ORIGINAL ARTICLE

Subjective sleep characteristics in elderly subjects- An analysis of 111 cases

S. Ramnathan Iyer*, Revati R. Iyer**

*Consultant Physician and Consultant Sleep Medicine, **Consultant Gynaecologist and Obstetrician; Ambika Clinic, A/224, Kasturi Plaza, Manpada Road,Dombivli (East),Dist. Thane; Dr.L.H.Hiranandani Hospital, Powai, Mumbai; Asian Institute of Medical Sciences,Dombivli (East) Dist Thane; Konkan Railway Corporation; Platinum Hospitals, Mulund (W), Mumbai; Zynova Heart Hospital, Ghatkopar(W),Mumbai.

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Introduction

Sleep is a basic biologic function and is essential for physical, mental and emotional well being. Good sleep improves immunity. Sleep changes with normal ageing and in many pathological states. Ageing is subject to semantic confusion. The progressive constriction of homeostatic reserve of every organ system – a process termed as homeostenosis is a major characteristic of ageing. Elderly subjects are prone to sleep disorders. The sleep changes both subjectively and polysomnographically with ageing. Estimates suggest that about 50% of elderly Americans have chronic difficulties with their sleep.[1]

Elderly subjects often suffer from sleep problems. Life style too has its own effects. The complaints are so subjective that it is difficult to draw distinctions. What is normal for one subject may be perceived as abnormal for another. Sleep architecture changes with advancing age and older subjects have disturbed sleep patterns. Evaluation of sleep complaints is important since sleep disorders themselves can be responsible for cardiovascular disorders, metabolic aberrations and aggravation of existing diseases/disorders. There is paucity of data on sleep in the elderly in this country and therefore the present work.

Address for correspondence
Dr. S. Ramnathan Iyer
303,Shree Dhanashree CHS Ltd.
Veer Savarkar Road,
Dombivli (East), Dist. Thane - 421 201.
E mail-sramiyer@gmail.com

Materials and Methods

Elderly subjects attending Ambika Clinic, Dombivili and Asian Institute of Medical Sciences between 29.6.2005 to 31.12.2009 were taken up for study. The subjects consisted of patients and relatives of patients who wanted to get their sleep complaints addressed after reading sleep awareness literature provided in the clinic/hospital. A total of 111 subjects were included in the study consisting of 75 (67.6%) males and 36 (32.4%) females. The examination was divided into three steps. First step was to collect demographic information.(age, sex, body weight, height in cms, BMI), (Table 1). Second step was a detailed sleep history obtained both from the patient and the subject who shares his/her bedroom. Note was made of the average duration of sleep of all the subjects (Table 2). Sleep history covered two aspects. (A) Nocturnal symptoms- sleep and wake times, jerking in sleep, bruxism, drooling, somniloquy, nocturia, snoring including grade of snoring. Nocturia was seen in 79 (71%) of the subjects - (grade I-only slightly louder than heavy breathing, grade II about as loud as mumbling and talking, grade III louder than talking, grade IV extremely loud – can be heard through the closed door) (Table 3).(B).Daytime symptoms- daytime sleepiness which was graded by the Epworth Sleepiness Scale (ESS) (Table 4). The modifications made in the ESS scale to suit to the Indian life style were(i) in addition to sleeping in car sleeping in bus and short distance train journey which is common in Mumbai (suburban local train) was enquired into. Missing and overshooting alighting station due to sleepiness was readily understood. (ii) sleepiness among housewives was enquired about. Accidents in

kitchen like spilling over of boiling milk happened due to sleepiness was enquired into. Headache, unrefreshed sleep were also enquired. Sleep times of both night and daytime were added to estimate the total duration of sleep.

Table 1: showing distribution of BMI

BMI	No of Subjects	Percentage
18.5-24.9	46	41.4
25-29.9	45	40.5
30-39.9	18	16.2
>40	02	02
Total No	111	

Table 2: showing the duration of sleep

Nocturnal duration of sleep	No of Subjects	Percentage
3-4 hrs	8	7.2
4-5 hrs	3	2.7
5-6 hrs	8	7.2
6-7 hrs	29	26.1
7-8 hrs	30	27
> 8 hrs	33	24.7

Table 3: No of Subjects observed to have snoring and their grades

Total no of cases	snoring		Males	Females
111	77=69.5	%	58=75.3	19=24.7

Grade of Snoring	No of Subjects	Percentage
Grade I	3	4
Grade II	17	22
Grade III	47	61
Grade IV	10	13
Total No	77	**100**

Discussion

An analysis of the 111 subjects is presented which showed a male predominance. Several elderly subjects who took appointment for a sleep consultation never returned possibly due to the understanding that sleep complaints are all a part of ageing process and they are here to stay.

