Original Research Article

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20220696

Sleep quality and its associated factors among elderly population in a rural area of West Bengal

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Received: 31 December 2021 Accepted: 10 February 2022

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ABSTRACT

Background: The problems with sleep increases sharply with age and can have profound effects among the elderly. The present study was done to assess the prevalence of sleep quality and its associated risk factors among the elderly people in a rural area of West Bengal.

Methods: Cross-sectional study was done at Arkhali village, West Bengal, among 80 elderly individuals of 60 years and above age during February and March 2020. Face to Face interview was conducted using self - designed general socio-demographic questionnaire, Pittsburgh Sleep Quality Index (PSQI), 7 – Item General Anxiety Disorder (GAD) Scale and 5 – Item Geriatric Depression Scale (GDS). Chi-square test was done to test association using SPSS 20 software.

Results: The mean age of the respondents was 70.1 ± 6.9 years and majority (60%) were females. Prevalence of poor sleep quality (GPSQI \geq 5) was 75%. The mean GPSQI of the study was 8.33 ± 4.272 . Increasing age category (p=0.001), marital status (p=0.003), present living status (p=0.006), health problems (p=0.014), help for daily activities (p=0.030), mosquitoes disturbing sleep (p=0.001), generalised anxiety (p=0.001) and Geriatric depression (p=0.001) had a significant association with poor sleep quality.

Conclusions: Healthcare providers should regularly provide sleep health education, encourage participation in family activities, sharing of ideas and making of compromises within the family.

Keywords: Anxiety, Depression, Elderly, Prevalence, Sleep quality

INTRODUCTION

Ageing is a natural phenomenon. In India there are nearly 138 million elderly persons in 2021 and is further expected to increase by around 56 million in 2031. As age increases, the health problem among elderly also increases and its unavoidable. Elderly health issues are mostly ignored among the families which draws special attention towards the researchers to focus on elderly in developing countries. Sleep is very important for maintaining normal physiology. According to U.S National Sleep Foundation's recommendation, the average sleeping time for elderly ranges from 7 – 8 hours. Sleep problems are common as age advances and occur in over 50% of adults above 65 years and are more

prone for its consequences. Insomnia among elderly defined as difficulty in falling or staying asleep.²

Poor sleep quality is associated with serious effects on physical, mental, and social aspects of well-being. The difficulty to fall asleep, sleep fragmentation, maintaining sleep, very early wakening up, and day time sleeping are some changes noted in elderly people due to poor sleep quality. Poor sleep quality and sleep deprivation are also affects daily living activities, cognitive impairment in the elderly people and misuse of hypnotics.⁵

Insomnia and mental disorders like depression and anxiety have a bidirectional relationship. Elderly with insomnia have 23% increase in risk of developing

depression symptoms.⁶ In view of its consequences, poor sleep quality is a primary concern for health professionals. Any complaint of significantly disrupted night time sleep must be investigated and treated early. Hence, this study was conducted to assess the prevalence of sleep quality and its associated factors among elderly in rural area of West Bengal.

METHODS

A community based cross sectional study was done in Arkhali village, Amdanga Block of North 24 Parganas, West Bengal. This village and block was chosen to get maximum convenience for collecting data, as it is the field practice area of R.G. Kar Medical College, Department of Community Medicine. The study was conducted in the month of February and March 2020. Study population included elderly population who were above 60 years of age. Considering 72.4% prevalence of poor sleep quality among elderly from previous study 7 sample size was calculated using Z 1- α /22 x PQ/ E2. With 95% CI, 10% allowable error sample size was calculated to be 80.

The study tools used were pre tested, self-designed general socio-demographic questionnaire and descriptive variables pertaining to sleep which was modified from George et al study, Pittsburg Sleep Quality Index (PSOI). Geriatric Depression Score (GDS 5 item), General Anxiety Disorder Scale (GAD 7 item).7 Pittsburg sleep quality index (PQSI) is an instrument that measures subjective sleep quality and its pattern. The Pittsburgh Sleep Quality Index scale has been reported to be useful in the screen of the total sleep quality of elderly population.⁸ This instrument measures seven components and thus differentiates poor from good sleep. The 7 components are subjective sleep quality, sleep latency, habitual sleep efficiency, sleep duration, use of sleep medication, sleep disturbances and daytime dysfunction over the last month. Scores are based on a 0 to 3 scale. The component scores are summed to produce a global score range of 0 to 21. A global sum of "5" or greater indicates poor sleep quality.

5-Item GDS is used as a screening tool for identifying depression in older adults. 9 It consists of five items and of

which two or more answers in bold are suggestive of depression.

The GAD-7 item scale is given a scoring of 0-3 for each questions, which deals with problems that have been bothered over the last 2 weeks.10 The total score is calculated and cut-off values are <5 denotes no anxiety, 5–9 mild, 10-14 moderate, and ≥ 15 denotes severe anxiety.

