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Assessment of Sleep Habits and Quality of Sleep among Elderly Residing In Rural Area of Dehradun: A Community-Based Cross-Sectional Survey

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ABSTRACT

Context: Elderly have increased frequency of awakenings of longer durations, lower sleep efficiency, early bedtimes and wake times as compared to younger subjects. The study was conducted to assess the quality of sleep using Pittsburgh Sleep Quality Index (PSQI), sleeping habits and changing sleep pattern among elderly and their associated factors.

Material and Methods: A cross-sectional study was conducted for a period of 3 months among all the elderly population residing in village Thano situated in Raipur block of district Dehradun, Uttarakhand. A total of 96 elderly were surveyed**.** Data was collected on sociodemographic characters of elderly as well as questions on Quality of sleep was asked based on PSQI questionnaire. Data was collected using Epi-collect5 application on phone. Data was analysed and presented utilizing appropriate statistical methods**.**

Results: Among the 96 elderly, 57.3% of the participants were females and 40.6% were from 60-69-year age group. The mean PSQI score was 5.6±1.9. Sleep quality was poor among females, smokers, widow and those with no physical activity. With advancing age sleep quality came out to be significantly poor.

Conclusions: Sleep disturbances are commonly seen among the elderly. Treatment of primary sleep problems can improve the quality of life.

Key-words: Sleep disturbances, Elderly, PSQI

INTRODUCTION

Global population of elderly aged 65 and over increased to 55 million in only 3 years from 2012 to 2015. The proportion of the older population reached 8.5% of the total population. In India, the population of the elderly was 9.30% of the total population in 2016 and is expected to rise to 10.70% in the year 2021.[1]

Individuals aged 60 years and above are considered elderly in India. They are considered as disadvantaged population and are ignored in most of the families. They need special attention and care due to increasing health issues. This has led to the focus of health care professionals and researchers from different fields to pay attention towards elderly in developing countries.[2]

Sleep is an important physiological process which is essential in maintaining the body's circadian rhythm. Sleep disturbances increase with ageing due to various psychological and biological factors. Elderly ave initial insomnia, wake up earlier than usual, have higher time spent in bed, have night time awakenings, nap more, and have decreased total sleep as compared to the younger adults.

Proper and timely sleep is necessary for proper

human body functions. Its deficiency can lead to the weakening of immunological functions, poor general well-being and psychiatric illnesses. Excessive or insufficient sleep among the elderly can be considered as a marker for the poor quality of life and health status.[3]

The mental and physical status is also influenced by the quality of sleep. Inability to sleep can have a negative impact on the health of elderly which can lead to attention problems, slowed response time, difficulty in concentration, forgetfulness, falls, decreased performance in daily life activities, higher rates of depression and anxiety.[4]

To reduce the harmful consequences caused by poor sleep quality, it is essential to understand the burden and socio-demographic and clinical determinants of sleep disorder. As a result, this study was conducted to find out the quality of sleep among the elderly residing in rural population and factors related to it.

Subjects and Methods: A community-based cross-sectional study was conducted among the elderly (60 years and above) residing in village Thano of Raipur block, district Dehradun, Uttarakhand. The study was conducted for a period of three months i.e. October to December 2019. Sample size was calculated taking the prevalence of 47.3% [5] with 10% of absolute precision and 95% of confidence level. Finally, sample size came out to be 96. House to house survey was done until the desired sample size was completed. All the elderly residing in one household was taken and were interviewed separately.

Inclusion criteria: Elderly who were 60 years and above and gave consent to participate in the study were included in the study.

Exclusion criteria: Elderly who had severe problem of hearing, speech and vision, mental retardation and other psychiatric illnesses; who showed hostile behaviour and did not give consent to participate in the study; and who were not present at home at the time of the visit were excluded from the study.

Study method: Data was collected on a predesigned and pretested semi-structured questionnaire. Face to face interview was done to collect all necessary information on socio-demographic profile (age, sex, literacy rate, marital status), behavioural factors (smoking and alcohol addiction, physically active) and measures of sleep habit and sleep quality.

