done by checking for complete, or mostly complete, survey responses. Six participants entered the study by checking the “I agree” dialog box but did not complete any additional questions. These participants were excluded from any further analyses.

For both Aims 1 and 2 responses were examined first overall and secondarily based categorically on the question, “Does your unit offer any courses/formalized education on sleep to employees or clients? (select all that apply, yes for employees, yes for clients, no)”. The two resulting groups by which the data were analyzed are, “yes, my unit offers formalized sleep education to clients” and “no, my unit does not offer formalized sleep education to clients”. These groups were obtained post-hoc to compare differences that may exist among these unit types. Additionally, these groups were distributed relatively evenly. 20 participants indicated that their unit had formalized sleep education for clients while 16 participants indicated their unit did not have formalized sleep education for clients. The majority of analyses are conducted with this dichotomy in mind.

**Aim 1:** The first aim was to identify the prevalence of sleep education within inpatient psychiatric settings. After participants were determined to have completed enough of the survey to be included in analyses, responses were examined for potential outliers that may skew data and subsequently results performed on this data. Variables
that were examined included number of employees employed by a unit, number of clients the unit can accommodate, and the average length of client stay on a unit. One outlier was identified on number of employees (800 employees) and average length of stay (120 days). The typical range reported for number of employees was 15 to 575 ($M=129.14$, $SD=165.32$) and the typical range reported for average length of stay was 2 to 21 days ($M=8.58$, $SD=4.08$). Including the outlying data point would skew number of employees ($M=139.42$, $SD=174.95$) and average length of stay ($M=12.06$, $SD=20.13$) a great deal. The largest factor for excluding this response was because the next highest average length of stay was 21 days, a difference of 99 days. In order to maintain the homogeneity of this study’s sample and achieve the highest degree of representativeness to the overall population this participant was excluded from all further analyses. It should be noted that while this response was removed from analyses, this did not result in a normal distribution for many variables. There is a positive skew on number of employees and number of clients to smaller units within this study’s sample. Notably, average length of stay did represent a normal distribution upon removal of the outlier previously stated.

For the comparison of group differences (sleep education exists for clients yes and sleep education exists for clients no) on number of employees and number of clients, non-parametric tests (specifically the Mann-Whitney U test) were utilized to account for skewed distributions on both of these variables and were evaluated at a $p$ level of .05. If the Mann-Whitney U test was significant, groups means and medians were assessed along with effect size to quantify the differences between groups.

**Aim 2: The second aim was to determine barriers to sleep education within inpatient psychiatric settings.** For this aim, the frequency of identified barriers to sleep
education were recorded. No additional participants were excluded from the analyses. Barriers were identified for the overall sample as well as if sleep education was offered to clients or not. Other than frequencies, no statistical test was completed for Aim 2.
3: RESULTS

3.1: Aim 1 The Prevalence of Formalized Sleep Education

The prevalence of formalized sleep programs on inpatient psychiatric units was first analyzed for the entire sample. As seen in Table 1, it was found that of the 36 responses included in the analysis, 20 units (55.6% of the sample) offered formalized sleep education (FSE) to clients and 16 units (44.4% of the sample) did not offer formalized sleep education (NSE) to clients. In order to learn more about FSE and NSE units, further demographic characteristics were analyzed to determine if any significant differences existed between the two groups. In addition to reporting sleep education for clients, 6 units reported having formalized sleep education for employees. These units reported accommodating an average of 97.17 clients, and employed 190.5 employees on average. Due to small number of units reporting this, these statistics should be interpreted with caution.

Chi-square analyses were conducted on demographic characteristics reported by units including population size, age, mental health disorder populations served, and barriers to sleep education. In terms of unit characteristics, it was found that both units that offered sleep education and units that did not offer sleep education serve similar population densities. As can be seen in Table 2, units that offered sleep education reported serving populations of 50,000 of more people ($n=2$, 60.0%), populations of 2,500 to 50,000 people ($n=6$, 30.0%), and populations less than 2,500 people ($n=2$, 10.0%). Units that did not offer sleep education reported serving populations of more than 50,000 people ($n=10$, 62.5%) and populations of 2,500 to 50,000 people ($n=6$, 37.5%). Chi-square test of independence was conducted and the minimum expected
values assumption was violated. As a result of this, Fisher’s Exact Test was utilized and found no significant difference between the population densities served by FSE and NSE units $p = .63$, two-tailed.

Units with sleep education for clients reported serving a variety of age groups, these groups were not mutually exclusive thus allowing for the nursing director participant to indicate multiple age groups (Table 3). FSE units reported serving people younger than 18 years of age ($n=4$, 20.0%), ages 18 to 35 ($n=14$, 70.0%), ages 36 to 55 ($n=16$, 80.0%), and ages 56 or older ($n=13$, 65.0%). While NSE units reported serving ages younger than 18 years of age ($n=8$, 50.0%), ages 18 to 35 ($n=13$, 81.3%), ages 36 to 55 ($n=16$, 100.0%), and ages 56 or older ($n=12$, 75.0%). The largest difference present among these two groups was 18 years of age or younger. A Chi-square test of independence found no significant difference between FSE and NSE units and whether or not they serve individuals 18 years of age or younger $\chi^2 = (1, N = 36) = 3.6, p = .081$. In general, both FSE and NSE units provide care for the same age groups.

Additionally, in order to understand a variety of factors from acuity to length of stay, units were asked to indicate which mental health diagnoses (14 categories based on DSM-5 diagnostic criteria) they most frequently served. These groups were not mutually exclusive and as a result, units could indicate more than one group in their response. A summary of these responses can be found in Table 4. The most frequently reported mental health disorders for the overall sample were mood disorders (bipolar and major depressive disorder, $n = 35$, 97.2%), schizophrenia ($n = 35$, 97.2%), and anxiety disorders ($n = 33$, 91.7%). While the least frequently reported mental health disorders were neurodevelopmental ($n = 3$, 8.3%), feeding and eating ($n = 3$, 8.3%), and sleep-wake
disorders ($n = 3, 8.3\%$). The largest observed difference was that of disruptive, impulse-control, and conduct disorders. Among FSE units, this category was the 10$^{th}$ most frequently reported ($n = 6, 30.0\%$), while NSE units reported disruptive, impulse-control, and conduct disorders as the 5$^{th}$ most frequent population they served ($n = 12, 75.0\%$). To determine if there are any notable differences between FSE and NSE units, a chi-square test for independence was conducted. It was found that a significant difference was present in the percentage of FSE and NSE units that serve those with disruptive, impulse-control, and conduct disorders $\chi^2 = (1, N = 36) = 5.51, p = .019, \text{Cramer’s V} = .447$. In other words, within this sample, NSE units are 7x more likely to serve those with disruptive, impulse-control, and conduct disorders than FSE units.

In order to further put sleep education within inpatient psychiatric units into context, the present study examined what aspects of sleep care units addressed within sleep programs, or if no education was present, topics covered within their general continuum of care. For FSE units the most frequent topics covered were sleep hygiene/stimulus control/relaxation ($n = 16, 80.0\%$), medication’s effect of sleep ($n = 16, 80.0\%$), client’s diagnosis’ impact on sleep ($n = 10, 50.0\%$), and treatment of sleep disorders ($n = 5, 25.0\%$). In contrast, NSE units reported the most frequently covered topics within their continuum of care were medication’s effect on sleep ($n = 12, 75.0\%$), client’s diagnosis’ impact on sleep ($n = 9, 56.3\%$), sleep hygiene/stimulus control/relaxation ($n = 7, 43.8\%$), treatment of sleep disorders ($n = 1, 6.3\%$), and biological rhythms and physiology ($n = 1, 6.3\%$). Two units (12.5\%) reported that no sleep topics were covered at all within their continuum of care. Notably for both FSE and NSE units, the three most frequently reported topics of education were the same:
medication’s effect on sleep, client’s diagnosis’ impact of sleep, and sleep hygiene/stimulus control/relaxation. A summary of these findings can be found in Tables 5 and 6.