After obtaining the Institutional Ethical clearance, the researcher reached the centre of the village and the direction of the start of the research was decided by lottery method. Now in the selected direction, consecutive houses were approached by left hand thumb rule and all the elderly persons available in each household were interviewed face to face with the above questionnaire until the required number of sample from that village is met. Upon reaching the desired sample size of study subjects the sampling from that village was ceased. Medical records of study subjects were also reviewed. The study participants were briefed about the purpose of the study and their consent was taken before the start of the study. Confidentiality was duly considered.

Data were tabulated in Microsoft Excel (2013). Chi square test was performed using Statistical Package for Social Sciences (SPSS) 20.0 version software. (SPSS, Inc, Chicago, IL, USA).

RESULTS

Among 80 elderly people most of them were between the age group of 67 to 73 years (46.3%) and majority of them were females (60%), illiterate (91.3%). 5% of elderly were still working. 68.5% of the respondents were married and out of which 57.5% live with their children. Majority (93.8%) lived in their own houses. 82.5% had to toilet outside the house. 92.5% reported current health problems and 72.5% were on medications regularly. 5% of elderly reported history of treatment of mental illness. Only 15% were smokers and 18.8% were consuming alcohol. Only 15% needed help for activities of daily living.

Table 1: Distribution of study participants according to socio-demographic and health related characteristics (n=80).

Variables		Frequency (N)	Percentage (%)
Age (years)	< 66	26	32.5
	67-73	37	46.3
	> 74	17	21.3
Sex	Male	32	40
	Female	48	60
Literacy status	Literate	7	8.8
	lliterate	73	91.3

Continued.

Variables		Frequency (N)	Percentage (%)
Occupation	Retired	4	5
Occupation	Unemployed	76	95
Marital status	Married – Partner Alive	55	68.5
	Married – Partner Dead	25	31.3
	Alone	2	2.5
	Living with spouse	8	10
Present living status	With children	24	30
	With spouse and children	46	57.5
TT	Own	75	93.8
House ownership	Rented	5	6.3
Tailet less tion	Inside	14	17.5
Toilet location	Outside	66	82.5
Haalah mushlama	Present	74	92.5
Health problems	Not present	6	7.5
D 1 1' 1'	Yes	58	72.5
Regular medication use	No	22	27.5
g 1:	Yes	12	15
Smoking	No	68	85
A1 1 1	Yes	15	18.8
Alcohol	No	65	81.3
Dependence for daily	Yes	12	15
activities	No	68	85
D4	Yes	4	5
Past mental illness	No	76	95
T7'4 1 4 4 41	Death	2	2.5
Vital events past month	None	78	97.5
N/	Yes	70	87.5
Mosquitoes disturbing sleep	No	10	12.5
	Regular	3	3.8
Intoko of doon!!!!-	At times	8	10
Intake of sleeping pills	No	69	86.3
GAD 7	No Anxiety	41	51.2
	Mild Anxiety	27	33.8
	Moderate Anxiety	10	12.5
	Severe Anxiety	2	2.5
	No depression	53	66.3
GDS 5	Symptoms suggestive of depression	27	33.8
	Less than 5	20	25
Global PSQI (GPSQI) Score	5 or more	60	75

Table 2: Association between sleep quality (GPSQI) and socio-demographic variables, GAD-7 and GDS-5.

Variables		Sleep Quality (GPSQI)		Chi-square value	P value
		Good (%)	Poor (%)	value	
Age (Years)	< 66	13 (50)	13 (50)		0.001*
	67-73	4 (10.8)	33 (89.2)	13.130	
	> 74	3 (17.6)	14 (82.4)		
Marital status	Married – Partner Alive	19 (34.5)	36 (65.5)	0.522	0.003*
	Married – Partner Dead	1 (4)	24 (96)	8.533	
Present living status	Alone	1 (50)	1 (50)		
	Living with spouse	5 (62.5)	3 (37.5)		
	With children	1 (4.2)	23 (95.8)	12.483	0.006*
	With spouse and children	13 (28.3)	33 (71.7)		

Continued.

Variables		Sleep Quality (GPSQI)		Chi-square value	P value
Health problems	Present	16 (21.6)	58 (78.4)	6.006	0.014*
	Not present	4 (66.7)	2 (33.3)		
Dependence for daily activities	Yes	0 (0)	12 (100)	4.706	0.030*
	No	20 (29.4)	48 (70.6)		
Mosquitoes disturbing sleep	Yes	13 (18.6)	57 (81.4)	12.343	0.000*
	No	7 (70)	3 (30)		
GAD 7	No Anxiety	19 (46.3)	22 (53.7)	20.429	0.000*
	Anxiety present	1 (2.6)	38 (97.4)	20.429	
GDS 5	No depression	20 (37.7)	33 (62.3)		0.000*
	Symptoms suggestive of depression	0 (0)	27 (100)	13.585	

^{*} Significance considered<0.05

Majority (87.5%) reported mosquitoes affecting their sleep at night times. 3.8% elderly reported using sleeping pills regularly. As per GAD-7 item scoring, 51.2% had no anxiety while 2.5% had severe anxiety. With GDS-5 assessment, 33.8% of the respondents had symptoms suggestive of depression. Among the population 25% had PSQI value less than 5, which is suggestive of good sleep quality and whereas 75% had PSQI greater than or equal to 5, thus suggesting poor sleep quality. The mean GPSQI of the study was 8.33 ± 4.272 (Table 1).