Approximately 26.1 % had a total sleep duration of 6-7 hours while approximately 17 % had a sleep duration of 6 hours of less. It is be noted that there is redistribution of sleep in the elderly. It is known that advanced sleep phase syndrome is common in elderly subjects. However it was observed that the elderly were forced to sleep late since their loved ones came home late from their place of work. Watching late night television often postponed

Table 4: Total no of subjects complaining of daytime sleepiness-(96) and their ESS score

No of Subjects	ESS
26	3
5	5
15	6
3	7
8	8
10	9
2	10
11	11
6	12
4	14
3	15
1	17
2	18
1	20

their sleep further. All these resulted in sleep deprivation. Further the elderly usually got up early for performing religious activities and early morning walks. What may be termed as "rebound sleep deprivation". Chronic sleep deprivation has its adverse impact on cardiovascular and metabolic systems. Thirty subjects experienced daytime sleepiness scoring more than 10 on the Epworth Sleepiness Scale. Seventeen subjects had a score of more than 12 indicating pathological sleepiness in them. Daytime sleepiness is a significant risk factor for fall in elderly subjects even while sitting on a chair. Also it has an adverse effect on activities of daily living. In one study the prevalence of sleepiness was found to vary between 0.5% to 5% of the general American population[2], through [a] higher prevalence of about 10% has also been recorded.[3]

Nocturia

Nocturia is often overlooked in clinical practice. It often has been associated with urological illnesses like urinary tract infection, decreased capacity of bladder, decreased urethral resistance in women, prostatic enlargement in men and diabetes, Sleep apnea can also cause nocturia. In fact the timing of nocturia can be at fixed times if the sleep time and wake times are fixed. Nocturia can be very disturbing at times acting as an alarm clock. The mechanism of nocturia in patients suffering from obstructive sleep apnea appears to be the release of atrial natriuretic peptide and increase in detrusor pressure secondary to negative intrathoracic pressures. In our

study we found 58% of subjects complained of nocturia. All of them also had snoring of different intensities. Seven subjects who did not complain of nocturia led a very disciplined life style. However they were awakened from sleep early morning for urination which matched their wake times and gave history of drinking plenty of water at night with a view to detoxify the body. OSA patients often have dry mouths compelling them to drink water at night. Nocturia can cause sleep fragmentation and vice versa. Nocturia therefore can be responsible for daytime fatigue and sleepiness. Middlekoop and workers[4] listed nocturia as by far the most common explanation offered by elderly people as to the cause of inability to stay asleep.

Snoring

Snoring is a sound produced by vibration of the structures of the upper airway. Snoring is commonly observed but estimates of prevalence vary widely in different populations. The prevalence of snoring varies between as low as 5 % in males and 2-3 % in females[5] to 86 % in males and 57% in women.[6] Suri et al[7] reported prevalence of snoring in adult population of Delhi as 39.5% (49.5 % in males and 29 % in females.)The prevalence of snoring in our study was found to be 69.3% (75.3% being males and 24.7% females). Majority of snorers were grade III. Snoring is a prominent symptom of sleep disordered breathing (SDB). Also it is known that SDB is a risk factor for the development of hypertension, ischemic heart disease, diabetes, stroke and loss of memory. It has been reported that snoring predicts the onset of diabetes.[8,9] Also the prevalence of type 2 diabetes increases as age advances.[10] Disorders like hypertension, diabetes are frequently observed in the elderly thereby demanding evaluation of SDB in this segment of the population. Treatment of SDB must find a place in preventive and therapeutic segments of elderly care.

Conclusions

Data on the subjective characteristics of sleep in a limited number of elderly subjects is presented. Several complaints in sleep have been recorded in this study which would have escaped attention in routine histories and clinical examination of the elderly. Lack of awareness of sleep disorders in the society at large resulted in less number of subjects in the study. Analysis of sleep complaints in larger number of elderly subjects along with polysomnography would help to determine the magnitude of sleep problems in the elderly. Management of sleep disorders would pave the way for a better quality of life in the elderly. A close association of sleep medicine consultants and geriatricians is called for.

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