A systematic review protocol examining the biological, physiological, and psychological factors that contribute to, and prevent, the development of insomnia

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ABSTRACT

Insomnia is a common disorder that pertains to a lack of sleep with symptoms like having trouble falling asleep and waking up in the middle of the night. It can be caused by numerous factors which include mental health and stress. Biological, physiological, and psychological factors can cause or affect insomnia and need to be summarized. The aim of this review protocol is to summarize research on the causes and possible prevention of insomnia, and its relationships with various factors that can influence it. The research questions address this goal and cover the variety of factors that can affect insomnia. Google Scholar will be used to conduct research, using a search process that includes using keywords, sample queries and filters. The screening process involves a set of inclusion criteria and the use of Covidence in order to analyze and assess the validity of potential sources. The data extraction process will require each team member to assess a division of sources collected and extract crucial information. It will be categorized into research questions as well as the biological, psychological, and physiological factors affecting insomnia. Lastly, the extracted information will be synthesized in a narrative form with qualitative methods and statistical calculations.

INTRODUCTION

Insomnia is characterized by chronic dissatisfaction with sleep quantity. It is marked by difficulty falling asleep, frequent nighttime awakening, and waking up early [1]. This disorder has various effects during daytime performance such as fatigue and interruptions in cognitive performance. It is known that this disorder affects 35% of adults, and has been known to affect 23.8% of teens [2]. There are numerous potential causes of insomnia. Poor sleep can trigger insomnia as it could worsen other health conditions. Furthermore, it is believed that one of the main causes of insomnia is caused by hyperarousal [3]. This state disrupts an individual's mind from falling asleep or staying asleep. Hyperarousal in insomnia can be mental or physical and can be caused by various factors such as stress, mental health disorders, lifestyle, and medications [2]. It is important to note that individuals can experience insomnia in distinct ways. Common ways to cure this disorder are maintaining a consistent sleep schedule, staying active, cognitive therapy, and a change in lifestyle [2]. It is also important to note that stress is one of the most significant factors that causes this disorder to develop. Stress can be overcome through a variety of different procedures such as cognitive therapy [2][4].

There are numerous factors that can either prevent or contribute to this disorder. These factors can be biological, physiological, or psychological. For instance, a common source of insomnia in teens is biological factors such as changes in sleep schedule and stress stimulated by schoolwork [5]. Studying these factors can contribute to having a better understanding of the disorder overall. These determinants can further aid in finding methods and behaviours that can prevent or potentially develop this disorder. Furthermore, it will enable public health authorities and clinicians to develop human-centred approaches [6].

METHODS AND ANALYSIS
Aims and Objectives
The aim of this protocol review is to summarize research on why and how people develop insomnia and how to prevent it. It will also examine relationships with insomnia and biological, physiological, and psychological factors that can affect or cause it. The research questions complement the central aim, with a variety of factors that can affect insomnia being considered (e.g. Effect on women, people of different ages, cause of insomnia through genetics, physical and mental health). The objectives that will be met in order to properly achieve this goal include the classification of research into the categories of biological, physiological, and psychological factors, standard peer review at each milestone, and the assessment of possible strategies to prevent insomnia.

Research Questions
- ➢ What are the common factors affecting the development of insomnia?
- ➢ How can one prevent the development of insomnia?
- ➢ How does insomnia develop in women?
- ➢ What is the relationship between mental health and insomnia?
- ➢ What is the relationship between physical health and insomnia?
- ➢ Can insomnia be caused by genetic factors?
- ➢ What factors contribute to insomnia in younger people vs. older people?
- ➢ How are younger people treated for insomnia as opposed to older people?

Search Strategy and Information Sources
Google Scholar and the University of Toronto Libraries Database will be employed to conduct a search in November 2022. Only publications in the English language which have been peer-reviewed will be filtered through queries. To test queries and keywords, prefatory searches were conducted in October 2022. See Table 1 for the full query process.

