

The Effectiveness Of Nurse-Led Sleep Hygiene Interventions

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Abstract

Sleep is gaining more prominence in the field of public health. The objective of this umbrella review is to assess the non-pharmacological therapies for sleep health that have been studied in healthy populations. This will be done by analyzing the specific groups targeted, the contexts in which the interventions took place, and the efficacy of these interventions in enhancing both the quality and length of sleep. Empirical research strongly supports the efficacy of delaying school start hours, using behavior modification techniques, and engaging in mind-body exercises. Alternative forms of intervention, such as sleep training or relaxation methods, showed some encouraging effects on sleep, however the data was not consistently reliable. The findings were constrained by significant variability across the research, inconclusive outcomes, and inconsistent quality of the reviews. However, this umbrella review serves as a first effort to comprehend the present condition of sleep wellness and provides a comprehensive summary of interventions throughout one's lifetime.

Keywords: sleep, sleep hygiene, efficacy, program assessment, public health, review.

1. Introduction

Sleep health is a complex pattern of sleep and wakefulness that is tailored to meet individual, social, and environmental needs, and is beneficial for both physical and mental well-being [1]. Inadequate sleep may be a contributing factor to the development of chronic illnesses, including obesity [2],

cardiovascular disease [3], and diabetes [4]. Insufficient sleep may also result in sadness [5], other mood problems [6], and declines in cognitive function, such as memory and learning challenges [7]. Insufficient sleep may lead to workplace injuries, accidents, and medical mistakes due to daytime sleepiness and exhaustion, which can reduce awareness and slow down response time [8,9].

Insufficient sleep is a widespread problem worldwide, and research indicates a growing occurrence of poor sleep [10,11]. According to a research, it is projected that by 2030, the number of older persons with sleep disorders in low-income countries would reach 260 million, which is an increase from 150 million in 2010 [10]. According to Ohayon (2011), the occurrence of individuals with insufficient sleep in different nations varied between 20% and 41.7% [12]. Globally, inadequate sleep impacts individuals of all age groups, but it often goes unrecognized and unreported in many countries [10,13]. Inadequate sleep also has a detrimental impact on the global economy. The collective assessment for the United States, Canada, the United Kingdom, Germany, and Japan indicates that the yearly economic detriment caused by sleep issues amounts to USD 680 billion [14].

Many extensive public health education programs and campaigns have been developed with the aim of impacting food and exercise, but neglecting to take into account the importance of sleep [15,16]. In 2010, the US health agenda included standards for physical exercise and food as crucial health-related activities, although sleep was not addressed [17]. Nevertheless, sleep has lately been a topic of concern in the US health agenda [18], and the reduction of sleep deprivation is likewise gaining importance as a public health goal in the UK [19].

Consequently, the objective of advocating for good sleep is anticipated to garner more focus in the next decades. Sleep health promotion focuses on enhancing both the length and quality of sleep. This study focuses on sleep-related health habits and knowledge among healthcare professionals, policy makers, and the general public [20,21]. Sleep length is often described as the total quantity of sleep obtained during a single night of rest or throughout a 24-hour period [22]. Sleep quality refers to an individual's level of happiness with their sleep, taking into account factors such as how easily they fall asleep, how well they stay asleep, the amount of sleep they get, and

how refreshed they feel upon waking up [23]. Methods and instruments used to measure the length and quality of sleep differ and may be categorized as either objective or subjective.

Multiple systematic reviews and meta-analyses have been carried out to investigate sleep health treatments, analyzing various kinds of therapies, target populations, and contexts. However, there is a lack of an 'umbrella review' in the literature that offers a comprehensive summary of all systematic studies published in the diverse topic of sleep health promotion. The objective of this umbrella review is to comprehensively describe the extent and efficacy of sleep therapies in mostly healthy populations, namely those who have not been diagnosed with a sleep problem or particular illness. Its main objective is to identify the particular non-pharmacological treatments for sleep health, the target populations and situations in which they have been used, and their effectiveness in enhancing sleep quality and length. This summary of sleep health therapies during the course of one's life is also intended to acquaint academics who are interested in this relatively recent area of sleep health.

2. Intervention Settings

The evaluations examined several contexts where single interventions were implemented, such as schools [24-27], universities [28], the community [29], the workplace, outpatient settings [30], hospitals [31], nursing homes [31], and gyms [53].

3. Measures of Sleep

The measurement of sleep length often involves quantifying the entire amount of time spent sleeping (referred to as total sleep time or TST) either during a single night or as an average over a certain time frame. Sleep quality was assessed using composite scores derived from questionnaires, such as the widely used Pittsburgh Sleep Quality Index (PSQI). Sleep onset latency (SOL) was also regarded as a metric for assessing sleep quality. Among babies and young children, the frequency of waking up throughout the night and difficulties at bedtime were seen as measures of the overall quality of sleep [33].