Study tool: Pittsburgh Sleep Quality Index (PSQI). It is an effective instrument used to measure the quality and patterns of sleep in adults. It differentiates poor from good sleep quality by measuring seven components: subjective sleep quality (C1), sleep latency (C2), sleep duration (C3), habitual sleep efficiency (C4), sleep disturbances (C5), use of sleeping medications (C6) and daytime dysfunction (C7) over the last month. Each component has a range of 0-3 points. A score of 0 indicates no difficulty, while a score of 3 indicates severe difficulty. The seven components are added to yield one global score, with a range of 0-21 points, 0 indicating no difficulty and 21 indicating severe difficulty. A total score of 5 or greater is indicative of poor sleep quality.[7]

Data analysis: The data was collected using Epicollect5 by incorporating the questionnaire in the software. Excel sheet was prepared and data was then analysed using SPSS 23.0 version. Chi-square test was applied and p value < 0.05 was considered as significant. Multivariate analysis was done to find the independent risk factors for poor sleep quality among elderly.

Ethical clearance: The study was ethically approved by ethical committee of institute. The protocol and importance of the study was explained to the participants before recruitment into the study, followed by a signed informed consent by them.

RESULTS

Table 1 depicts that out of 96, 57.3% were females and 42.7% males. A total of 40.6% belonged to age group 60-69 years, whereas 37.5% to age group 70-79 and 21.9% to age group ≥ 80 years.

Table 1: Sociodemographic and behavioural characteristics of study participants (N=96)

Sociodemographic Variables	Frequency (%)
Age (years)	
60-69	39 (40.6)
70-79	36 (37.5)
>80	21 (21.9)
Gender	
Male	41 (42.7)
Female	55 (57.3)
Marital status	
Married	76 (79.1)
Widowed/widower	20 (20.8)
Education attainment	
No formal schooling	39 (40.6)
Primary school	28 (29.2)
Secondary school	15 (15.6)
Senior secondary school	14 (14.6)
Physical activity	
Regularly	70 (72.9)
Irregularly	26 (27.1)
Smoking status	
Smokers	46 (47.9)
Non-Smokers	50 (52)
Alcohol consumption	
Alcoholic	39 (40.6)
Non-Alcoholic	57 (59.3)

Table 2: Distribution of respondents according to components of Pittsburgh Sleep Quality Index

Components of PSQI	Frequency (N=96)(%)
Subjective Sleep Quality	
Very Good	31 (32.2)
Fairly Good	49 (51)
Fairly Bad	12 (12.5)
Very Bad	4 (4.1)
Sleep Latency (in minutes)	
<15 minutes	23 (23.9)
16-30 minutes	32 (33.3)
31-60 minutes	12 (12.5)
>60 minutes	29 (30.2)
Sleep Duration (in hours)	
>7 hours	7 (7.2)
6-7 hours	53 (55.2)
5-6 hours	25 (26)
<5 hours	11 (11.4)
Habitual Sleep Efficiency	
>85%	83 (86.4)
75-84%	12 (12.5)
65-74%	1 (1)
<65%	0 (0)
Use of Sleep Medication	
Not during the past month	94 (97.9)
Less than once a week	0 (0)
Once or twice a week	0 (0)
Three or more time a week	2 (2)
Day Time Dysfunction	
Not difficult	69 (71.8)
Little difficult	15 (15.6)
Difficult	7 (7.2)
Very difficult	5 (5.2)
Sleep Disturbances	
Not in last month	2 (2)
Once in a week	81 (84.3)
1-2 times a week	13 (13.5)
More than thrice a week	0 (0)
Total PSQI score of Study Participants (N=96)	
Less than 5	34 (35.4)
5 or more than 5	62 (64.5)

Table 3: Association between sleep quality (PSQI) and socio-demographic variables