Sleep quality was significantly associated (<0.05) with age group, marital status, present living status, health problems, help for daily activities, mosquitoes disturbing the sleep, GAD 7 item anxiety status, GDS 5 item depression status among elderly (Table 2).

DISCUSSION

This study aimed to assess the prevalence of sleep quality and its associated factors among elderly people. Prevalence of poor sleep quality was found to be high among the elderly (75%). In this study, the mean GPSQI was found to be 8.33±4.27. A study in West Bengal revealed prevalence of poor sleep quality among the elderly was 68.9% and mean GPSQI score was 8.59±5.35.11 A study in Kerala revealed prevalence of poor sleep quality among the elderly was 72.4% and mean GPSQI score was 8.04±4.59.7 This shows pattern of sleep quality is quite similar across the country. A study done by Wu et al. in Taipei reported 49% of the study participants had poor sleep quality and a PSQI of 6.3±4.40.12 A study done in Turkey 13 revealed a PSQI of 7.28±3.97. A study on sleep quality among elderly in rural Chiang Rai, Northern Thailand reported a poor sleep quality of 44%. 14 Mean T-PSQI global score was 5.68 ± 2.47. The difference in the mean GPSQI among India and other different countries may be due to lifestyle, social and cultural difference among the people.

The current study shows significant association between sleep quality and age category indicates that with increasing age, the sleep quality gets poorer. This study finding is very similar to studies conducted among elderly at Dehradun and Malaysia. ^{3,15}

The present study shows significant relationship between good sleep quality and marital status, present living status with spouse and thus, indicating that a companionship renders emotional and psychological stability. Similar to current findings, a study conducted at Karnataka reported that married people had better sleep quality compared to their single or widowed counterpart. On contrast to current findings, a study carried out at Dehradun showed that married elderly has higher odds of poor sleep quality as compared to widow. The reason could be negative relationship or conflicts in marriage which acts as a stressor and trouble sleep.

In current study the sleep quality was found to be significantly associated with health problems. The adding of health issues might put them in financial burden to the family which further affects their sleep. Findings are similar to study conducted at Malaysia where mean PSQI of those with chronic illness was higher indicating that chronic illness affected sleep.¹⁵

The present study findings revealed that there is significant association between dependence for doing daily activities and their sleep quality. This is due to the lack of any physical activities been involved and the dependency psychologically affecting their mental health. Similar finding are seen by the study done by Li et al., that disturbances in doing daily activities reduces the sleep quality.¹⁷

In current study, there was significant association between mosquitoes disturbing the sleep at night time and poor sleep quality. Due to rural set up place suitable for mosquitoes breeding and lack of knowledge about using protective against mosquitoes people sleep gets affected at night time. Evidence supporting association between sleep disturbances and mosquitoes is surprisingly scarce.

A significant positive association was found in current study between poor sleep quality and anxiety and depression status. Similar results were obtained from a study from Kerala.⁷ In another study among elderly, depression was one important factor to be associated with poor sleep quality, and thus considering the importance of mental health to overcome sleep related problems.¹²

Limitations

Some limitations faced by the researcher was difficulty in understanding the local language which was overcome with a translator. Recall bias is also to be duly considered due to their age factor.

CONCLUSION

The prevalence of poor sleep quality is much higher in the area of study. Also, the factors like age group, marital status, present living status, health problems, help for daily activities, mosquitoes disturbing the sleep, anxiety and depression also very much contribute to their sleep quality. The health care set - up should be strengthened through proper training to identify the sleep problems among the elderly in each village. The importance of sleep should be emphasized at regular intervals through the health care workers in the village. Engaging old age people in some recreational activities relieves their stress or depression. Proper counselling should also be provided to the family members to deal with elderly health problems and their mental health. Since significant association between sleep quality and psychological problems (anxiety and depression) has been noted in the study, questions on sleep quality should be routinely asked by clinicians or health workers as part of general health assessment of an elderly. Immediate professional help could help them recover from depression associated with ageing.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the Medical Officer in – charge of the Block PHC. Also the researcher would like to thank Department of Community Medicine R.G. Kar Medical College, Kolkata, for providing such an opportunity.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

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Cite this article as: Raja IA, Sardar JC. Sleep quality and its associated factors among elderly population in a rural area of West Bengal. Int J Community Med Public Health 2022;9:1360-5.