The next component of characterizing sleep education for FSE units was to examine who is typically responsible for educating clients on sleep and mental health. For FSE units, nurses (n = 16, 80.0%) were indicated as the primary educators for clients. Nurses were followed by mental health technicians (n = 7, 35.0%), recreational therapists (n = 5, 25.0%), physicians (n = 2, 10.0%), occupational therapists (n = 2, 10.0%), other licensed therapists (n = 2, 10.0%), and one unit indicated that a pharmacist was responsible for educating clients (n = 1, 5.0%). NSE units were not displayed this question when taking the survey. Notably, only 1 of the 36 units (2.8%) indicated their unit had a sleep specialist with whom clients could speak. While this participant indicated their unit had a sleep specialist, they did not indicate this individual’s specialty within the domain sleep.

To better understand how FSE and NSE units deal with problematic sleep behaviors on their unit, participants were asked to indicate how their unit addresses clients sleeping during the day and clients being awake at night. Two raters independently analyzed the free response data with 71% agreement, then determined how the responses which were not agreed upon should be classified. Overall, units indicated that they typically encourage client alertness (n = 17, 47.2%) in order to combat daytime sleep behaviors. Units also reported approaching each problematic sleep behavior dependent on the client’s needs (n = 12, 33.3%). A summary of these findings can be found in Table 8. As for when clients are awake at night, units reported utilizing
medication or PRNs (n = 24, 66.7%) most frequently in order to combat this occurrence. The next highest reported techniques were relaxation techniques (n = 14, 38.9%) and stimulus control (n = 10, 27.8%). A summary of these findings can be found in Table 9.

3.2: Aim 2 Barrier to Sleep Education

Barriers to sleep education for clients were first examined for the overall sample. A summary of the barriers reported by all units can be found in Table 6. Once barriers were identified for the sample, barriers were analyzed based on FSE or NSE status.

The large majority of barriers that were identified were similar across both groups (Table 7). The most frequently reported barriers for the overall sample were lack of resources (n = 14, 38.9%), time constraints (n = 14, 38.9%), lack of qualified personnel (n = 13, 36.1%), not a priority (n = 13, 36.1%), lack of education (n = 9, 25.0%), and too costly (n = 1, 2.8%). Before statistical tests were performed, the largest difference reported among the two groups was the barrier of “Time Constraints”. 45.0% of FSE units identified this as a barrier compared to 31.3% of NSE units, but a chi-square test of independence was conducted and found that there was no significant difference in the percentage of FSE and NSE units that reported time constraints as a barrier to implementation $\chi^2 = (1, N = 36) = .70, p = .50$.

To examine if sleep education within inpatient psychiatric units is dependent on the average length of client admission, an independent samples t-test was performed to compare group means. There was no significant difference in average length of stay for FSE units ($M = 8.65, SD = 2.36$) and NSE units ($M = 7.18, SD = 2.47$; $t(8) = .94, p = .377$, two-tailed). While there was no difference in average length of stay for client admission as predicted by hypothesis 2, units also reported number of employees and
number of clients that their unit accommodated. Further analysis was done to examine if there may be differences in these factors dependent on FSE and NSE unit types.

Due to the skewed nature of both number of employees and number of clients, rather than an independent samples t-test, a Mann-Whitney U Test was performed for both variables. For the number of employees on a given unit, a Mann-Whitney U Test revealed a significant difference between FSE units \((Md = 37.5, n = 20)\) and NSE units \((Md = 132.5, n = 16)\), \(U = 91, z = ±2.20, p = .03, r = .37\). Additionally, a Mann-Whitney U Test of the number of clients accommodated by a unit revealed a significant difference between FSE units \((Md = 19, n = 20)\) and NSE units \((Md = 73.5, n = 16)\), \(U = 66.6, z = ±2.98, p = .003, r = .49\). For both the number of employees and number of clients, the larger a unit, as indicated by more employees and clients, the more likely they were to be an NSE unit. While these analyses were not originally hypothesized, these findings are still important to understanding differences among units that do and do not offer sleep education.

The overall findings from this study resulted in similarities and statistically significant differences between FSE and NSE units. 55.6% of the sample were FSE units while 44.4% were NSE units. Non-significant findings, or similarities, included population densities served, frequently reported topics of education (medication’s effect on sleep, client’s diagnosis’ impact of sleep, and sleep hygiene/stimulus control/relaxation), and primary educators for clients (nurses). Notably, only 1 of the 36 FSE and NSE units (2.8%) indicating the presence of a sleep specialist with whom clients could speak. FSE and NSE also indicated similar approaches to combating problematic sleep behaviors. Both types of units indicated that they typically encourage client
alertness in order to combat daytime sleep behaviors and approach problematic nighttime sleep behaviors dependent on the client’s needs. Additionally, there were no significant differences of the barriers identified by FSE and NSE units. Finally, there were no significant differences in average length of stay for FSE units and NSE units. Significant findings included unit size differences as indicated by number of employees and number of clients. The larger a unit, the more likely they were to be an NSE unit. Additionally, it was found that a significant difference was present in the percentage of FSE and NSE units that serve those with disruptive, impulse-control, and conduct disorders.

3.3: Exploratory Aims

In order to determine other factors that may contribute to the effective creation of sleep education programs, units were asked how effective they felt they were in teaching about sleep and mental health. Within this sections of the survey, there was some participant dropout (n = 6, 16.7%). These six participants were split evenly between FSE and NSE units, served similar mental health populations as the rest of the sample, and these respondents reported an average length of stay of 9.58 days, slightly higher than the overall average of 8.58 days but not statistically significant (p = .42) The majority of the sample (36.2%) reported they felt their unit was either extremely ineffective (n = 2, 5.6%) or moderately ineffective (n = 11, 30.6%). In contrast, a minority of the sample (n = 9, 25.0%) reported that they were moderately effective in teaching about sleep and mental health. The remaining portion of the sample stated they were neutral (n = 11, 30.6%) in their effectiveness. No units indicated being extremely effective. These responses show that approximately 66.7% of the sample believe their unit is neutral or worse when it comes to educating their clients about sleep and mental health.
Additionally, 3 participants (8.3%) of the overall 36 did not complete this portion of this survey. 56.3% of NSE units reported that they felt ineffective educating their clients about sleep and mental health while only 20% of FSE units reported inefficiencies in education related to sleep and mental health. A summary of these findings can be found in Table 10. A chi-square test of independence was conducted to compare FSE and NSE units’ self-reported rating of effectiveness (effective or ineffective) in educating clients about sleep and mental health. Prior to performing the analysis, it was found that the assumption of expected values had been violated, as a result, the Fisher’s Exact Test was utilized. It was found that FSE units were 18x more likely to report being effective in educating clients about sleep and mental health than NSE units, $p = .01$, two-tailed.