Variable	Good sleep (%)	Poor sleep (%)	p-value
Age Group			
60-69	25 (64)	14(36)	0.000
70-79	6 (17)	30(83)	
≥80	3(14)	18(86)	
Gender			
Male	20 (49)	21 (51)	0.018
Female	14 (25)	41 (75)	
Marital Status			
Married	32(42)	44(58)	0.008
Widow	2(10)	18(90)	
Physical Activity			
Regularly	31(44.3)	39(55.7)	0.003
Irregularly	3(11.5)	23(88.5)	
Smoking Status			0.000
Smoker	6(13)	40(87)	
Non-Smoker	28(56)	22(44)	
Alcohol Consumption			
Alcoholic	12(31)	27(69)	0.431
Non-alcoholic	22(39)	35(61)	

A total of 20.8% of the participants were widow and 40.6% of the participants had no formal schooling.

73.9% of elderly were involved in some kind of physical activity regularly. 47.9% of study participants were smoker and 40.6% were alcoholic.

Average time of going to bed was 9:30 pm with standard deviation (SD) of 1.1 hours and average wake up time in the morning was 5:15 am (SD = 1.0 hours). Average bedtime was more (8:33-5:15am) for elderly with age group (≥80 years) than of age group 60-69 years (10:11-5:15am). The reason was early going to bed by elderly (≥80 years) as compared to others (60-69 years). However, morning rising time was same for both. Average night sleep duration was 6.0 hours (SD = 1.2). Average sleep-onset latency was 40.6 minutes (SD = 26.8) and was tended to increase with age.

The average Global PSQI score for the age group 60-69 years was 4.5±1.8 which was graded as "good score" whereas with increasing age the score became high and graded as "poor score" in-the age group 70-79 years as 6.3±1.7 and for ≥80 years as 6.6±1.3. The GPSQI score was poor in both males and females being 5.4±1.7 and 5.8±1.6, respectively.

Table 2 shows assessment of seven components of PSQI. It showed that 51% of the elderly had Fairly good subjective sleep quality, 33.3% had a sleep latency of 16-30 minutes and 55.2% of the elderly had a sleep duration of 6-7 hours. Habitual Sleep Efficiency was >85% for 86.4% of the participants. Only 2% of the participants had used some sleep medication in the past month. Only 5.2% had highest level of difficulty in day time dysfunction. The mean GPSQI came out to be 5.6±1.9. The overall score was good i.e. > 5 in 64.6% of study participants whereas it was < 5 in just 35.4% of study participants.

Table 3 shows risk factors for poor quality of sleep. Higher age, females, married, smokers and elderly who did not do physical activity regularly were found to have higher odds of having poor sleep quality. Multivariate logistic regression analysis documented, females and smokers as independent risk factors for poor quality sleep.

DISCUSSION

Elderly is a growing population. Indian estimates to have 9.30% of elderly in 2016. Sleep is one of the important physiological processes of body. The necessary amount of sleep can help elderly to remain active and focused, maintaining physical as well as mental health. Our findings from the study showed that the mean PSQI score was high and ac

Table 4: Multivariate analysis of sleep quality (PSQI) and associated factors

Associated factors	aOR (95% CI)	p-value
Age groups		
70-79 years	1.11 (0.74-12.25)	0.12
≥80 years	1.07 (0.55-15.58)	0.20
Widow	0.65 (0.14-1.95)	0.32
Irregular physical activity	1.22 (0.56-20.68)	0.18
Smokers	1.76 (1.47-21.75)	0.01
Female	1.51 (1.19-17.23)	0.02

aOR= Adjusted Odds Ratio; CI= Confidence Interval

cording to PSQI grading, it denotes poor quality of sleep. More than half of the elderly in this study reported poor sleep quality. This proportion of poor quality sleep among elderly is slightly lower (64.5%) than the proportion docuemted by a study conducted in Kerala (72.4%)[4] among elderly from rural area. However, it was higher than other studies done on healthy elderly population from different countries (32-47%)[5,7,8]. This could be due to differences in socio-demographic profile, geographic variations, morbidity pattern and history of medications among elderly.

Although two third of elderly had poor quality of sleep as per the PSQI score, the average subjective sleep quality was fairly good, most of the participants were satisfied with their sleep.

