

# Insomnia, its Prevalence, Associated Factors and Effects on Old Age: A Cross-Sectional Study

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## ABSTRACT:

**Introduction:** Insomnia is a common problem among old age population. Almost half of all old age adults report difficulty in initiating and maintaining sleep. The objective of this study was to assess the prevalence of insomnia, its associated factors and effects in old age adults. **Methods:** This was an observational analytical study where adults above 60 years of age from a ward of a village development committee were included. Data were collected for a period of four months. Insomnia was measured by Athens Insomnia Scale and structured questionnaires were used to assess the effects of insomnia. Descriptive statistics were presented as frequency and percentages. Association between variables was assessed with Chi-square test or Fisher's Exact test as appropriate. **Results:** There were a total of 55 participants in the study. Insomnia was prevalent in 56.4% (n=31) of the study population. Among the studied socio-demographic variables, presence of medical illness was significantly associated with insomnia. Insomnia was significantly associated with morning headache, irritability, unhappiness, fatigue, lack of concentration, day time sleepiness, avoiding interaction with people, and need of sedative for sleep. **Conclusion:** Majority of the old age adults suffer from insomnia with night awakenings as the most common symptom. Insomnia significantly affects various aspects of life at an old age.

**Keywords:** Insomnia, Old Age, Sleep

## INTRODUCTION:

Insomnia is a common sleep disorder consisting of an inability to fall asleep easily or remain asleep throughout the night, early morning awakening, or sleep that is poor in quality associated with daytime impairment such as fatigue, memory impairment, social or vocational dysfunction, or mood disturbance.[1] Sleep disorders and sleeping difficulties are among the most pervasive and poorly addressed problems of ageing and may lead to substantially impaired health, cognitive decline, and reduced quality of life.[2]

There were a total of 21,54,410 people above 60 years in Nepal according to the census of 2011. The proportion of the senior citizens has increased from five percent in the census of 1952/54 to 6.5% in 2001 and 8.1% in 2011.[3] They are vulnerable to have insomnia because of their age related changes. [4] Insomnia has far reaching and often subtle effects on health and quality of life. Approximately 30-60% of the general population in the industrial world suffer from insomnia symptoms, of whom 10-20% have chronic insomnia.[5]

Published literature on this issue from our part of geography is scarce. This study, therefore, aims to identify the prevalence of insomnia, its associated factors and effect in old age adults in a Nepalese community.

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## METHODS:

This was an observational, cross sectional study done over a period of four months from 1<sup>st</sup> September, 2017 to 30<sup>th</sup> December, 2017. The study was carried out in ward one of Telgha village development committee (VDC) of Palpa district, Nepal

Old age adults were taken as people who had crossed 60 years from the age of their birth. Insomnia was defined as difficulty initiating or maintaining sleep, or early morning awakening.

Participants above 60 years of age irrespective of gender and literacy status were included in the study. Exclusion criteria were sick individuals who could not communicate during interview or those not available for interview throughout the study period.

### Sample size calculation:

There were a total of 60 such people in the ward. So, using Slovin's formula for finite population, minimum sample size was calculated as:

$$n = N / (1 + Ne^2)$$

$$\text{or, } n = 60 / (1 + 60 * 0.052)$$

$$\text{or, } n = 52.17, \text{ ie. minimum sample size was } 53.$$

Here, n = estimated minimum sample size,

N = available population for study,

e = margin of error at 5%, alpha error = 0.05.

A total of 55 participants were included in the study.

### Research Instruments:

•**Part one:** A proforma was developed in Nepali language to record the socio-demographic data of the participants. Its reliability was maintained by pretesting in a non-study area of the VDC in 10% of the sample size. These individuals were not included in the study.

•**Part two:** Athens insomnia scale was used to measure the prevalence of insomnia.[6] It was converted into Nepali language. Backward and forward translation was done to check the reliability of questionnaire with the help of English and Nepali language experts. It consists of eight items. The first five items cover nighttime symptoms of insomnia while the last three items ask for daytime consequences of disturbed sleep. A score of six or more is diagnosed as insomnia.

•**Part three:** Self developed questionnaire in Nepali language was used to assess effects of insomnia. It was also pre-tested as part one of the instrument. Effect of insomnia included morning headache, irritability, perceived unhappiness, fatigue, lack of concentration, day time sleepiness, avoiding interacting with people, and need of sedative to go to sleep.

Ethical approval was taken from the Institutional Review Committee of Lumbini Medical College (IRC-LMC). Written permission for data collection was sought from the concerned authority of Telgha VDC. Verbal consent was obtained from all the participants before data collection. Anonymity and confidentiality were maintained by keeping code number in questionnaire after data collection. Information obtained was used only for the research purpose.