To build upon this, FSE and NSE units were asked how likely they would be to implement a standardized curriculum for sleep and mental health and if so, what topics would they like to be covered and in what way (in-person, online, etc.). There were no differences based on FSE and NSE status. The topics that FSE and NSE units reported would be most helpful to them were sleep and mental health ($n = 32, 88.9\%$), sleep hygiene/stimulus control/relaxation techniques ($n = 24, 66.7\%$), preventative measures ($n = 21, 58.3\%$), treatment of sleep disorders ($n = 20, 55.6\%$), development across the lifespan ($n = 14, 38.9\%$), biological rhythms and physiology ($n = 10, 27.8\%$), diagnostic criteria ($n = 6, 16.7\%$), evaluation of sleep disorders ($n = 4, 11.1\%$), and other – adaptable curriculum for clients currently on the unit- ($n = 1, 2.8\%$), respectively.

Notably, chi-square analyses demonstrated that FSE units reported the need for education on preventative measures $\chi^2 = (1, N = 36) = 5.14, p = .02$ and treatment of sleep disorders $\chi^2 = (1, N = 36) = 3.8, p = .05$ more frequently than NSE units. In terms of how units
would like this information to be delivered they stated that videos \((n = 29, 80.6\%)\), online educational support \((n = 23, 63.9\%)\), and case studies \((n = 14, 38.9\%)\) would be the most beneficial.

The final exploratory analysis of this study was to characterize nursing director’s views on sleep and mental health along with their general knowledge about sleep and mental health. First, nursing directors were asked if they would like their unit to remain up to date about sleep and mental health. The majority of participants stated they were in favor of their unit staying up to date on these topics \((n = 27, 75.0\%)\), while only 3 (8.3%) of participants stated that they did not want their unit to remain up to date on topics related to sleep and mental health. No differences were present between FSE and NSE groups.

In order to further assess this response, participants were asked to what extent they believed that sleep was a critical component to mental health recovery. The vast majority of nursing directors stated they strongly agreed \((n = 22, 61.1\%)\) or agreed \((n = 7, 19.4\%)\) that sleep was a critical component to mental health recovery; while only a few stated they strongly disagreed \((n = 3, 8.3\%)\) or disagreed \((n = 1, 2.8\%)\). Again, there was no difference between FSE and NSE units.

To put nursing director’s beliefs into a broader context, they were asked questions about their personal knowledge related to sleep and mental health. From the overall sample of 36 participants, 30 completed this portion of the survey. The first question of this portion of the survey asked participants to indicate if they believed individuals with a sleep and mental health disorder are either at a lower risk, no increased risk, or a higher
risk for future health complications. Participants unanimously chose correctly that clients would be at a higher risk for future health complications ($n = 30, 100.0\%$).

Next, participants were asked to identify the most common sleep symptom related to bipolar disorder. Responses included insomnia ($n = 23, 63.9\%$), delayed sleep onset ($n = 3, 8.3\%$), disturbed REM sleep ($n = 4, 11.1\%$), and the correct response; daytime sleepiness ($n = 0, 0.0\%$). Similarly, nursing directors were also asked to indicate which of the following disorders does not commonly present with excessive daytime sleepiness. Participants most frequently indicated bipolar disorder ($n = 16, 44.4\%$), schizophrenia ($n = 7, 19.4\%$), narcolepsy ($n = 4, 11.1\%$), and major depressive disorder ($n = 3, 8.3\%$) as disorders that do not present with daytime sleepiness. A minority of the sample selected the correct answer of schizophrenia ($n = 7, 19.4\%$).

The remaining questions explored beliefs related to treatment of sleep and mental health disorders. Participants first identified what they believed to be the most effective way to treat sleep disorders within mental health. They were able to select between pharmacological therapy, homeopathic therapy, cognitive behavioral therapy, and acceptance and commitment therapy. A considerable number of nursing directors correctly identified cognitive behavioral therapy ($n = 12, 33.3\%$) as the most effective way to treat sleep disorders within mental health. However, this was not the most popular response being narrowly surpassed by pharmacological therapy ($n = 13, 36.1\%$). The remaining responses identified in order of frequency were homeopathic therapy ($n = 3, 8.3\%$) and acceptance and commitment therapy ($n = 2, 5.6\%$). In addition to the broad treatment of mental health disorders, participants were asked to identify what they believed to be the most important factor to effectively manage bipolar disorder. Nursing
directors correctly indicated that sleep regularity ($n = 28, 77.8\%$) as the most important factor in order to manage bipolar disorder effectively. The only other response indicated by participants was that of total sleep time ($n = 2, 5.6\%$). No participants selected the options of nutrition or work schedule. Including the previous 4 questions, within the knowledge based portion of the survey, the sample overall only answered 2 of the 5 questions correctly. More specifically, no participants answered all 5 questions correctly. The remaining distribution was: 10\% answered 4 questions correctly, 40\% answered 3 questions correctly, 46.7\% answered 2 questions correctly, and 3.3\% only answered 1 question correctly. There were no differences between FSE and NSE units on the number of questions answered correctly. This result shows the disparities that are present among nursing directors’ knowledge of sleep and mental health.

The overall findings from the exploratory tests revealed that 66.7\% of FSE and NSE units rated themselves as neutral or ineffective when educating clients about sleep and mental health while no units indicated being extremely effective. Furthermore, FSE units tend to report feeling more effective than NSE units on this construct. In terms of adopting sleep curricula, the majority of FSE and NSE units were in favor of this citing the topics of sleep and mental health, sleep hygiene/stimulus control/relaxation techniques, and preventative measures as being the most beneficial to them. FSE and NSE units also indicated they would benefit from videos, online educational support, and case studies. These findings are especially encouraging when it is taken in to consideration that the majority of FSE and NSE units indicate wanting to stay up to date on information related to sleep and mental health and believe that sleep is important to mental health recovery. While FSE and NSE units are motivated to improve care related
to sleep and mental health, current knowledge of nursing directors is lacking with the vast majority of participants only answering two to three of the five knowledge based questions correctly.
4: DISCUSSION

The prevalence of sleep education on inpatient psychiatric units was approximately 50% with 20 FSE units and 16 NSE units. It is between these two groups that similarities and differences were examined in order to understand what characteristics may be beneficial, or detrimental, to implementing sleep education programs. Approximately 60% of both FSE and NSE units, report serving mostly populations of 50,000 or more people and both unit types also report serving very similar age groups. It was found that larger units, as indicated by a Mann-Whitney U test on the number of employees and clients reported, are also more likely to be an NSE unit. Additionally, this study demonstrated that NSE units (75%) are also more likely to serve disruptive, impulse-control, and conduct disorders than FSE units (30%). These findings demonstrate that not only do larger units have less sleep education, but they also serve a different population of mental health disorders. It is possible that while NSE units may have a more difficult time implementing educational programs on a larger scale, they also may be utilizing a different treatment approach tailored to the specific mental health population they serve. As a result, it is logical to consider if different educational programs are needed for small and large NSE units. At this point, it is difficult to determine but it is reasonable that larger units will be in need of a curriculum that can be easily adapted for group size.

With this in mind, it is known that mental health disorders are more common in individuals diagnosed with a sleep disorder (Ohayon, 1997) despite this fact, within the present sample, only 3 participants (8.3%) of the overall sample indicated that they served individuals with sleep-wake disorders. This could likely be due to the fact, as
indicated by data related to bipolar disorder and sleep symptomology, that these participants are simply not aware of how prevalent sleep disorders are within mental health and as a result, are not aware how prevalent sleep disorders may be within their own unit. It is also possible that clients may not have a sleep diagnosis upon admission to the unit but upon discharge may have been diagnosed with a sleep disorder (Gillis, 2014) and as a result, nursing directors may be less likely to consider this change when completing the current study.