Mean PSQI score showed increased trends with age which indicates that with increasing age sleep quality gets poorer and it was statistically significant. This finding is congruent with the study done in Malaysia.[5] Our study documents that females were more prone to sleep disturbances and most of the components of the sleep scale were poor among them. On the contrary a study done in Turkey showed no association of poor sleep quality with age and sex.[9]

Along with female gender, low physical activity also had a significant effect on sleep. The reason could be more physical activity among men in the rural area where they were mostly involved in farming and other activities in fields whereas most of the women stayed at home.

In this study, there was significant association between poor sleep quality and marital status. Married elderly showed higher odds of poor sleep quality as compared to widow. The reason to this could be negative relationship or conflicts in marriage which acts as a stressor and trouble sleep.

Only 2% of the elderly in our study had used any medication for sleep induction in past one month as compared to 46% in America.[10] This difference can be due to the stigma related to sleeping pills of casuing addiction and also lack of awareness among elderly regarding quality sleep. They consider disturbed sleeping pattern a normal variation in sleep with aging.

Smoking was common in the study area, both among men and women, and had a significant effect in poor sleep quality. Some participants were also used to take alcohol occasionally but the relationship with poor sleep quality was not significant.

The results should be considered while keeping in mind certain limitations of this study. Although the study was done among elderly in rural population but the sample size was small as compared to other studies done in the same setting. The factors to find out association with poor sleep quality were less. The study design used was cross-sectional so cause and effect relationship cannot be determined. Elderly did not remember the exact time and duration of sleep.

CONCLUSION AND RECOMMENDATION

Among the elderly, sleep gets lighter and fragmented with age. However, very few healthy older people complain about their sleep problem. Many elderly people may not consider sleep disturbance to be a disorder and may not seek medical treatment. Lack of sleep also has an impact on existing chronic diseases such as diabetes, hypertension and other diseases. It is important to identify sleep disturbances in the elderly as early as possible and provide prompt treatment. This would enhance the quality and duration of sleep, and will improve the overall quality of life of elderly. There should be provision of elderly health clinics where sleep related problems should also be addressed.

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BOOK REVIEW

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Concise text Book of Adolescent Health

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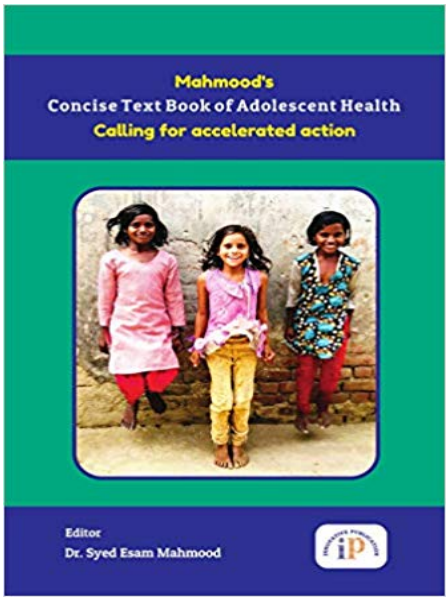

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The book entitled "Concise Textbook of Adolescent Health" edited by Professor Syed Esam Mahmood expands and deepens the understanding of adolescent health. This book is an essential guide for 10 to 19 years old, parents, teachers & counsellors. It provides information about the Health needs and problems of adolescents, National programs and recent initiatives related to Adolescent health in India and recommendations for accelerating the health of adolescents. Important aspects like Mental Health, Role of Parental Concern in Adolescent Health and Helplines for adolescents are included. Topics like "Helplines for Adolescent in India" and "Frequently asked Questions on Adolescent Health" are very novel. Simple and self-explanatory illustrations, tables and flow charts have been used. Recent developments have been incorporated. This will serve as a book for self-directed learning for students and medical practitioners. Institutions elsewhere will be benefited by using this book as a part of Faculty Development Programme. This book is highly recommended for undergraduate and postgraduate medical, dental, public health as well as master's in social work students.

The book fulfils the long standing needs of adolescents, health professionals, health managers and policy makers.