Review Article

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Insomnia in Elderly : A Review

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ABSTRACT

Background: Insomnia is sleep disorder in which its have trouble falling asleep, staying asleep or waking up too early-addresssed problems of elderly / ageing. Studies indicate that up to 50% of older adults struggle with falling or staying asleep. Various sleep problems in the elderly are linked to *Age-related cognitive decline and normal aging processes can be further disrupted by sleep disturbances caused by medical or psychiatric conditions such as *Chronic pain, depression and dementia. Additionally primary sleep disorders like *Sleep-disordered breathing and periodic limb movements during sleep *Can worsen the situation, especially when combined with other risk factors. Since sleep plays a crucial role in protecting the body and maintaining overall well-being, addressing sleep disorders is essential for a better quality of life. This review focuses on evaluating sleep disorders in elderly / ageing.

Methodology: This current study is a systematic review to published studies and articles by using PubMed and Google. Search strategy using appropriate key words and title.

Conclusion: Normal elderly / ageing accompanied by changes in the sleep quality, quantity and architecture. Specially there appears to be a measurable decrease in the ability to initiate and maintain sleep accompanied by a decrease in the proportion of the deeper more restorative slow wave sleep and REM sleep in the healthy elderly / ageing.

KEY WORDS

Ageing; Elderly; Insomnia; Sleep disorder.

INTRODUCTION

The insomnia was borrowed from Latin insomnis "Sleepless" from the prefix in "Not" plus somnus "Sleep". Somnus is actually related to Greek hypnos "Sleep" the source of English words such as hypnosis and hypnotic.

Sleep problems are common among the elderly / ageing. Those who experience sleep difficulties often report a lower quality of life and exhibit more symptoms of depression and anxiety compared to those who sleep well. Research indicates that insufficient sleep is linked to serious health risks and higher mortality rates in older adults.[1-3] As people age, the occurrence of Sleep-Related Breathing Disorders (SRBD) and insomnia symptoms rises significantly. However, little is known about how these conditions coexist and their combined effects.[4-6] Poor sleep in older adults also increases the risk of reduced physical abilities, workplace accidents and memory issues.[4]

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Etiology is complex, involving multiple factors,such as neurodegenerative changes in the brain, the patient's environment, medical or psychiatric morbidity, and medications used to treat chronic illnesses.[2,7] Risk factors for sleeping difficulty inthe elderly are depression, respiratory symptoms, disability and fair to poor perceived health and use of prescribed sedatives. The relationship between sleep disturbance and depression in the elderly is especially strong. Untreated insomnia may result in depression and the presence of adepressed mood may even predict insomnia. It is difficult to determine whether depression causes insomnia or vice versain a study of 7954 respondents by Ford and Kamerow suggests that unremitting insomnia causes depression.[8-10] This decreased ability to sleep is often as a function of co-morbidities associated with ageing.[11] A variety of age-related co- morbid conditions that exacerbate sleep disturbances such as ischemic heart disease, diabetes, depression, renal failure, arthritis and pulmonary disorders and the multiple medications used to treat them are common in the older adult population and enhance risk for development of insomnia.[7,12-14] Narcotic analgesics routinely used to control chronic pain can cause Excessive Daytime Sleepiness (EDS).[15]

SEARCH STRATEGY

Available studies and abstract were identified through PubMad and Google Scholar (1989 – 2024). Key search topics were "InsomoniainElderly : A review" and

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relevant articles from reference lists of reviewed articles were also searched. The search term were the following key words used in combination : Ageing; Elderly; Insomnia; sleep disorder. Bibliography was also searched from relevant full text.

DISCUSSION

Dementia

Dementia is a neurodegenerative disorders (e.g. Alzheimer's disease, Parkinson's disease). It affects memory, thinking, language, judgment and behavior. Behavioral disturbances are exhibited in almost all people with dementia. Common behavioral disturbances are mood disorders (e.g. Depression, apathy, euphoria) sleep disorders Insomnia, hypersomnia, night-day reversal) psychotic symptoms (Delusions and hallucinations) and agitation (e.g. Pacing, wandering, sexual disinhibition, aggression). They are often persistent greatly diminish quality of life of patients and their family caregivers.[16] Reports suggest that 19-44% of community-dwelling patients with dementia complain about sleep disturbances such as circadian rhythm changes, medical illnesses, depression andthe primary sleep disorders.[17]

Medical and Psychiatric Illnesses

Insomnia is difficulty in getting to sleep or staying asleep for long enough to feel refreshed on the next morning, even though he/she have had enough opportunity to sleep.[18] Studies showed that sleep disturbances in patients with chronic medical diseases such as arthritis, chronic pain, diabetes etc report difficulty in falling and/or staying asleep. Other health-related diseases those are associated with insomnia include congestive heart failure, cancer, nocturia, shortness of breath due to chronic obstructive pulmonary disease, neurological deficits related to cerebrovascular accidents and Parkinson's disease.[7] Ohayon and Roth conducted a large cross-sectional survey and observed that in 65% of those with major depression, 61%with panic disorder and 44% with generalized anxiety disorder also suffered from insomnia.[19] Perlis et al.also described that insomnia is a significant risk factor for recurrent and a new onset of major depressive disorder especially for the elderly subjects, particularly women, were at greater risk for the development of depression.[20] The annual incidence rate of insomnia in 65 years or older is approximately 5%.[21] While medications are traditionally used to treat insomnia, however, recent studies have shown that behavioral treatments are more effective and thus, recommended as the first-line treatment option. Others treatment involves a combination of sleep restriction therapy, stimulus control therapy, relaxation techniques and good sleep hygiene practices.[22]