While sleep-wake disorders were not identified at rates we would expect, mood disorders are responsible for the most hospitalizations within mental health and were identified, in the current study, in accordance with prevalence rates that have been previously reported (HCUP, 2015). Both bipolar and related disorders along with depressive disorders were reported as the populations that were served most frequently by the overwhelming majority of units ($n = 35, 97.2\%$). Notably, conduct disorders were reported more frequently among NSE units. Given that conduct disorders are usually diagnosed in younger populations; this may demonstrate a lack of sleep problems for those with this diagnosis. Alternatively, these units may simply have different priorities more relevant to conduct disorder populations, such as educating clients on coping skills. Either way, more research is needed on conduct disorder populations and sleep disorders. Additionally, the sample of the current study reported an average length of stay of 8.58 days which is representative of the national average of 8.3 days (HCUP, 2015). With the present sample reporting mental health diagnoses and average length of stay very similar to that of the national average, this sample is assumed to be a broadly representative sample of the population.
In order to further characterize how sleep education is being conducted within FSE units, participants were asked to state specific topics that are covered by their unit. The majority of units reported that they educate clients about sleep hygiene/stimulus control/relaxation techniques ($n = 16, 80.0\%$), how client’s medication may affect their sleep ($n = 16, 80.0\%$), and how the client’s diagnosis may impact their sleep ($n = 10, 50.0\%$). These topic areas are likely important to clients and also have the potential to improve sleep hygiene in clients, which has been shown to improve physical health (Tembo & Parker, 2009) and mental health (Plante & Winkelman, 2008; Wehr et al., 1998). Contrary to FSE units, NSE units still address similar sleep factors within their continuum of care, reporting medication’s effect on sleep ($n = 12, 75.0\%$), impact of client’s diagnosis on sleep ($n = 9, 56.3\%$), and sleep hygiene/stimulus control/relaxation techniques ($n = 7, 43.8\%$). Though this group differs on the prevalence of formalized sleep education, these topics are still likely important to clients and have a high chance of yielding the greatest benefits for clients and their mental health as demonstrated by prior research (Plante & Winkelman, 2008; Wehr et al., 1998). Notably, FSE units reported the need for education pertaining to preventative measures and treatment of sleep disorders more frequently than NSE units. These findings may indicate that FSE units may be better prepared to begin addressing sleep disorders within inpatient units, while NSE units may need more attention on other topic areas related to basic sleep hygiene. These topics could include how sleep disorders manifest within mental health conditions or even information related to basic sleep hygiene, stimulus control, and relaxation techniques.
As for who teaches clients in these sleep programs, the most common response was nurses ($n = 16, 80.0\%$) followed by mental health technicians ($n = 7, 35.0\%$). This is not entirely unexpected as nurses tend to make up the majority of inpatient psychiatric staff. However, there have been reports about the lack of sleep education for nurses and recommendations for improving education of sleep within nursing school (Lee et al., 2004). The more concerning finding is that only 1 of the 36 units (2.8\%) stated that they had a sleep specialist for their unit. Notably, this participant did not state if the sleep specialist had a specific specialty within the domain of sleep. This raises concern because if a specialist is utilized by a unit, but their specialty is not known it may demonstrate a lacking presence within the unit; or simply the participant did not know the specialist’s focus. Regardless as to why, previous studies investigating the prevalence of sleep training in psychology training programs have already highlighted the need for better training of staff and the scarcity of sleep professionals within this field (Meltzer et al., 2009). This finding not only supports these studies but also highlights the overwhelming need for sleep specialists within inpatient psychiatric settings.

While it is abundantly clear that there is a considerable need for sleep specialists within inpatient psychiatric care, there are other barriers that exist which prevent units from carrying out their desired treatment plan. For both FSE and NSE units, barriers were largely similar with lack of resources (38.9\%), time constraints (38.9\%), lack of education (36.1\%), and not prioritizing sleep education (36.1\%) reported most frequently. Despite FSE and NSE units having differences in unit size and mental health populations, these findings demonstrate that barriers to implementing sleep education are consistent across inpatient psychiatric units regardless of unit characteristics.
While some units have incorporated sleep education into their continuum of care, both FSE and NSE units indicated they did not believe their units educated clients about sleep effectively with 66.7% of nursing directors stating their units were either extremely ineffective, moderately ineffective, or neutral. One way to improve quality of care in the meantime is by educational programs, which have been shown to effectively increase knowledge about sleep and result in long term retention of information (Gallasch & Gradisar, 2007; Meltzer et al., 2009). Despite evidence that inpatient psychiatric nurses are receiving education pertaining to CBT (Olatunji & Hollon, 2010), participants reported that if a standard curriculum for sleep and mental health were available they would be in favor of implementing that program on their unit ($n = 24, 66.7\%$). Demonstrating that current education may not be sufficient. Additionally, participants reported that they believed sleep and mental health, sleep hygiene, preventative measures, and treatment of sleep disorders would be the most beneficial topics to be covered in a standard curriculum. Participants also indicated that they would value videos, online educational support, and case studies to be at their disposal. These findings demonstrate that nursing directors are not blind to the inefficiencies within sleep education and mental health. The majority of units feel they do not address sleep adequately but also show interest in a standard curriculum that units would be motivated to utilize within their units. Nursing directors state wanting information such as “sleep hygiene” in a future curriculum, which is actually a smaller component of cognitive behavioral therapy for insomnia (CBTI). However, when developing these programs, caution must be exercised because recommending components of CBTI which have not been shown to
independently improve sleep quality, may lead to poor treatment outcomes (Conroy & Ebben, 2015).

Nursing directors are not blind to inefficiencies within their unit. Within this study’s sample, nursing directors were largely incorrect on the knowledge based portion of the survey. As a group, participants only correctly answered 2 of the 5 questions. Though this seems concerning, one question asked clients to identify the most common sleep symptom of bipolar disorder. The correct answer was daytime sleepiness (Plante & Winkelman, 2008) but the majority of nursing directors selected insomnia ($n = 23, 63.9\%$). This question is, in a sense, based on a diagnostic technicality. Patients who have been hospitalized on a psychiatric unit with bipolar disorder are often admitted in a manic phase and a result often do not sleep for a significant portion of their stay. Once clients have been stabilized and are no longer experiencing a manic episode, they are likely to be discharged to a less acute unit. While this information makes it is easy to understand why a majority of participants selected insomnia incorrectly, the majority of participants also only answered 2 questions correctly (46.7\%). This demonstrates the need to educate staff on sleep and mental health. By receiving this education, staff may be more adept at distinguishing symptoms more common to sleep disorders and as a result, improving the quality of care given to clients.
4.1: Limitations

This study was limited in a few ways. First, the current study’s overall sample size is relatively small. Unfortunately, by product of the central limit theorem this means it is plausible that the sample obtained by this study is skewed. Despite this possibility, various factors such as common mental health disorders and average length of stay were obtained to determine if the sample was representative of inpatient psychiatric units on the national level.

One limiting factor of this study was how participants were recruited. 558 recruitment letters were sent to potential participants and a response rate of 7.8% was achieved. While not terrible in terms of typical response rates, this survey was conducted online and utilized a paper recruitment letter. This creates a barrier for potential participants by forcing them to type a link into a web browser to access the survey. The present study sough to recruit via email but various association regulations, put in place to combat commercial solicitation, did not allow access to member’s email addresses. Future studies should attempt to recruit participants via email as other studies have experienced better response rates with this method (Meltzer et al., 2009). Additionally, recruitment was conducted from NAPHS and SAMHSA mailing lists. NAPHS requires hospitals/units to join the mailing list, while SAMHSA provides hospitals/units regardless of membership. NAPHS respondents may be potentially biased due to the membership requirement for this mailing list, but it is difficult to determine the exact nature of this potential bias.

