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[Intervention Review]

Non-pharmacological interventions for sleep disturbances in people with dementia

Denise Wilfling[1], Stella Calo[2], Martin N Dichter[3], Gabriele Meyer[4], Ralph Möhler[2], Sascha Köpke[3]

[1]Nursing Research Group, Institute of Social Medicine and Epidemiology, University of Lübeck, Lübeck, Germany. [2]Institute for Health Services Research and Health Economics, Centre for Health and Society, Medical Faculty and University Hospital Düsseldorf, Heinrich-Heine University, Düsseldorf, Germany. [3]Institute of Nursing Science, Faculty of Medicine and University Hospital Cologne, University of Cologne, Cologne, Germany. [4]Institute of Health and Nursing Sciences, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany

Contact: Sascha Köpke, sascha.koepke@uk-koeln.de.

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ABSTRACT

Background

Sleep disturbances occur frequently in people with dementia with a reported prevalence of up to 40%. Common problems are increased number and duration of awakenings and increased percentage of light sleep. Sleep disturbances are associated with a number of problems for people with dementia, their relatives, and carers. In people with dementia, they may lead to worsening of cognitive symptoms, challenging behaviours such as restlessness or wandering, and further harms, such as accidental falls. Sleep disturbances are also associated with significant carer distress and have been reported as a factor contributing to institutionalisation of people with dementia. As pharmacological approaches have shown unsatisfactory results, there is a need to synthesise the research evidence on non-pharmacological strategies to improve sleep in people with dementia. As interventions are often complex, consisting of more than one active component, and implemented in complex contexts, it may not be easy to identify effective intervention components.

Objectives

To evaluate the benefits and harms of non-pharmacological interventions on sleep disturbances in people with dementia compared to usual care, no treatment, any other non-pharmacological intervention, or any drug treatment intended to improve sleep, and to describe the components and processes of any complex intervention included.

Search methods

We used standard, extensive Cochrane search methods. The latest search was 13 January 2022.

Selection criteria

We included individually or cluster-randomised controlled trials in people with dementia comparing non-pharmacological interventions to improve sleep compared to usual care or to other interventions of any type. Eligible studies had to have a sleep-related primary outcome. We included people with a diagnosis of dementia and sleep problems at baseline irrespective of age, type of dementia, severity of cognitive impairment, or setting. Studies reporting results on a mixed sample (e.g. in a nursing home) were only considered for inclusion if at least 80% of participants had dementia.

Data collection and analysis

We used standard Cochrane methods. Our primary outcomes were 1. objective sleep-related outcomes (e.g. total nocturnal sleep time, consolidated sleep time at night, sleep efficiency, total wake time at night (or time spent awake after sleep onset), number of nocturnal

awakenings, sleep onset latency, daytime/night-time sleep ratio, night-time/total sleep ratio over 24 hours) and 2. adverse events. Our secondary outcomes were 3. subjective sleep-related outcomes, 4. behavioural and psychological symptoms of dementia, 5. quality of life, 6. functional status, 7. institutionalisation, 8. compliance with the intervention, and 9. attrition rates. We used GRADE to assess the certainty of evidence and chose key outcomes to be included in summary of findings tables.

Main results

We included 19 randomised controlled trials with 1335 participants allocated to treatment or control groups. Fourteen studies were conducted in nursing homes, three included community residents, one included 'inpatients', one included people from a mental health centre, and one included people from district community centres for older people. Fourteen studies were conducted in the US. We also identified nine ongoing studies.

All studies applied one or more non-pharmacological intervention aiming to improve physiological sleep in people with dementia and sleep problems. The most frequently examined single intervention was some form of light therapy (six studies), five studies included physical or social activities, three carer interventions, one daytime sleep restriction, one slow-stroke back massage, and one transcranial electrostimulation. Seven studies examined multimodal complex interventions.

Risk of bias of included studies was frequently unclear due to incomplete reporting. Therefore, we rated no study at low risk of bias.