Circadian Rhythm Changes

As people older, their circadian rhythms become weaker, desynchronized and lose amplitude. Changes in the phasing of the circadian rhythm develop in older adults which can cause changes in the timing of the sleep period. The amplitude of the circadian rhythm decreases with age. In turn, this reduction can increase the frequency of night time awakenings and the severity of daytime sleepiness.[23] Nocturnal secretion of endogenous melatonin that also plays an important role in the sleep-wake cycle gradually decreases with age, possibly resulting in reduced sleep consolidation, duration and early morning awakenings.[23] Light exposure, social and activity rhythms has been demonstrated as the most powerful contributing to circadian entrainment in humans to the 24-h day.[24-25]

Primary Sleep Disorders and Elderly / Ageing

Mental disorders, medical conditions, medications or substance use are not counted as the primary sleep disorders. The most common primary sleep disorder in the elderly population is sleep-disordered breathing. Sleep-Disordered Breathing (SDB) describes a range of respiratory events that occur periodically during sleep, from simple snoring to complete cessation of air flow (Apnea) at the more severe end. Snoring is the sound caused by the vibration of the uvula and soft palate due to obstructed air movement during breathing while sleeping. It plays a role in the breathing cessation during anapnea event and approximately 50% of those who snore also have SDB.[26] The number of instances of apnea and hypopnea (Partial reduction in airflow) per hour of sleep is called the Apnea-Hypopnea Index (AHI). For SDB diagnosis,a patient has an AHI>5-10. Sleep-disordered breathing is more prevalent in the older population and even more common in elderly nursing home patients, especially among those who suffer from dementia.[27-30] Risk factors for SDB include: Age, gender and obesity. Other conditions that increasethe risk of developing SDB include, the use of sedating medications, alcohol consumption, family history, race, smoking and upper airway configuration. The main symptoms of SDB in the elderly population are snoring and EDS. The Sleep Heart Health Study found that the risk of developing cardiovascular disease, including coronary artery disease, congestive heart failure and stroke, is positively related to the severity of SDB.[31-33]

The most common and proven treatment for SDB is Continuous Positive Airway Pressure (CPAP). Patients with sleep apnea-hypopnea syndrome treated with CPAP have improved daytime function, alertness and quality of life.[34] Following CPAP treatment, older adults have increased neurobehavioral outcomes in

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cognitive function, memory and have more consolidated sleep. Moreover, a positive effect for CPAP user observed on the factors affecting the cardiac functions included vascular resistance, platelet coagulability and other aspects of cardiovascular health. Therefore, the SDB treatment needs to be considered as an important and urgent regardless of the age.[35-36]

Other important primary sleep disorders are Restless Legs Syndrome/Periodic Limb Movements in Sleep (RLS/PLMS) and Rapid Eye Movement Sleep-Behavior Disorder (RBD).

Restless Legs Syndrome/Periodic Limb Movements in Sleep

Restless Legs Syndrome (RLS) is an uncomfortable sensation in legs accompanied by urge to move that occurs in a relaxed awake or restful state and thus, is more common during the evening or at night. Movement provides temporary relief of this uncomfortable sensation. Other terms that are used to describe this sensation include, Creepy-crawly, electric current, crazylegs, worms moving, ants crawling or pain.[37] The development of secondary RLS is associated with renal failure, iron deficiency, frequent blood donation, Parkinson disease, neuropathy, as well as pregnancy. Generally, these medical conditions are more frequently complicated in patient with RLS than in healthy controls.[38] Periodic Limb Movements in Sleep (PLMS) are characterized by clusters of repetitive leg jerks or kicks causing brief arousal and/or awakening occurring approximately every 20-40 sec over the course of a night during sleep. PLMS is diagnosed with an overnight sleep recording (Polysomnogram) which shows patients having at least 5 leg jerks per hour of sleep associated with arousal. It is often related to RLS and in the absence of RLS, there may belittle clinical significance to PLMS. The prevalence of both RLS and PLMS increases significantly with age.[39] The recommended treatments for RLS/PLMS are dopamine agonists for all age groups.[40]

Rapid Eye Movement Sleep-Behavior Disorder (RBD)

RBD is a condition in which the skeletal muscle atonia normally found in Rapid Eye Movement (REM) sleep is absent. The patient's uncontrolled movements like kicking, punching, running and/or yelling are found in sleep and sometimes it can be aggressive and/or violent and might result in injuries either to the patient himself and/or the patient's bed partner. The etiology of chronic RBD is currently unknown, some data suggest that RBD may be the first manifestation and/or indication of a neurodegenerative disease.[41]

Study showed that 50% of those diagnosed with RBD has developed Parkinson's diseaseor Multiple System Atrophy within 3-4 years.[42]

Among the common problems related to aging is sleep quality. Sleep disturbances that are frequently seen in people with neurologic disorders place significant stress on the functional status, changes in cognition and mood and behavioral disruptions. In addition, sleep-disordered breathing is a common manifestation higher in older compared to middle- aged adults resulting in an increased burden for families and caregivers associated with increases in overall health care costs. Careful health assessment in an individual with sleep disorders can improve the overall sleep problems for elderly in this population.

