

Insomnia among Elderly People in a selected urban Community

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ABSTRACT

Background: Insomnia affects both physical and mental well-being of elderly people, also increasing risks of psychological problems such as depression and decreases quality of life. We assessed the proportion of elderly people with insomnia and associated factors in a selected community.

Methods: We carried out a cross sectional study interviewing 110 elderly people residing in Shankarapur-7, Sankhu, Kathmandu using convenient sampling technique. We used a structured questionnaire and included Insomnia Severity Index to identify level of insomnia. We analysed insomnia as clinically significant and non-significant and present the results as proportion and further bivariate analysis.

Results: About one third (29.1%) of the elderly had clinically significant insomnia. About half (53%) of the participants suffered from co-morbid disease conditions, mainly hypertension and diabetes mellitus. About 2 in 5 (38%) participants performed regular exercise for more than 15 minutes. Similarly, the proportion of clinically significant insomnia was higher among older age groups (50% among 70+ years & 21% among below 70 years), females 40% (males 19%), widowed 56% (currently married 21%), illiterate 42% (literate 13%). These were found to be significant during bivariate analysis.

Conclusions: We found a substantial proportion of participants with clinically significant insomnia. Promoting the physical and mental health of elderly people is important for them to lead a quality life. Health promotion approaches with targeted interventions for elderly are important to cater the need of elderly population and this might help improve the quality of life of the elderly people.

Keywords: Community; elderly; insomnia; Kathmandu; Nepal

INTRODUCTION

The proportion of elderly people (aged 60 years and above) in Nepal is 10.3%.¹ While the recommended sleep duration for older adults is between 7-8 hours daily,² it is common for elderly people to meet the criteria of insomnia ranging from sleep-onset insomnia causing to sleep maintenance insomnia.³ Several factors affect or are associated with insomnia including their physical and mental health status and other psychosocial factors.⁴⁻⁸ Sleep related problems can even result in cognitive impairment, tiredness during day, and thus decreased standard of life.⁹ Despite this a small minority seek professional help and this condition is often ignored, under-recognized and under-treated.¹⁰ Geriatric health has been gradually gaining value in Nepalese health system recently with the release of guidelines and strategies by the Nepal Ministry of Health and Population (MoHP).^{11,12} We aimed to identify factors associated with insomnia among elderly in a community settings.

METHODS

A cross-sectional study was used to find out prevalence and factors influencing insomnia among elderly people residing in a selected community of Shankharapur municipality, Kathmandu, a semi-urban location 17 KM away from the city center of Kathmandu in the north-east. The study population consisted of elderly individuals of age 60 years and above. The total number of samples was determined by using the formula, $n = Z^2pq/d^2$ and the final sample size was 110. A semi structured interview schedule was used in the study. The development of tool was based on the objectives of the study and was done on the basis of literature review and consulting research committee and followed Insomnia Severity Index (ISI)¹³ to identify clinically significant insomnia. The instrument consisted of three sections: Section 1: Questions related to socio-demographic information of respondents. Section 2: Questions related to physical health and other related variables. Section

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3: Questions related to insomnia severity index. The ISI consists of seven questions that ask about self-reported symptoms and daytime consequences of insomnia. Each item receives a score of 0-4 points, for a total score of 0-28 points. A score of 0-7 indicates clinically insignificant insomnia, 8-14 indicates sub-threshold insomnia, 15-21 indicates moderate clinical insomnia and 22-28 indicates severe clinical insomnia.

Content validity of the instrument was established by consulting with peer and research supervisor and members of research committee of Nepalese Army Institute of Health Sciences (NAIHS). Instrument was prepared in English language and converted to Nepali language. Back translation into English language was done by peer. Research instruments were pretested among 10% of total sample size (i.e., 11 elderly) in a similar setting at Shankharapur-6 for clarity, sequencing, adequacy, and feasibility. The pretested data was used to establish internal consistency reliability of ISI scale by Cronbach's alpha method which was 0.957.