We are uncertain whether light therapy has any effect on sleep-related outcomes (very low-certainty evidence). Physical activities may slightly increase the total nocturnal sleep time and sleep efficiency, and may reduce the total time awake at night and slightly reduce the number of awakenings at night (low-certainty evidence). Social activities may slightly increase total nocturnal sleep time and sleep efficiency (low-certainty evidence). Carer interventions may modestly increase total nocturnal sleep time, may slightly increase sleep efficiency, and may modestly decrease the total awake time during the night (low-certainty evidence from one study). Multimodal interventions may modestly increase total nocturnal sleep time and may modestly reduce the total wake time at night, but may result in little to no difference in number of awakenings (low-certainty evidence). We are uncertain about the effects of multimodal interventions on sleep efficiency (very low-certainty evidence). We found low-certainty evidence that daytime sleep restrictions, slow-stroke back massage, and transcranial electrostimulation may result in little to no difference in sleep-related outcomes.

Only two studies reported information about adverse events, detecting only few such events in the intervention groups.

Authors' conclusions

Despite the inclusion of 19 randomised controlled trials, there is a lack of conclusive evidence concerning non-pharmacological interventions for sleep problems in people with dementia. Although neither single nor multimodal interventions consistently improved sleep with sufficient certainty, we found some positive effects on physical and social activities as well as carer interventions. Future studies should use rigorous methods to develop and evaluate the effectiveness of multimodal interventions using current guidelines on the development and evaluation of complex interventions. At present, no single or multimodal intervention can be clearly identified as suitable for widespread implementation.

PLAIN LANGUAGE SUMMARY

Non-medicine interventions for sleep problems in dementia

What are sleep problems in people with dementia?

People with dementia frequently have sleep problems including an increase in the length and number of awakenings and an increased amount of light sleep. These cause a number of problems for the affected person, their relatives, and carers, possibly leading to carer distress and the admission of people with dementia to nursing homes or long-term care homes.

Can non-medicine interventions help?

As we do not know if medicines can help improve sleep in people with dementia, non-medicine interventions are frequently recommended. These include light therapy, social and physical activities, changes of the environment (such as reducing noise and light at night), or avoiding daytime sleep. Also, intervention programmes consisting of more than one of these components are available (so-called 'multimodal interventions'; e.g. combining light therapy and activities for people with dementia).

What did we want to find out?

We searched for clinical trials that tested the effects of non-medicine interventions for people with dementia and sleep problems. We wanted to find out if these interventions or programmes can promote sleep and avoid side effects for people with dementia and their carers.

What did we do?

We searched for randomised controlled trials (a design of study that usually gives the most reliable evidence about the effects of a treatment) evaluating any non-medicine intervention to improve sleep in people with dementia. We compared and summarised the results of the studies and rated our confidence in the evidence, based on factors such as study methods and numbers of participants.

What did we find?

We identified 19 studies, including 1335 participants. The studies included 13 to 193 participants with sleep problems and dementia. All studies applied one or more non-medicine intervention (i.e. light therapy, physical and social activities, carer interventions, daytime sleep restriction, slow-stroke back massage, or transcranial electrostimulation (a method that delivers a low electric current to the scalp that changes brain function)). Seven studies assessed multimodal interventions. Studies assessed sleep in different ways, but most used actigraphy, which is a wristband to measure night-time sleep.

Main results

– Physical activity interventions, social activities, carer interventions, and multimodal interventions may slightly or modestly improve night-time sleep in people with dementia.

– We found no evidence that light therapy, slow-stroke back massage, or transcranial electrostimulation reduce sleep problems in people with dementia.

What are the limitations of the evidence?

Although we were able to include 19 studies with 1335 participants evaluating non-medicine interventions to avoid sleep disturbances in people with dementia, we were unable to draw firm conclusions mostly due to important differences between interventions and lack of methodological quality. Therefore, the results of this review must be interpreted with caution and high-quality studies are urgently needed.

How up to date is this evidence?

The evidence is up to date to 13 January 2022.