Table I Some Wake-Promoting Agents[43]

MEDICATION	DOSE (MG)	COMMON SIDE EFFECTS	SERIOUS SIDE EFFECTS	CONTRA INDICATIONS AND PRECAUTIONS
Amphetamine/ dextroamphetamine IR (Adderall)	5-60	Weight loss headache, insomnia, tremor, addominal pain, anorexia.	Cardiomyopathy, chest pain, MI irregular heart rate immune	Advanced arteriosclerosis,
Dextroamphetamine	5-60	xerostomia, euphoria, nervous, restlessness	hypersensitivity reaction, CVA, CNS stimulation, psychotic disorder with prolonged use, sudden death,	hyperthyroidism, severe hypertension
Methylphenidate hydrochloride (Ritalin, Concerta)	10-50	Loss of appetite, abnormal behavior, restlessness	Hypertension (Frequent) tachyarrhythmia (Frequent) thrombocytopenia, hallucinations	H/O drug dependence or alcoholism. Pts taking MAOIs and pts with glaucoma, motor tics, Touretre's syndrome
Modafinil (Provigil)	200-800	Headache, nausea anxiety nervousness, insomnia, dizziness	Hypersensitivity syndrome, Stevens-Johnson syndrome, hypertension	Angioedema, hypersensitivity, anaphylactoid reaction

Avg: Average, CNS: Central Nervous System, CVA: Cerebrovascular Accident, MAO: Monoamine Oxidase, MAOI: Monoamine Oxidase Inhibitor, MI: Myocardial Infarction.

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Talbe II Some Hypnotic Drugs Used in the Treatment of Insomnia[44]

DRUG TYPE	MEDICATION	DOSE (MG)	SIDE EFFECTS	CONTRA INDICATIONS AND PRECAUTIONS
Benzodiazepine Hypnotics	Nitrazepam (Alodorm)	5-10	Drowsiness, dizziness, visual disturbance, hypersensitivity reactions, G I disturbance, urinary retention, dependency	Acutepulmonary insufficiency, respiratory depression, chronic psychosis
	Temazepam (Restoril)	15-30		
Nonbenzodiazepine Hypnotics	Zolpidem (Ambien)	5-10 (Age>65 yrs)	Daytime drowsiness, dizziness, vertigo, nightmare, confusion,	History of drug or alcohol use, tolerance, amnesia,
	Zopiclone (Imovane)	3.75 (Age >65 yrs)	tremor, unsteady gait	psychiatric reations
Nonbypnotics Sometimes Used to Aid Sleep	Clonazepam (Klonopm)	0.5-3	Muscle hypotoma, coordination disturbance, mental change.	Respiratory depression Acute pulmonary insufficiency
	Diazepam (Valium)			

Table III Other Drugs Used to Treat Insomnia [44]

Drug	Drug Type	Dose (Mg)	Side Effects	Contra Indications and Precautions
Melatonin	Momone Ethanolamine	3-6	Headach,depression	Autoimmune diseases
Diphenhydramine	antihistanine	50-75	Drowsiness, dryness of mouth & skin	Alcohol & other CNS depressants
Gabapentin	Anticonvulsant	900	Fatigue, weight gain,ataxia	drug

CONCLUSION

In conclusion, some evidence indicates that sleep need is reduced in older adults, including that older adults innately get less sleep, show less intense rebound sleep following deprivation, report less subjective sleepiness under sleep restriction conditions, and suffer a smaller increase in lapses of attention after sleep deprivation and restriction. However, alternative explanations of these findings leave open the possibility that sleep need remains high while sleep-generating capacity is impaired, for which there is now significant supportive empirical data. While there remains no complete consensus surrounding this debate, the current evidence appears to most parsimoniously support the hypothesis that older adults do not have a reduced sleep need, but rather, an impaired ability to register and/or generate that unmet sleep need.

RECOMMENDATION

In elderly / ageing patients sleep disorders occur at a higher frequency but may be difficult to assess. Residing in a long-term care facility are associated with increased depression which impacts sleep and environmental factors in long-term care facilities may additionally disrupt sleep. Interventions tailored to these challenges enhance effectiveness, including working with the patient's caregiver, installing bright room lighting and encouraging engagement in exercise and social activities offered by the facili facility.

DISCLOSURE

The author declared no competing interests.

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