Table 1 Search process

> Keywords
> Biological   Physiological   Psychological
> Contribute   Prevent   Sleep   Insomnia
>
> Sample query
> (biolog* OR physiolog* OR psycholog*) AND (contribu* OR cause* OR prevent* OR factor* OR diagnose* OR develop* OR treat* OR affect* OR relation* OR catagor*) AND "insomnia" AND (health* OR mental* OR genetic* OR sleep* OR dementia* OR

age* OR cognit* OR mind* OR schedul* OR stress* OR therap* OR disorder* OR lifestyle* OR condition* OR consisten* OR day* OR night* OR perform* OR frequen* OR chronic) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article OR Book OR Book Chapter OR Proceedings Paper)

Filters
Any type sorted by relevance in a custom range from 2012 to 2022.

Screening Process and Inclusion Criteria

Covidence will be utilized to perform the preliminary screening of potential sources and record chosen sources. When completing the screening process for the Search and Screening, each team member will utilize Covidence and the inclusion criteria in Table 2 to perform a preliminary screening of the research sources. A secondary screening will be performed by a different team member paying greater attention to detail and conducting any additional research into the journal and authors of the research.

Table 2 Inclusion criteria

Study design
Keywords and relevant concepts are included in search queries. Due to the qualitative nature of the research questions, the systematic research will be focused on cohort, case-control, and cross-sectional studies to best inform the observational quality of the review. Unpublished papers will be excluded.

Condition or domain being studied
Research regarding biological, physiological, and psychological factors as they pertain to insomnia will be included. Work studying the

general population and particular subgroups of the population (e.g. women, men, youth, elderly) will be included. Research which discusses factors adjacent to biological, physiological, and psychological factors will be included. Research which discusses other sleep disorders will not be included.

Currency
Only work published within the last 10 years (2012 to present) will be included as research within this time frame can still be relevant.

Authority
Work must be published in a reputable, peer-reviewed journal.

Context
The number and currency of references for the research will be used to determine its accuracy. The publication history and education level of the authors will be assessed to determine its credibility. To determine the credibility of the work, additional research will be conducted for sponsors of the work. In addition, the academic and professional affiliations of the publisher and journal will be assessed. The criteria directly above are merely guidelines to direct the team members' investigation and assessment of a research source if there is cause to question its authority.

The criteria in Table 2 will continue to be adjusted as research development progresses.

Data Extraction Process

Each of the five team members will receive an equal division of papers that have been processed through the screening and inclusion criteria. Each individual extraction will converge with all the information stored in a single shared document. The data to be extracted will include citation details, objects, the type of study, the setting and context, related measures and results, major findings, as well as participant demographics such as age range, occupation, the environment in which the participants were surrounded, etc. In addition, categories specific to the research question will be defined and as such, data pertaining to the three classifications of biological, physiological, and psychological factors that either contribute to or prevent the development of insomnia will be extracted.

Data Analysis and Synthesis

The relevant information will be extracted from the chosen data sources and synthesized in a comprehensive summary of findings. This will be supported with appropriate qualitative analysis and visualization. Where applicable, statistical properties and calculation methods such as averages, standard deviations, and sample sizes will be used to inform the conclusions of the literature review.

DISCUSSION

Insomnia is a sleep disorder that affects over half of the population [2]. This disorder makes falling asleep and staying asleep very difficult, depriving those affected of rest [1]. However, poor sleep is not the only consequence.

Insomnia affects other areas of an insomniac's life such as performance at work, performance in school, attentiveness, mental health, and physical health. This presents a need to prevent insomnia in order to ensure these areas of people's lives remain unaffected by involuntary sleep deficiency. In determining how insomnia can be prevented, the biological, physiological, and psychological factors that contribute to developing this sleep disorder must be determined. Here concludes the importance of composing this review. The team's objective throughout this review will be to research the various factors which potentially contribute to developing insomnia and to pinpoint how each can be prevented. Doing so will establish how to prevent the sleep disorder. The completion of this review will inform readers of what components in their lives are potential factors in developing insomnia. Researchers seeking to minimize these factors can determine what aids they require and how to obtain them.

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