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Sleep interventions for adults admitted to psychiatric inpatient settings: a scoping review protocol

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ABSTRACT

Objective: The scoping review aims to identify how sleep is measured and what sleep interventions are used effectively in psychiatric inpatient settings. Potential barriers to measuring sleep in inpatient settings will be classified.

Introduction: Polysomnography has shown that poor sleep is associated with emotional, cognitive, and somatic changes, as well as increased risks in suicide ideation and aggression. People with mental illness often experience sleep disturbances and believe the psychiatric inpatient environment contributes to sleep problems. The use of sleep interventions has been studied widely in general inpatient wards; less is known of similar interventions in psychiatric inpatient settings.

Inclusion criteria: The review will include studies that have primarily studied the effectiveness of sleep interventions for adults in any psychiatric inpatient setting. Studies that focus solely on sleep apnea, parasomnias, or restless legs syndrome will be excluded.

Methods: A literature search of PsycINFO, Web of Science, MEDLINE and Google Scholar will be conducted. Studies identified will be screened and examined against the eligibility criteria. Eligible studies will be assessed for risk of bias and relevant data extracted to answer the review questions. Extracted data will be presented in narrative and tabular formats.

Keywords environment; hospital; intervention; mental health; sleep

JBI Evid Synth 2020; 18(0):1–10.

Introduction

Sleep is essential for life, good health, and well-being. Poor sleep can have a negative impact across multiple health domains.¹ Sleep disturbances are common among people with mental disorders, affecting over half of all adults with schizophrenia or bipolar affective disorder.² Many people experience poorer sleep at night in a non-psychiatric hospital than at home.³ However, this problem appears greater in the psychiatric inpatient setting where the overwhelming majority report disturbed sleep.⁴ It is possible that this is not merely due to the combination of having a mental disorder and being

admitted to a hospital, but reflects the unique situation of admission to a psychiatric hospital for treatment of a mental disorder. Multiple factors contribute to poor sleep among adults admitted to psychiatric inpatient settings, including environmental factors and the ward regime.⁵ Sleep interventions that are effective in this setting would improve sleep as well as other health domains among individuals during a hospital admission for treatment of a mental disorder, with the potential to improve recovery, shorten length of stay in hospital, and even preserve life.

Impact of poor sleep on health

The sleep-wake cycle involves complex interactions between several regions of the brain: hormonal activity, varying release patterns of excitatory and

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inhibitory neurotransmitters, environmental stimuli, and other factors such as pain and medication.¹ The complexity of sleep is particularly relevant to people with a mental disorder involving a neurotransmitter imbalance such as schizophrenia, regardless of medication status⁶; individuals taking psychotropic medication such as antidepressants or antipsychotics⁷; and those exposed to the environmental stimuli of any inpatient setting.⁸ In both psychiatric and non-psychiatric populations, disturbances to this complex system has the potential to affect multiple parts of the brain leading to impairments in emotional,^{1,9} cognitive,^{1,10} and somatic responses.^{1,11}

In the domain of emotional response, poor sleep in people with mental disorders is associated with depressed mood, elevated stress, and higher levels of irritability.¹ Notably, in the psychiatric inpatient population, sleep disturbances are also associated with increased suicidality,¹² and may have a role in predicting aggression and violence.^{13,14} It would follow that untreated sleep disturbances among this population may be linked to a continued increased risk of loss of life, as well serious harm to self and others, requiring a high level of nursing intervention.

Cognitively, poor sleep is linked with poor memory, deficits in concentration, and reduced decision-making and productivity in those with mental disorders.¹ In the psychiatric inpatient setting, impaired cognitive functioning may present as non-adherence with medication,¹⁵ which is likely to lead to deterioration of the mental disorder. Furthermore, those with sleep-related cognitive deficits are more likely to struggle to concentrate during psychological treatments for their mental disorder and are less likely to remember the content of these sessions.¹⁶ Poor engagement with inpatient occupational therapy has been attributed to hypersomnolence and poor concentration.¹⁷ As a result of sleep disturbances, some patients have difficulty in participating in the various aspects of the inpatient treatment program offered by the multidisciplinary team and are therefore likely to experience a slower recovery and a prolonged length of stay in hospital.

The increased risk of developing cardiovascular disease or diabetes among people who have poor sleep arises from the impairments in the somatic response, which leads to metabolic imbalance and obesity.^{1,11} This is especially problematic for patients who are already prescribed psychotropic medication with side effects of obesity and metabolic

syndrome.¹⁸ As a result, these patients may be prescribed additional medication specifically for the management of these physical health conditions.¹⁹ Whilst the impact of poor sleep on the emotional and cognitive domains is clearly important for inpatients in the psychiatric setting, the impact on the somatic domain should be considered equally important in this population, which experiences a higher mortality rate compared to the general population.^{20,21} Considering the range of adverse health outcomes that arise from poor sleep, the most effective sleep interventions applied in the psychiatric inpatient setting can be expected to be associated with better all-round health and safety of the individuals concerned.

