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Original article

Insomnia in the elderly—A hospital-based study from North India

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ABSTRACT

Background/Purpose: Insomnia affects the elderly population significantly. The Indian elderly population is growing rapidly and the epidemiology of insomnia needs to be studied in detail in this group.
Methods: An observational study was carried out using a standard questionnaire on 304 male and 200 female Indian elderly patients presenting to the geriatric clinic of the Sir Sunderlal Hospital of the Institute of Medical Sciences, Banaras Hindu University, to study the prevalence and nature of insomnia in this population. The mean age of the study group was 66.47 (±6.855) years. The distribution of insomnia in the various groups (based on sex, occupation, residence, habit-forming substance use, depression) was compared using the Chi-square test with SPSS version 16.0.
Results: Insomnia was present in 32% of the study population. A statistically significant association was found between increasing age and insomnia ($p = 0.035$) but no significant sex differences were appreciable ($p = 0.173$). Early insomnia was found to be the most common pattern of insomnia identified (39% of total affected). Most of the cases were of chronic insomnia (89.45%) and associated with some comorbidity (100%). Cardiovascular diseases were the most common comorbidity (27.3% of patients with insomnia). Further, positive and statistically significant correlation was found between insomnia and the place of living ($p = 0.034$), habit-forming substance use ($p = 0.045$) and depression ($p < 0.001$).
Conclusion: The nature and attributes of insomnia in the Indian elderly are identified by this study. The scope for cause-finding studies is highlighted and points regarding adequate intervention are suggested.

1. Introduction

Insomnia is the complaint of inadequate sleep. The International Classification of Sleep Disorders, Second Edition (ICSD-2; 2005) defines insomnia as a complaint of difficulty initiating sleep, difficulty maintaining sleep, or waking up too early, or sleep that is chronically nonrestorative or poor in quality.[1] Insomnia is classified according to the nature of sleep disruption into sleep onset, sleep maintenance, sleep offset insomnia, and nonrestorative sleep and on the basis of the duration of the complaint into transient, short-term, and long-term/chronic insomnia. Insomnia lasting for >3 weeks is said to be chronic.[2] Many patients with chronic insomnia have no clear or single identifiable underlying cause for their difficulties with sleep. These cases come under the umbrella of primary insomnia.[3] Complaints about sleep disturbances increase steadily with age. It has been estimated that sleep disturbances affect >50% of community-dwelling individuals aged >65 years as well as an estimated two-thirds of institutionalized elderly persons. In institutionalized elderly, sleep becomes even more disturbed and fragmented than in community-dwelling older adults.[4] The consequences of poor sleep quality may include cognitive impairment, daytime sleepiness, and reduced quality of life.[5] In addition to affecting the quality of life in the aged, problems with sleep have been associated with increased risk of nursing home placement and an increased mortality.[6] The annual incidence of insomnia in those aged 65 years or older is approximately 5%. There are many potential causes of disturbed or unrestful sleep in the elderly, including emotional stress, physiologic changes of aging including circadian rhythm disorders, psychosomatic disorders, adverse effects of medications, and serious underlying medical conditions.[7,8] Hence, a large section of the elderly population suffers from potentially reversible causes of insomnia. Foley et al[9] estimate that only 7% of the incident cases of insomnia in the elderly occur in the absence of one of these risk factors. Frequent association is found

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between insomnia and pain (arthritis, bursitis, paresthesias, myalgias, fibrositis), gastric problems (gastroesophageal reflux disease, peptic ulcers), respiratory complaints (asthma, chronic obstructive pulmonary disease, sleep apnea, intrinsic pulmonary disease, hypoxia), urologic complaints (prostatism, urologic dysfunction), and nocturnal myoclonus (restless legs syndrome, periodic limb movement disorder).

The Indian elderly population is growing at a rapid pace because of improvement in the standard of general medical care. Given the growing evidence of a relationship between sleep and health, identification of insomnia could lead to improved management of common age-related chronic illnesses and enhanced quality of life of elderly patients. Mazzotti et al,[10] as part of the 10/66 Dementia Study Group, showed the prevalence of sleep disorders in the South Indian geriatric population aged >65 years to be 37.7%. Not much work has been done in the North Indian population in this regard. The findings of the 10/66 study group cannot be generalized to the whole of India because of significant ethnic and racial variations. This study aims to highlight the scenario in the north Indian elderly with respect to insomnia and to find correlations between insomnia and various population attributes such as sex, literacy/education, occupation, and place of residence as each of these might be determinants of a person's sleep habits on account of their influence on lifestyle, nutrition, and access to health care. Because depression in the elderly is a major factor in determining quality of life, this study analyzed the relation between depression and insomnia. Finally, the study is likely to lay the foundation for more elaborate cause-finding studies and laboratory research on sleep disorders.