Both quantitative and subjective measures were used to assess results. Actigraphy and polysomnography were often used as objective measures. Subjective measures included many sleep indices, such as the PSQI or the Insomnia Severity

Index, along with additional self-report methods including parent reports, sleep diaries, interviews, and non-standard questionnaires. A total of twenty-nine evaluations used a blend of subjective and objective criteria. Four papers only assessed sleep outcomes using subjective measures, whereas two reviews failed to specify the methods used for measurement.

4. Categories of Interventions and Their Efficacy

Several evaluations included sleep education, with significant disparities in methodologies [34-38]. The treatments included education on sleep health, sleep cycles, the repercussions of inadequate sleep, and/or recommendations for sleep hygiene. Nevertheless, several evaluations offered only ambiguous explanations of the supplied information. Various modalities were used to disseminate sleep education, such as workshops, brochures, phone consultations, and internet resources. The targeted audiences for sleep instruction were diverse, however, college students and parents with newborns and small children were often included.

Despite the inclusion of sleep education treatments in four previous evaluations, they were coupled with other kinds of interventions, making it impossible to draw any conclusions [36-39]. Two studies examined treatments designed to enhance sleep awareness in school settings [27,28]. Although the evaluations indicated an improvement in sleep-related knowledge, there was no corresponding change in sleep-related behaviors or the quality and duration of sleep. Although several sleep education treatments showed slight beneficial effects on both the length and quality of sleep, the outcomes were very inconsistent.

5. Methods for Changing Behavior (BCM)

Infants and children were a frequently targeted demographic for BCM, with their parents being responsible for implementing the strategies. BCM, or Behavioral Child Management, encompasses several techniques such as structured bedtimes, planned awakenings, pleasant routines, controlled consoling, and progressive extinction. These techniques have been supported by research studies [40-44]. Infants, athletes, and shift workers were subjected to prescribed sleep waking patterns. BCM were often used in conjunction with sleep instruction.

A research conducted on newborns, athletes, and shift workers showed benefits in sleep length and/or quality [45]. However, another analysis did not provide any evidence on sleep duration outcomes [46]. Three more studies including babies and children demonstrated enhanced sleep quality [47], while another study indicated improvements in both sleep length and quality. Two studies presented inconclusive findings [47,48], while one did not provide particular information about the efficacy of BCM [45]. In general, there is significant data indicating that behavioral sleep interventions in babies and toddlers, when implemented by parents, lead to an improvement in both the length and quality of sleep [49-52]. Additionally, there is also promising (although less extensive) data for other demographics.

6. Methods for Inducing Relaxation

The participants included a diverse range of individuals, including teenagers, shift workers, college students, pregnant women, and hospitalized adults. The category exhibited a noteworthy array of treatments, including progressive muscle relaxation, mindfulness, calming music, and more.

The enhancements in the length and/or quality of sleep shown a range of favorable impacts, ranging from minor to significant. The majority of studies assessed sleep quality, whilst a smaller number investigated sleep duration. A study found that the use of several relaxation methods had a moderate positive impact on the quality of sleep [44]. A study found that relaxation techniques had varying favorable impacts on sleep quality, ranging from minor to big [50]. However, another study reported inconsistent findings on the impact of relaxation on both sleep length and quality [31]. Relaxation methods were not individually assessed for their efficacy in five evaluations [35,41,45,48,51]. The most compelling evidence in this particular area was found in favor of listening to soothing music, as substantiated by a meta-analysis [52]. The evidence on alternative relaxation methods was more varied.

7. Interventions Involving Physical Exercise

Seven studies evaluated the impact of various forms of physical exercise on sleep outcomes. The composition of the participant groups was diverse, with a greater emphasis on women in the reviews, including particular subgroups such as

postmenopausal, pregnant, postpartum, and middle-aged women.

The efficacy of physical activity in enhancing sleep quality varied from little to substantial impacts. One study indicated little impacts on the quality of sleep, but three studies shown significant impacts on sleep quality [46, 51, 53]. Divergent findings on sleep length were observed in one analysis, whilst another review demonstrated moderate impacts on sleep duration [54-56]. A meta-analysis was conducted that included a research on physical exercise together with other treatments. However, the analysis did not provide any information on the efficacy of physical exercise alone [45]. Physical exercise therapies have shown encouraging improvements in both the length and quality of sleep. However, it is worth noting that the sample sizes in these evaluations were quite limited.

8. Summary

This review is the first attempt to provide a comprehensive summary of the tactics used in the rapidly progressing domain of sleep health promotion, elucidating the specific groups of people and locations where interventions are implemented. The most compelling evidence for enhancing sleep was found in studies that examined later school start times, behavior modification techniques, and mind-body exercises. Additional therapies, such as sleep education, relaxation methods, physical activity, aromatherapy, massage, psychotherapy, and environmental interventions, also shown encouraging although uneven or restricted outcomes. Caution should be used when considering conclusions due to the significant heterogeneity seen across studies. However, this umbrella study might be considered a first effort towards achieving a more comprehensive understanding of sleep health promotion.

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