Another limitation was that this study is entirely observatory in nature and is entirely correlational. Group comparisons can be made across groups but assumptions for
establishing causality are not present within the current study. Additionally, the questions
developed for the survey utilized by this study have not been tested for validity because of this, any conclusions based on these questions should be done so with caution.

Finally, because this study analyzed the responses of nursing directors, the findings of this study, specifically the knowledge based portion, pertain only to nursing directors. Demographic characteristics were not collected for nursing directors. As a result, there may be possible cohort effects that this study is unable to detect. While nursing directors have access to demographic information pertaining to the diagnoses of patients within their unit, these raw data may not have been referred to when providing responses. If so, this study relies on nursing director’s confidence and ability to accurately report the mental health diagnoses served by the inpatient unit.
4.2: Conclusions

This study examined the prevalence of sleep education within inpatient psychiatric units and highlighted key similarities and difference among inpatient units with and without formalized sleep education. These findings provide further support for the need of sleep specialists within inpatient psychiatric units, as well as the need for more effective sleep education programs within these settings. Previous studies have either focused specifically on treating sleep within a given mental health disorder, or characterized sleep interventions in both related and unrelated fields. Due to the lack of information regarding sleep care within inpatient psychiatric units, the current study addressed these knowledge gaps in previous research, and, thus, provided important insights into how educational sleep programs may be constructed in the future.

It is still unclear if all of the results of this study would remain the same, even with a larger sample size. Despite this, the sample does appear to be representative of inpatient psychiatric units within the United States of America in terms of mental health disorders commonly treated and average length of client admission.

Future research should focus on replicating these results with a larger sample of inpatient psychiatric units within the United States of America, and should also aim to further examine the needs of inpatient units and the needs of clients whom are hospitalized within these units in order to create effective sleep education programs. Finally, there are many aspects of mental health care ranging from inpatient units, assisted living, outpatient facilities in the community, and more, that should be the product of future research in order to create an improved and more holistic treatment experience for those with mental health disorders.
List of References


Appendix A: Inpatient Psychiatric Sleep Care Survey

Q1

Study Information

Please read the following information before deciding whether to participate in this experiment:

Title of research study: Prevalence of Inpatient Psychiatric Sleep Care & Barriers to Implementation

Researcher: Steven M. Smith, B.S. - Drexel University

Why are you being invited to take part in this research study?
We invite you to take part in a research study because recent studies investigating sleep and mental health have demonstrated potential avenues to better treat mental health disorders. We want to understand what sleep treatment currently looks like in inpatient psychiatric settings. We also wish to identify what factors may make treating sleep in these settings difficult.

What will I have to do?
You will be asked to provide information related to the adult inpatient psychiatric unit you oversee. If desired, you may also enter your email address (not linked to your responses) for the opportunity to win an electronic Amazon gift card worth $25.00.

How long will this survey take?
This survey will take about 10 minutes.

How many people will participate in this study?
We are aiming to recruit approximately 125 people.

Are there any risks?
We do not expect there to be any risks, but you are free to end the survey at any time by closing your browser window.

Will I be paid?
If you so desire, you may provide an email address and be entered to win 1 of 8 electronic gift cards worth $25.00.

How will my information be stored?
All of your information will be stored in a secured database. All databases are password protected and secure. For the Amazon gift card raffle, your email will be recorded in a database that is entirely separate from your responses to this survey.

What if I have questions or something to tell you?
If you have any questions or comments about this survey, please contact Steven M. Smith (sm0063@drexel.edu) or Mary Spiers, Ph.D. (spiersm@drexel.edu).

This research has been reviewed and approved by an Institutional Review Board (IRB). An IRB reviews research projects so that steps are taken to protect the rights and welfare of humans subjects taking part in the research. You may talk to them at (215) 255-7857 or email HRPP@drexel.edu for any of the following:
- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

Q2

By checking the box next to "I agree to participate...", you are stating that:
1. You agree to take part in this research
2. You understand this study is anonymous
3. You understand this study is entirely voluntary

☐ I agree to participate in this study, and know that I am free to leave the study at any point by closing the web browser.
<table>
<thead>
<tr>
<th>Question</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3</td>
<td>What is your job title?</td>
</tr>
</tbody>
</table>
| Q4 | Does your unit serve Urbanized Areas or Urban Clusters?  
- Urbanized Areas (population of 50,000 people or more)  
- Urban Clusters (population of 2,500 - 50,000 people)  
- Population less than 2,500 people |
| Q5 | How many employees are employed by your unit? (e.g., 15, 25, etc.) |
| Q6 | How many clients does your unit accommodate? (e.g., 15, 25, etc.) |
| Q7 | What is the average length of stay for a client on your unit in days? (e.g., 2 days, 7 days, etc.) |
| Q8 | What type of units do you currently oversee as a nursing director?  
- Children Inpatient  
- Adult Inpatient  
- Other: (please specify) |
| Q9 | Which of the following populations does your unit most regularly serve? (Please select all that apply)  
- Children (younger than 18 years of age)  
- Young adults (18-35 years of age)  
- Middle-aged adults (36-55 years of age)  
- Older adults (56+ years of age)  
- Other: (please specify) |
Q10
Which of the following populations does your unit primarily serve? (Please select all that apply)
- Neurodevelopmental Disorders
- Schizophrenia and other psychotic disorders
- Bipolar and related disorders
- Depressive disorders
- Anxiety disorders
- Obsessive-Compulsive and related disorders
- Trauma and Stressor related disorders
- Dissociative Disorders
- Eating and Eating disorders
- Sleep-Wake disorders
- Disruptive, Impulse-Control, and Conduct disorders
- Substance-Related and Addictive Disorders
- Neurocognitive disorders
- Personality Disorders
- Other: (please specify)

Q11
Is sleep an area of specialty for any of your employees?
- Yes
- No

Q12
If there are employees that specialize in sleep, what is their specialty? (Please select all that apply)
- Pediatric sleep
- Adult sleep
- Elderly sleep
- Cognitive-Behavioral Therapy (CBT)
- Sleep and mental health
- Circadian rhythms
- Sleep walking/talking, nightmares, etc.
- Other: (please specify)

Q13
Does your unit offer any education about sleep to employees?
- Yes
- No
<table>
<thead>
<tr>
<th>Q14</th>
<th>Does your unit offer any education about sleep to clients?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q15</th>
<th>Display This Question: If Does your unit offer any education about sleep to employees? Yes Is Selected Or Does your unit offer any education about sleep to clients? Yes Is Selected Are these courses evidence based (i.e., the conscientious use of current best evidence in making decisions about patient care)?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Not sure</td>
</tr>
<tr>
<td></td>
<td>Other: (please specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q16</th>
<th>Display This Question: If Does your unit offer any education about sleep to employees? Yes Is Selected What course subjects are covered/offered to employees about sleep? (Please select all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Diagnostic criteria for sleep disorders</td>
</tr>
<tr>
<td></td>
<td>- Sleep and mental health</td>
</tr>
<tr>
<td></td>
<td>- Evaluation of sleep disorders (EEG, PSG, interviewing, etc.)</td>
</tr>
<tr>
<td></td>
<td>- Treatment of sleep disorders (medical, behavioral, etc.)</td>
</tr>
<tr>
<td></td>
<td>- Sleep hygiene/stimulus control/relaxation techniques</td>
</tr>
<tr>
<td></td>
<td>- Biological rhythms and physiology</td>
</tr>
<tr>
<td></td>
<td>- Preventative measures</td>
</tr>
<tr>
<td></td>
<td>- Developmental differences across the lifespan</td>
</tr>
<tr>
<td></td>
<td>Other: (please specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q17</th>
<th>Display This Question: If Does your unit offer any education about sleep to clients? Yes Is Selected What courses are offered to clients about sleep? (Please select all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Treatment of sleep disorders (medical, behavioral, etc.)</td>
</tr>
<tr>
<td></td>
<td>- Sleep hygiene/stimulus control/relaxation techniques</td>
</tr>
<tr>
<td></td>
<td>- Biological rhythms and physiology</td>
</tr>
<tr>
<td></td>
<td>- Medication's effect on sleep</td>
</tr>
<tr>
<td></td>
<td>- Client's diagnosis impact on sleep</td>
</tr>
<tr>
<td></td>
<td>Other: (please specify)</td>
</tr>
</tbody>
</table>
Q18: Who typically teaches sleep hygiene to your employees? (Please select all that apply)