Data collection was initiated after getting approval from the institutional review committee of NAIHS. Formal written permission was obtained from the ward office of Shakhapur-7. To enroll the study participants, a non-probability convenient sampling was used in the study. It was ensured that one elderly was chosen in each household if there were more than one by enrolling the senior most elderly in the study. Immediate next household was selected if house was locked or there was no elderly in the household visited.

Data were collected in participants' own household. The purpose and objectives of the research study were explained. Written consent was obtained from each respondent. Interview technique by using semi structured interview schedule was used to collect data from selected participants. Confidentiality was maintained by using the findings only for study purposes without revealing the personal identity of participant. The collected data was checked and reviewed for its accuracy and completeness before leaving the respondent's house. Data was collected from mid-January to mid-February 2022. The coded data was entered, cleaned, and tabulated by using SPSS version 16. Descriptive statistics were used to describe the findings before applying inferential statistics in the form of Chi square test to identify the association of insomnia with demographic variables, physical health variables and other selected variables.

RESULTS

Table 1 gives the overview of the background characteristics of the elderly participant interviewed with the distribution of the independent variables used in this study. The majority (58%) of the participants were aged 60 to 70 years with age of the participants ranging from 60 to 86 years. Just more than half of the participants (52%) were males. All the participants were from Janajati ethnicity, one of the disadvantaged ethnic groups in Nepal, while 92% of the participants followed Hinduism as the religion, while the rest were the ones following Buddhism. Combining retired and homemaker with regards to their occupational status, there were about 63% of the participants with 56% of the participants being illiterate. About three-fourth (76%) of the participants lived in a joint family.

Table 1. Background Characteristics.

Characteristics	Frequency	Percent
Age in years (n=110)		
Upto 70 years	80	72.7
More than 70 years	30	27.3
Mean= 68.47, SD ±6.082		
Sex (n=110)		
Male	57	51.8
Female	53	48.2
Religion (n=110)		
Hinduism	101	91.8
Buddhism	9	8.2
Marital status (n=110)		
Married	83	75.5
Widowed	27	24.5
Educational status (n=110)		
Illiterate	62	56.4
Literate	48	43.6
Level of education of literate (n=48)		
Primary level	22	45.8
Secondary level	24	50.0
Bachelor and above	2	4.2
Type of family (n=110)		
Nuclear	24	21.8
Joint or Extended	86	78.2

Table 2 below presents the illness related characteristics of the participants, and other activities. We found that just above half (53%) of the participants were suffering

from some co-morbid disease conditions, and out of those majority had hypertension (54%) followed by diabetes mellitus (29%). Nearly half (47%) were taking some medication at present. More than one third (36%) of the participants had some problems during sleep at night such as pain, nocturia, cough and breathing difficulties. We found that around 38% of the participants did some form of exercise for more than 15 minutes on a regular basis, with most of them using walking as the form of exercise. We asked about feeling excessively worried or having unrealistic fear, and around 18% responded yes to that, with the reasons mainly being their current health condition, and about family and children.

Table 2. Illness related characteristics.

Characteristics	Frequency	Percent
Presence of disease (n=110)		
Yes	58	52.7
No	52	47.3
Disease conditions if yes, (n=58) *		
Hypertension	31	53.5
Diabetes	17	29.3
COPD	11	19.0
Other	20	34.5
Taking medication at present (n=110)		
Yes	52	47.3
No	58	52.7
Problems during night sleep (n=110)		
Yes	39	35.5
No	71	64.5
Problems faced if yes (n=39)*		
Pain	14	35.9
Nocturia	11	28.2
Cough	9	23.1
Breathing difficulty	5	12.8
Heart burn	3	7.7
Regular exercise (n=110)		
Yes, more than 15 minutes	42	38.2
No or only less than 15 minutes	68	61.8
Excessive worry or unrealistic fear felt (n=110)		
Yes	20	18.2
No	90	81.8
If yes, reasons for excessive worry or unrealistic fear (n=20)		
Current health condition	7	35.0
Family/Children	6	30.0
Unknown about future	2	10.0
Finance	1	5.0

Agricultural yielding	2	10.0
Ignorance from family	2	10.0

* Multiple response

About 71% of the participants had clinically insignificant pneumonia with the remaining 29% having clinically significant anemia (table not shown). Upon further breakdown among those with clinically significant insomnia it was found that 22 (20%) of them had sub-threshold insomnia, while 9 (8.2%) had moderate clinical insomnia and the remaining 1 participant had clinically severe insomnia.