Sleep disturbances in people with mental disorders

Disturbances of sleep occur to a greater degree in people with a mental disorder than in the general population.^{6,22,23} Sleep disturbances can be described within four broad symptom categories that may reach the threshold for specific diagnoses: sleep of poor quality or inadequate quantity (insomnia); too much sleep (hypersomnia including daytime somnolence); sleep that does not occur at the correct times (sleep-wake cycle disturbance); and sleep involving unusual happenings (eg, parasomnias, sleep paralysis, restless legs syndrome).²⁴ Significant disturbances of sleep quality are found in adults with a wide range of mental disorders including schizophrenia, depression, anxiety, and borderline personality disorder.²⁵ Furthermore, compared to the general population, individuals with schizophrenia, bipolar affective disorder, and borderline personality disorder are more likely to experience difficulty falling asleep or initial insomnia.^{6,23,26} Sleep disturbances in people with schizophrenia is complex. Reduced sleep quality is associated with positive symptoms of schizophrenia (eg, auditory hallucinations and delusions), while increased sleep duration occurs more frequently in those with severe negative symptoms of schizophrenia (eg, apathy and avolition).²⁷ However, sleep disturbances can continue even when remission from psychotic symptoms has been achieved.² Furthermore, the duration of sleep may be prolonged as a side effect of sedating medication used to treat schizophrenia,⁶ but significantly reduced in those who have never been treated with antipsychotic medication and those who have been withdrawn from such medication.²⁸

Sleep disturbances among people with mental disorders are of particular concern during hospital admissions. The psychiatric ward is often the setting for individuals with mental disorders that are the most acute, severe, likely to require higher doses of psychotropic medication, and likely to be difficult to treat. The psychiatric inpatient setting is also a place with procedures,⁵ and environmental factors such as noise from response alarms that are less conducive to a good night's sleep.⁴ It is therefore not surprising that the vast majority of adults admitted to acute psychiatric wards experience sleep disturbances, particularly insomnia characterized by broken sleep with reduced overall sleep duration, and less commonly, prolonged sleep.⁴

Measurement of sleep

The measurement of sleep in hospital is important not only to assess sleep and establish the presence of a sleep disorder,^{4,8} but also to evaluate the effectiveness of clinical interventions to improve sleep.²⁹ Polysomnography is the gold standard for objectively measuring sleep, describing the architecture of sleep and examining progression through the various stages of sleep.²⁵ It records data on EEG brain activity, muscle activity, and eye movement.²⁵ However, the equipment used for polysomnography includes items such as electrodes, sticky gel, medical tape, and wires, which not only may be restricted items on most inpatient wards, but also may be intrusive and unacceptable for individuals with a high level of agitation, or unsafe and unsuitable for patients assessed to have a high risk of self-harm.

Actimetry (or actigraphy) is a non-invasive method of measuring sleep objectively that typically involves wearing a wristwatch-like device that collects data about the sleep-wake cycle.³⁰ Actimetry also provides information on daytime somnolence and activity levels that can have an impact on the circadian rhythm.

Sleep is also measured subjectively using instruments that often rely on participant self-report and involve questionnaires such as the Pittsburgh Sleep Quality Index.^{1,2} It is not known which sleep measurement instruments are used most widely in research undertaken in psychiatric inpatient settings.

Sleep interventions and rationale for review

The complex and individualized nature of sleep disturbances among the inpatient population calls for individualized solutions that may include

pharmacological and non-pharmacological sleep interventions.⁵ Sleep interventions that are effective in this population as well as in people with mental disorders can be expected to have favorable outcomes that are measurable across multiple domains. Primarily, this would include a measure of improved sleep. Secondly, there would be demonstrable improvements in emotional, cognitive, and somatic measures, such as lower levels of irritability, improved attention, and reduced body mass index. More distal measurements of benefit would demonstrate improvement in effective treatment engagement; reduction in aggression, violence and suicide; faster recovery times; shorter length of stay in hospital; and lower health care costs.