- Mental Health Technicians
- Nurses
- Occupational Therapists
- Recreational Therapists
- Sleep Specialist
- Not Sure
- Other: (please specify)

Q19: How are employees of your unit typically educated about sleep hygiene? (Please select all that apply)

- Online
- In-person
- Other: (please specify)

Q20: Who typically teaches sleep hygiene to your clients? (Please select all that apply)

- Mental Health Technicians
- Nurses
- Occupational Therapists
- Recreational Therapists
- Sleep Specialist
- Not Sure
- Other: (please specify)
If your unit does not provide sleep education to clients or employees, does your unit address any of the following aspects of sleep? (Please select all that apply)

- Treatment of sleep disorders (medical, behavioral, etc.)
- Sleep hygiene/stimulus control/relaxation techniques
- Biological rhythms and physiology
- Medication’s effect on sleep
- Client’s diagnosis impact on sleep
- None
- Other: (please specify)

What do you believe to be the barriers to sleep education on your unit for employees? (Please select all that apply)

- Too costly
- Lack of education
- Lack of qualified personnel
- Lack of resources
- Time constraints
- Not a priority
- Other: (please specify)

What do you believe to be the barriers to sleep education on your unit for clients? (Please select all that apply)

- Too costly
- Lack of education
- Lack of qualified personnel
- Lack of resources
- Time constraints
- Not a priority
- Other: (please specify)

What courses were offered to employees about sleep? (You may provide the course name or description)
Q25
Display This Question:
If Does your unit offer any education about sleep to employees? Yes Is Selected

What courses were offered to clients about sleep? (You may provide the course name or description)

Q26
Display This Question:
If Does your unit offer any education about sleep to employees? Yes Is Selected

Was the course required or optional for employees?
- Required
- Optional

Q27
Display This Question:
If Was the course required or optional for employees? Optional Is Selected

About how many people participated in this optional course? (e.g., 15, 35, etc.)

Q28
Is sleep incorporated in other aspects of employee training? (Such as: orientation courses, employee qualifications, etc.)
- Yes
- No
- Not sure
- Other: (please specify)

Q29
Which of the following have been utilized to deliver sleep education to employees? (Please select all that apply)
- Lecture/in-person course
- Online course
- Other: (please specify)
- None
Q30
Does your unit address any of the following? (Please select all that apply)

- Sleep assessments (polysomnography, multiple sleep latency tests, etc.)
- Sleep history of the client (previous diagnoses, sleep patterns leading up to admission)
- Treatment of sleep disturbances (insomnia, restless leg syndrome, etc.)
- Not Sure
- Other: (please specify) __________

Q31
How would you rate your unit’s effectiveness in teaching about sleep and mental health?

- Extremely Ineffective
- Moderately Ineffective
- Neutral
- Moderately Effective
- Extremely Effective

Q32
If any of the following resources were available, would any of the items listed below assist in the training of your employees in sleep and mental health? (Check all that you would find helpful.)

- Textbooks
- Videos
- Online education support
- Case studies
- Other: (please specify) __________

Q33
If there were a standardized curriculum in sleep and mental health disorders, would you be likely to use it in your program?

- Yes
- No
- Not sure

Q34
Of the following topics, which would you find helpful in a curriculum for clients on sleep in inpatient psychiatric settings? (Please select all that apply.)

- Diagnostic criteria for sleep disorders
- Sleep and mental health
- Evaluation of sleep disorders (EEG, PSG, interviewing, etc.)
- Treatment of sleep disorders (medical, behavioral, etc.)
- Sleep hygiene/stimulus control/relaxation techniques
- Biological rhythms and physiology
- Preventative measures
- Developmental differences across the lifespan
- Other: (please specify) __________
Please indicate to what degree you agree or disagree with the following statements:

Q35 I would like my unit to learn about sleep problems in mental health and remain up to date on this topic:
- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Q36 I believe that sleep is a critical component to mental health recovery:
- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Q37 How does your unit address clients sleeping during the day?

Q38 When a client is awake at night and cannot go to sleep, what is the typical course of action for this client?

Recent studies investigating sleep and mental health have demonstrated potential avenues to better treat mental health disorders. We want to understand what is currently known in the field.

Please answer the following questions to the best of your ability.
### Q40
Individuals with a sleep disorder and a mental health disorder are:
- at a lower risk for future health complications
- at no increased risk for future health complications
- at a higher risk for future health complications

### Q41
The most common sleep symptom related to bipolar disorder is:
- insomnia
- daytime sleepiness
- delayed sleep onset
- disturbed REM sleep

### Q42
Disorders commonly presenting with excessive daytime sleepiness include all of the following except:
- major depressive disorder
- narcolepsy
- bipolar disorder
- schizophrenia

### Q43
The most effective way to treat sleep disorders within mental health is:
- pharmacological therapy
- homeopathic therapy
- cognitive-behavioral therapy
- acceptance and commitment therapy

### Q44
Research has indicated that in order to effectively manage bipolar disorder, it is extremely important to manage:
- sleep regularity
- nutrition
- work schedules
- total sleep time

### Q45
If you have any questions or comments about this study, please leave them below:

### Q47
If you wish to enter your email address to enter the Amazon gift card raffle, please click on the link below which will allow you to enter your email separate from your responses to this survey.

After entering your email please return to this page and click to continue to the last page of the survey.

https://drexel.qualtrics.com/ControlPanel/?ClientAction=EditSurvey&Section=SV_Oq9PCWYRsZJfTnp&SubSections=&SubSubSections=&PageAction=Options&
Click the link below to enter your email to be entered in the Amazon gift card raffle:

https://drexel.qualtrics.com/SE/?SID=SV_9mc1z6zVK0hbtX
### Appendix B: Adaptations from Boerner et al., 2015

<table>
<thead>
<tr>
<th>Barriers from Boerner et al. 2015</th>
<th>Barriers from Smith 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge, skills, techniques, training, or education</td>
<td>Lack of Education</td>
</tr>
<tr>
<td>Lack of resources and materials</td>
<td>Lack of Resources</td>
</tr>
<tr>
<td>Lack of time</td>
<td>Time Constraints</td>
</tr>
<tr>
<td>Institutional/systems-level/practice-setting barriers</td>
<td>N/A</td>
</tr>
<tr>
<td>Lack of access to sleep specialists/sleep services</td>
<td>Lack of Qualified Personnel</td>
</tr>
<tr>
<td>Barriers related to parents, mismatch between parent and health provider or setting</td>
<td>N/A</td>
</tr>
<tr>
<td>Barriers related to individual practice and professional orientation</td>
<td>N/A</td>
</tr>
<tr>
<td>Lack of experience</td>
<td>N/A</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
</tr>
<tr>
<td>N/A</td>
<td>Not a Priority</td>
</tr>
<tr>
<td>N/A</td>
<td>Too Costly</td>
</tr>
</tbody>
</table>