2. Methods

An observational study was carried out at Sir Sunderlal Hospital, Varanasi, India from June 2009 to May 2011. Cases were taken from elderly patients (>60 years age) with different medical conditions attending the geriatric clinic for the first time. Patients not consenting to the study, those suffering from some acute illness or requiring hospitalization, and those unable to participate in the study because of other physical limitations such as speech or hearing impairment or severe dementia were excluded from the study. There were 1084 patients who were assessed for eligibility. This was the total number of newly registered geriatric outpatients during the period of study. Three hundred patients did not give consent. Two hundred and eighty patients were excluded because they did not fulfill the inclusion criteria or had one or more of the exclusion points: 30 were between 55–60 years age, 221 required hospitalization or were suffering from some acute illness, and 29 had severe dementia to the extent that meaningful interview was not possible. The study thus involved 304 male and 200 female patients. General information was collected, including name, age, sex, socioeconomic status, educational status, marital status, and place of living using a predecided standard questionnaire. The questionnaire was filled by the resident physician posted in the geriatric unit on the basis of a verbal interview of the patient in the patient's local dialect. All patients were interviewed by the same interviewer over the study period. Hence, interviewer standardization was not deemed necessary. Patients were segregated into age groups using 5-year groups and into various socioeconomic groups based on the modified Prasad classification proposed for the year 2004[11,12] (Table 1). Furthermore, categories I and II, III and IV, and V and VI in the classification scheme were combined to form high, middle, and low socioeconomic groups. Habit-forming substance use was defined as the almost daily consumption of tobacco by smoking or chewing irrespective of the quantity or the daily consumption of alcohol. The short form of the Geriatric Depression Scale (15 items) was used for classifying the participants based on the level of depression.[13] This was administered in translated form in the patient's local dialect.

Table 1
Proposed Indian social classification for 2004.

Social class	Per capita monthly income limits (Rupees: 1 Indian Rupee = 0.016 $)		
	Prasad (1970)	Suggested modification (2004)	
I. Upper high	≥100	≥10,000	High
II. High	50–99	5000–9999	
III. Upper middle	30–49	3000–4999	Middle
IV. Lower middle	15–29	1500–2999	
V. Poor	15	500–1499	Low
VI. Very poor or below poverty line (BPL)		<500	

Note. From "Social classification: The need to update in the present scenario" by A.K. Agarwal, 2008, *Indian J Community Med*, *33*, p. 50–1. Copyright 2008, *Indian Journal of Community Medicine.* Reproduced with permission.

A National Institutes of Health consensus statement on sleep disorders protocol was used for screening the patients.[14] This protocol involved asking the patients the following questions: (1) "Are they satisfied with their sleep?"; (2) "Does sleep or fatigue interfere with activities?"; and (3) "Does their bed partner or another person notice unusual behavior (e.g., snoring, interrupted breathing, leg movements) in them during sleep?".

The protocol was administered to the patients in translated form in the local language. It needs to be emphasized that there are no translated versions of standardized geriatric sleep assessment measures such as the Pittsburg Sleep Quality Index available for use in the Indian population.[15] The patients suspected to have sleep disorders were asked about the history of sleep pattern, medications used, behavior pattern/sleep environment, and relation to current disease. The data acquired thus was recorded in predesigned case report form. The diagnostic evaluation for comorbidities involved a detailed history and physical examination and routine laboratory workup comprising blood counts, a hepatic and renal panel, urinalysis, an electrocardiogram, and other relevant investigations.

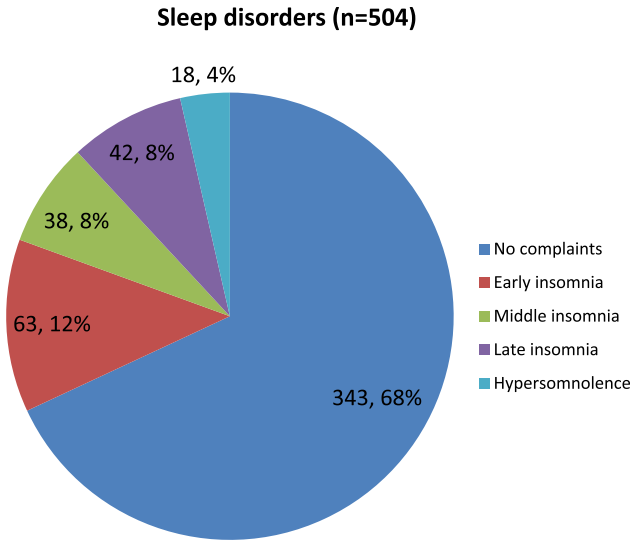

Fig. 1. Prevalence of insomnia in the North Indian geriatric study population (*N*, %).