Table 3 & 4 below present the level of insomnia by background and other variables and its association with selected variables. Upon analysis of level of insomnia in the form of clinically significant and insignificant, we have noticed the difference in the prevalence of clinically significant anemia by certain independent variables. Some of the association was statistically significant such as the age group, sex, marital status and educational status during bivariate analysis.

Table 3. Insomnia by background and other variables.

Characteristics	Level of Insomnia				Chi-square	p-value
	Clinically insignificant (n=78)		Clinically significant (n=32)			
	n	%	n	%		
Age						
Upto 70 years	63	78.8	17	21.2	8.742	0.013*
More than 70 years	15	50.0	15	50.0		
Sex						
Male	46	80.7	11	19.3	5.500	0.019*
Female	32	60.4	21	39.6		
Marital Status						
Currently married	66	79.5	17	20.5	12.149	<0.001*
Widowed	12	44.4	15	55.6		
Religion[#]						
Hinduism	72	71.3	29	28.7		
Illiterate	6	66.7	3	33.3		
Educational Status						
Literate	42	87.5	6	12.5	11.364	<0.001*
Illiterate	36	58.1	26	41.9		
Type of Family[#]						
Nuclear	20	83.3	4	16.7		

Joint or Extended	58	67.8	28	32.6		
Presence of Disease						
Yes	37	63.8	21	36.2	3.012	0.083
No	41	78.8	11	21.2		
Problems during Night Sleep						
Yes	16	42.1	22	57.9	23.350	<0.001*
No	62	86.1	10	13.9		
Regular Performance of Exercise						
Yes	32	76.2	10	23.8	0.919	0.338
No	46	67.6	22	32.4		
Feel excessive worry or unrealistic fear[#]						
Yes	3	15.0	17	85.0		
No	75	83.3	15	16.7		

*Significant at p -value <0.05, [#]one cell with frequency less than 5 and hence chi square value not used

We further attempted to carry out a binary logistic regression analysis using the outcome variable insomnia as clinically significant and non-significant insomnia through both bivariate and multivariate analysis. We found some significant results in the bivariate analysis in the form of crude odds ratio (COR) supported by 95% confidence interval (CI). However, up next when a set of variables was taken through the multivariate analysis, we only noticed a significant adjusted odds ratio (AOR) with only one variable - the feeling of excessive worry or unrealistic fear. But the 95% CI was very wide and hence we chose not to show the results of multivariate analysis. Table 4 below, shows the COR for the independent variables depicting the odds of having clinically significant insomnia among the participants of the study.

Table 4. Factors associated with Insomnia.

Characteristics	Frequency	Crude Odds Ratio	95% CI
Age			
Upto 70 years	80	1	
More than 70 years	30	3.71	1.52-9.06
Sex			
Male	57	1	
Female	33	2.74	1.16-6.47
Marital Status			
Currently married	83	1	
Widowed	27	4.85	1.92-12.27
Education Status			
Literate	48	1	
Illiterate	62	5.06	1.87-13.65

Religion			
Hinduism	101	1	
Buddhism	9	1.24	0.29-5.30
Type of Family			
Joint or Extended	86	1	
Nuclear	24	0.41	0.13-1.33
Having other chronic disease condition			
No	52	1	
Yes	58	2.12	0.90-4.97
Regular Exercise			
Yes more than 15 minutes	42	1	
No or less than 15 minutes	68	1.53	0.64-3.66
Feel excessive worry or unrealistic fear			
No	90	1	
Yes	20	28.33	7.37-108.94

DISCUSSION

We carried out a cross sectional study which assessed the level of insomnia among elderly population aged 60 to 86 years in a peri-urban setting of Kathmandu, Nepal. We found nearly one in three participants (29.1%) with clinically significant insomnia.