### Attitude Statement from Boerner et al. 2015

“For a long time, I have been learning about behavioral sleep problems, and I would like to continue to learn and remain up to date on this topic”

### Attitude Statement from Smith 2016

"I would like my unit to learn about sleep problems in mental health and remain up to date on this topic."
Appendix C: Sleep Education Questionnaire (Meltzer, 2009)

1. What programs are offered at your institution? Please check all that apply.
   a. PhD
   b. PsyD
   c. Internship
   d. Other: (please specify)

2. How many students are in your graduate program?

3. How many faculty members do you have?

4. Is sleep or circadian rhythms an area of specialty for any of your faculty members?
   a. Yes
   b. No

5. How many faculty members specialize in sleep or circadian rhythms?

6. What specialty area(s) do they focus on? Please check all that apply.
   a. Pediatric
   b. Adult
   c. Elderly
   d. Cognitive–behavioral therapy
   e. Neuropsychology
   f. Health
   g. Insomnia
   h. Circadian rhythm
   i. Parasomnias (sleepwalking/talking, nightmares, etc.)
   j. Other: (please specify)

7. Does your program offer a course on sleep to graduate students/interns?

8. What course(s)? (Please list.) Was that course required or an elective? How many students were in the class?

9. Is sleep incorporated in other aspects of training? (Such as lecture as a part of another course, in a weekly lecture series, guest lectures/grand rounds, clinic patients, etc.)
10. Which of the following were included in your program?
   a. Lecture as part of another course
   b. Lectures in weekly education series
   c. Guest lecture/grand rounds
   d. Clinic patients
   e. Other: (please specify)

11. If included as a part of another course, what course(s)? (List each.) Was that course required or an elective? How many students were in the class?

12. Does your program offer any training in any of the following? Please check all that apply.
   a. Sleep laboratory experience (polysomnography, multiple sleep latency tests, etc.)
   b. Sleep history interviewing skills
   c. Actigraphy
   d. Treatment of sleep disturbances (insomnia, pediatric sleep disorders, etc.)
   e. None of the above
   f. Other: (please specify)

13. Approximately, how many clients/patients does a trainee see who has a:
   a. Primary sleep disorder
   b. Concomitant sleep disorder (ex. depression and insomnia)

14. Approximately, how many clients/patients with primary sleep disorder does a trainee see who is:
   a. Pediatric
   b. Adult
   c. Elderly

15. For students involved in practicum sites or an internship, do you offer any of the following in relation to sleep:
   a. Rotation in a sleep center
   b. Rotation in a site that typically includes patients with sleep-related issues
   c. No sleep practicum or clinical training experiences offered
   d. Other: (please specify)
16. How would you rate your institution’s effectiveness in teaching about sleep on the following topics? (Extremely Effective, Moderately Effective, Neutral, Moderately Ineffective, Extremely Ineffective)
   a. Sleep disorders
   b. Sleep and cognition
   c. Treatment of disorder
   d. Sleep and comorbid conditions (ex. anxiety, depression)
   e. Sleep architecture/physiology

17. If any of the following resources were available, would any of the items listed below assist in the training of your students in sleep and sleep disorders? Check all that you would find helpful.
   a. Textbooks
   b. Videos
   c. Online education support
   d. Case studies
   e. Other: (please specify)

18. If there were a standardized curriculum in sleep, would you be likely to use it in your program?
   a. Yes
   b. No

19. Of the following topics, which would you find helpful in a curriculum for sleep?
   a. Diagnostic criteria for sleep disorders
   b. Evaluation of sleep disorders (EEG, PSG, interviewing, etc.)
   c. Treatment of sleep disorders (medical, behavioral, etc.)
   d. Sleep hygiene/stimulus control/relaxation techniques
   e. Biological rhythms and physiology
   f. Preventive measures
   g. Developmental differences (across the lifespan)
   h. Other: (please specify)

20. Other comments:
Appendix D: Sleep and Mental Health Knowledge Questions

Recent studies investigating sleep and mental health have demonstrated potential avenues to Q39 better treat mental health disorders. We want to understand what is currently known in the field.

Please answer the following questions to the best of your ability.

1. Individuals with a sleep disorder and a mental health disorder are:
   a) at a lower risk for future health complications
   b) at no increased risk for future health complications
   c) **at a higher risk for future health complications**

2. The most common sleep symptom related to bipolar disorder is:
   a) insomnia
   b) **daytime sleepiness**
   c) delayed sleep onset
   d) disturbed REM sleep

3. Disorder commonly presenting with excessive daytime sleepiness include all of the following except:
   a) major depressive disorder
   b) narcolepsy
   c) bipolar disorder
   d) **schizophrenia**

4. The most effective way to treat sleep disorders within mental health is:
   a) pharmacological therapy
   b) homeopathic therapy
   c) **cognitive behavioral therapy**
   d) acceptance and commitment therapy

5. Research has indicated that in order to effectively manage bipolar disorder, it is extremely important to manage:
   a) **sleep regularity**
   b) nutrition
   c) work schedule
   d) total sleep time

*Note: Responses in bold indicate correct answers*
## Appendix E: Results Tables

### Table 1: Prevalence of Sleep Education

<table>
<thead>
<tr>
<th>Number of Units (N=36)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formalized Sleep Education (FSE)</td>
<td>20 (55.6%)</td>
</tr>
<tr>
<td>No Formalized Sleep Education (NSE)</td>
<td>16 (44.4%)</td>
</tr>
</tbody>
</table>

### Table 2: Group Comparisons of Population Density

<table>
<thead>
<tr>
<th>Unit Type (N=36)</th>
<th>Unit Type (N=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FSE (N=20)</td>
</tr>
<tr>
<td>Serves Urbanized Areas (population 50,000 or more people)</td>
<td>12 (60.0%)</td>
</tr>
<tr>
<td>Serves Urban Clusters (population 2,500 to 50,000 people)</td>
<td>6 (30.0%)</td>
</tr>
<tr>
<td>Serves Rural Areas (population less than 2,500 people)</td>
<td>2 (10.0%)</td>
</tr>
</tbody>
</table>

*Note: Chi-square analyses did not indicate significant differences among groups on the categorical variable of unit type (FSE and NSE).*

### Table 3: Group Comparisons on Age Served

<table>
<thead>
<tr>
<th>Unit Type (N=36)</th>
<th>Unit Type (N=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FSE (n=20)</td>
</tr>
<tr>
<td>Serves Ages Younger Than 18 Years</td>
<td>4 (20.0%)</td>
</tr>
<tr>
<td>Serves Ages 18 to 35</td>
<td>14 (70.0%)</td>
</tr>
<tr>
<td>Serves Ages 36 to 55</td>
<td>16 (80.0%)</td>
</tr>
<tr>
<td>Serves Ages 56+</td>
<td>13 (65.0%)</td>
</tr>
</tbody>
</table>

*Note: Age groups are not mutually exclusive. Chi-square analyses did not indicate significant differences among groups on the categorical variable of unit type.*
Table 4: Group Comparisons on Mental Health Disorder Population