There is little evidence that pharmacotherapy is an effective sleep intervention for individuals admitted to acute wards in general, non-psychiatric inpatient settings.³¹ Systematic review evidence on the effectiveness of non-pharmacological sleep interventions across all inpatient settings is limited to the sleep outcomes.³² Critically, there have been no published reviews internationally on the effectiveness of both pharmacological and non-pharmacological sleep interventions specifically in the psychiatric inpatient population that have considered sleep and non-sleep health outcomes.³³ A preliminary search of PROSPERO, MEDLINE, the Cochrane Database of Systematic Reviews and the *JBI Database of Systematic Reviews and Implementation Reports* was conducted and no current or in-progress scoping reviews or systematic reviews on the topic were identified.

The purpose of the scoping review is to examine the sleep interventions used with adults admitted to a psychiatric inpatient setting. The primary aim is to review the existing research to identify the range and effectiveness of sleep interventions that have been used among adults in psychiatric inpatient settings. The secondary aims of the review is to list the different ways in which sleep has been measured in these sleep intervention studies and classify potential barriers to measuring sleep in these settings. The findings will inform the planning of future research projects.

Review questions

- i) What sleep interventions are used in adults admitted to psychiatric inpatient settings?
- ii) What effect do sleep interventions used in adults on psychiatric wards have on sleep and other health outcomes?

- iii) How is sleep measured in adults admitted to inpatient psychiatric settings?
- iv) What are the potential barriers to measuring sleep in adult inpatient psychiatric settings?

Inclusion criteria

Participants

The review will include studies of adults admitted to a psychiatric inpatient setting. Studies of outpatients and inpatients on overnight leave from hospital will be excluded.

Concept

This review will consider studies that examine interventions for sleep, where sleep is measured as an outcome. Additional health outcomes will include affective, cognitive, and somatic domains. Studies that focus solely on sleep apnea, parasomnias, or restless leg syndrome will be excluded. Studies that do not report the method of sleep measurement will also be excluded.

Context

This review will consider studies that report on sleep interventions for adults in a psychiatric inpatient setting. This is defined as any inpatient setting that exists primarily to provide specialist mental health assessment, treatment, or rehabilitation. This definition includes, but is not limited to: acute psychiatric wards; psychiatric intensive care units; locked rehabilitation psychiatric wards; and low security, medium security, and high security psychiatric wards.

Types of sources

This scoping review will consider quantitative and mixed methods design studies for inclusion. Randomized controlled trials, quasi-randomized trials, and non-randomized trials/quasi-experimental studies will be included. Studies arising from all disciplines including medicine, nursing science, occupational therapy and psychology will be included in the review. Articles published from database inception to the present will be included. Only studies published in English will be reviewed.

Methods

The JBI methodology guidance will be used to undertake the proposed scoping review.³⁴

Search strategy

The search strategy will aim to identify studies published in peer-reviewed journals. An initial search of MEDLINE was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the article were used to develop a full search strategy for MEDLINE (see Appendix I). The search strategy, including identified keywords and index terms, will be adapted for each included information source. Databases will be searched from the date of inception to present day. Finally, the reference lists of articles selected for inclusion in the scoping review will be screened for additional papers.

Information sources

A literature search will be conducted using electronic databases including: PsycINFO, Web of Science and MEDLINE (Ovid). Google Scholar will be searched to identify additional studies. Only studies published in peer-reviewed journals will be included.

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Study selection

Full citations of all studies identified through the literature search will be collated, counted, and uploaded into reference management software End-Note v.X8.1 (Clarivate Analytics, PA, USA). Duplicates will be removed and the remaining studies counted. Titles and abstracts will be screened against the review inclusion criteria. Remaining studies will be retrieved in full text and assessed by two independent reviewers in detail against the review inclusion criteria. Studies that do not meet the review criteria will be excluded from the review and the reasons for exclusion will be noted. In addition, studies that are not accessible as an original full text manuscript will be excluded, along with studies contained only within conference proceedings. Disagreements between reviewers will be resolved by discussion or, if necessary, with a third reviewer. The remaining studies that are eligible for the scoping review will be used for data extraction. The results of the search will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses for Scoping Reviews (PRISMA-ScR) flow diagram.³⁵

Data extraction

Data will be extracted from papers included in the scoping review by two independent reviewers using

the data extraction tool recommended in the *JBIM Manual for Evidence Synthesis*,³⁴ modified to meet the objectives of the scoping review. For each paper, the data extracted will include specific details about the methods, setting, participants, sleep and health outcomes, intervention, effectiveness of the intervention, and any barriers to measuring sleep reported.³⁶ The data extraction tool will be further modified and revised as necessary during the process of extracting data from each included paper. Modifications will be detailed in the full scoping review. Two independent reviewers will complete the data extraction form for each study and resolve disagreements through discussion or, if necessary, with a third reviewer. Authors of papers will be contacted to request missing or additional information, where required. Each selected study will be critically appraised using the Cochrane risk of bias tool.³⁶