This result contradicts with a similar study carried out in a nearby town of Banepa in Kavrepalanchok district not far from Kathmandu which showed 71% of elderly having insomnia¹⁴ and another community in Lalitpur district which showed 51% of elderly having insomnia.¹⁵ The difference might be because of the use of different scale measuring level of insomnia, and the mean age was slightly higher than that of current study. Though we could not locate many other studies on Insomnia in Nepal among this population, there were several studies from around the globe with similar findings with 32.4% prevalence of insomnia among Korean elderly in a rural community, 27.5% prevalence of insomnia in a geriatric Centre of Nigeria, 30.0% prevalence in a Chinese study.^{5,16,17} This finding is somehow supported with the study conducted at Northern Taiwan where 41.4% of elderly met the criteria of insomnia syndrome.¹⁸ Some other studies reported a slightly higher prevalence of insomnia: 50% elderly were suffering from sleep problem as shown in a study from Taipei,¹⁹ likewise 51.0% of elderly of city of Turkey had insomnia.²⁰ This difference may be due to different in sample size and study setting.

The current study found that insomnia is significantly associated with age ($p=0.013$). The finding is consistent

with the finding of another study in a similar setting in Nepal in Banepa, Kavre district.¹⁴ A community-based study among Korean elderly also revealed a similar significant association between insomnia and age ($p=0.010$).⁵ This study showed that there is significant association between insomnia and sex ($p=0.019$), marital status ($p<0.001$) and educational status ($p<0.001$). The finding is similar to the findings of a cross-sectional study conducted in Ibadan, Nigeria, which revealed insomnia is significantly associated with sex ($p=0.033$), marital status ($p=0.019$) and educational status ($p=0.004$) respectively.¹⁸ The positive association insomnia with educational status was also shown in the study from Banepa, Kavre district.¹⁴

This study showed that the proportion of those with insomnia was higher (42%) among the people residing in a joint or extended family, however since the sample size for those living in a nuclear family was low (24) and among those only 4 of them had insomnia, we could not look for the statistical association of type of family with occurrence of insomnia. Similar studies in other settings have shown the association of where the elderly people are residing. A study in Egypt among 1059 participants showed that there is significant association of insomnia with elderly residing alone ($p\leq 0.001$) compared to residing with family.²¹

A similar result was noticed among people who reported feeling of excessive worry or unrealistic fear. Almost everyone (17 out of 20) who reported feeling of excessive worry or unrealistic fear had clinically significant insomnia. This is however, not presented with statistical result owing to small sample size in one of the categories. Similar findings are noted from studies elsewhere. The finding is consistent with the finding of the study conducted in Shanghai, China which revealed there is significant association between insomnia and feeling of excessive worry and unrealistic fear ($p<0.0001$).²² However, this study illustrated that there is no association between insomnia and presence of co-morbid disease conditions ($p=0.083$) and regular performance of exercise ($p=0.338$), which contrasts with the finding from the Chinese study showing significant association between insomnia and presence of disease ($p<0.0001$) and outdoor activities ($p<0.0001$).²²

This study found that insomnia is significantly associated with having problems such as pain, nocturia, cough etc., during night sleep ($p<0.001$). The finding is consistent with the finding of a similar study conducted in Lalitpur, which revealed insomnia is significantly associated with health problems during night sleep ($p=0.002$).¹⁵

While we have used standard instrument to assess the level of insomnia and the first author of the study collected the data herself, the study comes with some limitations as well such as low level of generalizability considering the non-probability sampling. The study has attempted to capture some factors that might be associated with insomnia among elderly, not all factors might have been captured. In addition, the cross-sectional nature of the study has limited the opportunity of explaining causality.

CONCLUSIONS

A substantial proportion of elderly people in the study had clinically significant insomnia and it was found to be associated with age, gender, marital status, and education status. Even though the study design might have limited the establishment of statistically significant association, the occurrence of insomnia and its variation among different subgroups definitely indicates the need for targeted interventions to cater the need of elderly population. Addressing these factors might also help improve the quality of life of these elderly people.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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