<table>
<thead>
<tr>
<th>Disorder</th>
<th>FSE (n=20)</th>
<th>NSE (n=16)</th>
<th>Total n = 36 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia and Psychotic</td>
<td>19 (95.0%)</td>
<td>16 (100.0%)</td>
<td>35 (97.2%)</td>
</tr>
<tr>
<td>Bipolar and Related Disorders</td>
<td>19 (95.0%)</td>
<td>16 (100.0%)</td>
<td>35 (97.2%)</td>
</tr>
<tr>
<td>Depressive Disorders</td>
<td>20 (100.0%)</td>
<td>15 (93.8%)</td>
<td>35 (97.2%)</td>
</tr>
<tr>
<td>Anxiety Disorders</td>
<td>20 (100.0%)</td>
<td>13 (81.3%)</td>
<td>33 (91.7%)</td>
</tr>
<tr>
<td>Trauma and Stressor Related Disorders</td>
<td>13 (65.0%)</td>
<td>8 (50.0%)</td>
<td>21 (58.3%)</td>
</tr>
<tr>
<td>OCD and Related Disorders</td>
<td>9 (45.0%)</td>
<td>10 (62.5%)</td>
<td>19 (52.8%)</td>
</tr>
<tr>
<td>Dissociative Disorders</td>
<td>8 (40.0%)</td>
<td>8 (50.0%)</td>
<td>16 (44.4%)</td>
</tr>
<tr>
<td>Disruptive, Impulse-Control, Conduct Disorders*</td>
<td>6 (30.0%)</td>
<td>12 (75.0%)</td>
<td>18 (50.0%)</td>
</tr>
<tr>
<td>Substance-Related and Addictive Disorders</td>
<td>13 (65.0%)</td>
<td>11 (68.8%)</td>
<td>24 (66.7%)</td>
</tr>
<tr>
<td>Personality Disorders</td>
<td>17 (85.0%)</td>
<td>11 (68.8%)</td>
<td>28 (77.8%)</td>
</tr>
<tr>
<td>Neurocognitive Disorders</td>
<td>2 (10.0%)</td>
<td>5 (31.3%)</td>
<td>7 (19.4%)</td>
</tr>
<tr>
<td>Neurodevelopmental Disorders</td>
<td>1 (5.0%)</td>
<td>2 (12.5%)</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td>Feeding and Eating Disorders</td>
<td>1 (5.0%)</td>
<td>2 (12.5%)</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td>Sleep-Wake Disorders</td>
<td>1 (5.0%)</td>
<td>2 (12.5%)</td>
<td>3 (8.3%)</td>
</tr>
</tbody>
</table>

*Chi-square analyses p < .05
Table 5: Sleep Subjects Covered for Clients - FSE Units

<table>
<thead>
<tr>
<th>Topic</th>
<th>FSE Units (N=20) n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep Hygiene, Stimulus Control, Relaxation</td>
<td>16 (80.0%)</td>
</tr>
<tr>
<td>Medication's Effect on Sleep</td>
<td>16 (80.0%)</td>
</tr>
<tr>
<td>Client's Diagnosis Impact on Sleep</td>
<td>10 (50.0%)</td>
</tr>
<tr>
<td>Treatment of Sleep Disorders</td>
<td>5 (25.0%)</td>
</tr>
</tbody>
</table>

*Note:* Only includes FSE units

Table 6: Sleep Subjects Covered for Clients – NSE Units

<table>
<thead>
<tr>
<th>Topic</th>
<th>NSE Units (N=16) n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication's Effect on Sleep</td>
<td>12 (75.0%)</td>
</tr>
<tr>
<td>Client's Diagnosis Impact on Sleep</td>
<td>9 (56.3%)</td>
</tr>
<tr>
<td>Sleep Hygiene, Stimulus Control, Relaxation</td>
<td>7 (43.8%)</td>
</tr>
<tr>
<td>None</td>
<td>2 (12.5%)</td>
</tr>
<tr>
<td>Treatment of Sleep Disorders</td>
<td>1 (6.3%)</td>
</tr>
<tr>
<td>Biological Rhythms and Physiology</td>
<td>1 (6.3%)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>
Table 7: Barriers to Client Sleep Education

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>FSE (N = 20)</th>
<th>NSE (N = 16)</th>
<th>Total (N = 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Lack of Resources</td>
<td>8 (40.0%)</td>
<td>6 (37.5%)</td>
<td>14 (38.9%)</td>
</tr>
<tr>
<td>Time Constraints</td>
<td>9 (45.0%)</td>
<td>5 (31.3%)</td>
<td>14 (38.9%)</td>
</tr>
<tr>
<td>Not a Priority</td>
<td>6 (30.0%)</td>
<td>7 (43.8%)</td>
<td>13 (36.1%)</td>
</tr>
<tr>
<td>Lack of Qualified Personnel</td>
<td>6 (30.0%)</td>
<td>7 (43.8%)</td>
<td>13 (36.1%)</td>
</tr>
<tr>
<td>Lack of Education</td>
<td>5 (25.0%)</td>
<td>4 (25.0%)</td>
<td>9 (25.0%)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (10.0%)</td>
<td>0 (0.0%)</td>
<td>2 (5.6%)</td>
</tr>
<tr>
<td>Too Costly</td>
<td>0 (0.0%)</td>
<td>1 (6.3%)</td>
<td>1 (2.8%)</td>
</tr>
</tbody>
</table>

Note: Chi-square analyses did not indicate significant differences among groups on the categorical variable of unit type.

Table 8: Method of Handling Problematic Sleep Behaviors – Day

<table>
<thead>
<tr>
<th>Method of Handling</th>
<th>FSE &amp; NSE Units (N=32)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td>Encourage Alertness</td>
<td>17 (47.2%)</td>
</tr>
<tr>
<td>Client Dependent</td>
<td>12 (33.3%)</td>
</tr>
<tr>
<td>Structure</td>
<td>11 (30.6%)</td>
</tr>
<tr>
<td>None</td>
<td>9 (25%)</td>
</tr>
<tr>
<td>Sleep Hygiene</td>
<td>3 (8.3%)</td>
</tr>
<tr>
<td>Education</td>
<td>2 (5.6%)</td>
</tr>
<tr>
<td>Medication</td>
<td>1 (2.8%)</td>
</tr>
</tbody>
</table>

Note: Includes both FSE and NSE units
Table 9: Method of Handling Problematic Sleep Behaviors – Night

<table>
<thead>
<tr>
<th>Method</th>
<th>FSE &amp; NSE Units (N=32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication</td>
<td>24 (66.7%)</td>
</tr>
<tr>
<td>Relaxation Techniques</td>
<td>14 (38.9%)</td>
</tr>
<tr>
<td>Stimulus Control</td>
<td>10 (27.8%)</td>
</tr>
<tr>
<td>Client Dependent</td>
<td>5 (13.9%)</td>
</tr>
<tr>
<td>1:1 Interactions</td>
<td>4 (11.1%)</td>
</tr>
<tr>
<td>Melatonin</td>
<td>2 (5.6%)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1 (2.8%)</td>
</tr>
</tbody>
</table>

*Note: Includes both FSE and NSE units*

Table 10: Unit’s Effectiveness in Educating About Sleep and Mental Health

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>FSE (n=18)</th>
<th>NSE (n=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely Ineffective</td>
<td>0 (0.0%)</td>
<td>2 (13.3%)</td>
</tr>
<tr>
<td>Moderately Ineffective</td>
<td>4 (22.2%)</td>
<td>7 (46.7%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>6 (33.3%)</td>
<td>5 (33.3%)</td>
</tr>
<tr>
<td>Moderately Effective</td>
<td>8 (44.4%)</td>
<td>1 (6.7%)</td>
</tr>
<tr>
<td>Effective</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

*Note: For chi-square analyses, both rating of ineffectiveness and effectiveness were collapsed to meet assumption of minimum expected values. Chi-square analyses found a significant difference between ineffective and effective ratings based on the categorical variable unit type.*