Data presentation

The extracted data will be presented in a diagrammatic or tabular format that aligns with the objectives of the scoping review. A table of all included studies will be presented providing information on: authorship, publication year, country of origin, study design, population, sample size, intervention, instrument, and outcomes. A text narrative, synthesis of findings, and a critical discussion of the review will complement the tabular data. Service users will be invited to comment on the review. The full scoping review will be reported in accordance with PRISMA-ScR guidance.³⁵

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Appendix I: Search strategy

MEDLINE (Ovid); searched September 20, 2019

Search – 1946 to September 18, 2019	Query	Records retrieved
#1	sleep.m_titl. OR "sleep-less".m_titl. OR "sleep problem".m_titl. OR "sleep disturbance".m_titl. OR poor sleep.m_titl. OR "hypnotic".m_titl. OR z-drug.m_titl. OR zopiclone.m_titl. OR zolpidem.m_titl. OR zaleplon.m_titl. OR melatonin.m_titl. OR insomnia.m_titl. OR insomniac.m_titl. OR *somn*.m_titl. OR "actigraph".m_titl. OR "actimetr".m_titl. OR "accelerometer".m_titl. OR exp Sleep Disorders, Intrinsic/ or exp Sleep, Slow-Wave/ or exp Sleep Hygiene/ or exp Sleep Stages/ or exp Sleep Deprivation/ or exp Sleep/ or exp Sleep Wake Disorders/ or exp Sleep, REM/ or exp Sleep Disorders, Circadian Rhythm/ OR exp "Hypnotics and Sedatives"/ OR exp Receptors, Melatonin/ or exp Melatonin/ or exp Receptor, Melatonin, MT2/ or exp Receptor, Melatonin, MT1/ OR exp "Sleep Initiation and Maintenance Disorders"/ OR Polysomnography/ OR Accelerometry/ "sleep-less".m_titl.	288,968
#2	(mental or psychiatr* or psychos* or psychot* or schizo* or depressi* or depressed or personality disorder or personality disorders or bipolar or mood disorder or mood disorders or affective disorder or affective disorders).m_titl. OR exp Mental Health/ OR exp Schizophrenia/ OR exp Psychotic Disorders/ OR exp Depression, Postpartum/ or exp Depression/ OR Bipolar Disorder/ OR Personality Disorders/	639,034
#3	"hospital".m_titl. OR "unit".m_titl. OR inpatient.m_titl. OR in-patient.m_titl. OR ward*.m_titl. OR PICU.m_titl. OR seclusion.m_titl. OR rehab*.m_titl. OR forensic*.m_titl. OR secure.m_titl. OR exp Hospitals, Psychiatric/ OR exp Hospitalization/ OR exp Inpatients/ OR exp Psychiatric Department, Hospital/	725,718
#4	1 AND 2 AND 3 AND 4	718
No language and date limits were applied		

Appendix II: Data extraction tool

Publication details	Author(s)	
	Title	
	Year of publication	
	Journal	
About the study	Aim/purpose	
	Setting	
	Population <ul style="list-style-type: none"> - Age - Sample size - Sex - Intervention group size and criteria/characteristics - Control group criteria size and criteria/characteristics 	
Sleep measurement instrument	Measurement of sleep <ul style="list-style-type: none"> - Objective - Subjective 	
Research outcomes	Sleep outcomes	
	Health outcomes	
Intervention	Intervention description	

Effectiveness of intervention	<p>Sleep outcomes (primary)</p> <ul style="list-style-type: none"> - Intervention group pre and post - Control group pre and post - Comparison between two groups 	
	<p>Health outcomes (emotional)</p> <ul style="list-style-type: none"> - Intervention group Pre Post (X months) Post (X months) Post (X months) - Control group pre Post (X months) Post (X months) Post (X months) - Comparison between two groups Pre Post (X months) Post (X months) Post (X months) 	
	<p>Health outcomes (cognitive)</p> <ul style="list-style-type: none"> - Intervention group Pre Post (X months) Post (X months) Post (X months) - Control group pre Post (X months) Post (X months) Post (X months) - Comparison between two groups Pre Post (X months) Post (X months) Post (X months) 	
	<p>Health outcomes (somatic)</p> <ul style="list-style-type: none"> - Intervention group Pre Post (X months) Post (X months) Post (X months) - Control group pre Post (X months) Post (X months) Post (X months) - Comparison between two groups Pre Post (X months) Post (X months) Post (X months) 	
Barriers to sleep measurement	Reported barriers to measuring sleep	

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