Data were collected from interview with each individual. A person was trained to conduct interview and collect data. At first, interpersonal relationship was maintained by the interviewer and a friendly environment was created. Purpose of study was explained to the participants. Verbal consent was taken and confidentiality assured. The participants gave answers to the questions verbally which were recorded by the interviewer in the research instruments. The collected information were numbered serially and filed.

Data were entered, coded, processed, and analyzed using Statistical Package for Social Sciences (SPSS™) software version 16. Descriptive statistics were presented as frequency and percentages. Inferential statistics (Chi-square or Fisher's Exact test) was applied to show the association between categorical variables.

## RESULTS:

There were a total of 55 participants. Socio-demographic information of the participants is presented in Table 1. According to Nepal census 2011,[3] there were 10,89,471 (50.57%) female and 10,64,939 (49.43%) male population older than 60 years of age in Western Development Region giving a F:M ratio of 1.023:1. With this reference, we analyzed the difference in gender in our sample where there were 32 (58.2%) male and 23 (41.8%) female with a F:M ratio of 0.72:1 using Chi-square goodness of fit test and found that the difference was not statistically significant ( $X^2=1.69$ ,  $df=1$ ,  $p=0.19$ ).

Table 1. Sociodemographic characteristics of the study population (N=55)

Variables		Frequency	Percentage
Age in years	60-64	16	29.1
	65-69	15	27.3
	70-74	11	20.0
	75-79	9	16.3
	80-84	4	7.3
Gender	Male	32	58.2
	Female	23	41.8
Marital status	Married	30	54.6
	Unmarried	1	1.8
	Widow / widower	24	43.6
Type of family	Nuclear	21	38.2
	Joint	33	60.0
	Extended	1	1.8
Literacy status	Literate	26	47.3
	Illiterate	29	52.7

Overall literacy rate in this region during 2011 census was 65.94%.[3] The literacy rate among our sample was 47.3% (n=26, N=55). Using Chi-square goodness of fit test, we found that the difference was statistically significant ( $X^2=4.28$ ,  $df=1$ ,  $p=0.039$ ).

Table 2. Clinical characteristics of the study population (N=55).

Variables		Frequency	Percentage
<b>Medical illness</b>	Hypertension	10	18.2
	COPD*	9	16.4
<b>Mental illness</b>	Present	2	3.64
	Absent	53	96.36
<b>Physical disability</b>	Present	8	14.55
	Absent	47	85.45
<b>Use of medicine</b>	Yes	19	34.55
	No	36	65.45

Table 3. Relationship between socio-demographic and clinical variables and insomnia (N=55)

Variables		Insomnia		Statistics
		Present n (%)	Absent n (%)	
Gender	Male	16 (50)	16 (50)	$X^2=1.26$ , $df=1$ , $p=0.26$
	Female	15 (65.2)	8 (34.8)	
Literacy	Literate	14 (53.8)	12 (46.2)	$X^2=0.13$ , $df=1$ , $p=0.72$
	Illiterate	17 (58.6)	12 (41.4)	
Medical Illness	Present	15 (78.9)	4 (21.1)	$X^2=6.02$ , $df=1$ , $p=0.014$
	Absent	16 (44.4)	20 (55.6)	
Psychiatric illness	Present	2 (100)	0 (0)	$p=0.5$ , Fisher's Exact
	Absent	29 (54.7)	24 (45.3)	
Physical disability	Present	4 (50)	4 (50)	$p=0.72$ , Fisher's Exact
	Absent	27 (57.44)	20 (42.56)	
Financial Support	Present	27 (54)	23 (46)	$p=0.38$ , Fisher's Exact
	Absent	4 (80)	1 (20)	
Daily physical work or exercise	Yes	29 (54.7)	24 (45.3)	$p=0.5$ , Fisher's Exact
	No	2 (100)	0 (0)	

Thus, our sample population was less literate than the total population in this region in 2011.

Table 2 presents the clinical characteristics of the study population. Hypertension was the most common medical illness observed while mental illness was relatively less frequent, being present in only two participants.

Insomnia was present in 31 (56.4%) of the participants. Relationship between socio-demographic variables and insomnia is presented in Table 3. Among the variables analyzed, only medical illness was statistically associated with insomnia. Effects of insomnia and their relationship with insomnia are presented in Table 4. All the variables presented in the table were statistically significantly associated with insomnia.

### DISCUSSION:

The study was aimed at assessing the prevalence and effects of insomnia among older age adults and analyzing association between prevalence and effects. We found that insomnia was prevalent in 56.4% of the participants and was significantly associated with effects like morning headache, irritability, unhappiness, fatigue, lack of concentration, day time sleepiness, avoiding interaction with people, and need of sedative for sleep.

In our study, insomnia was present in 65.2% of total female population. This finding is similar to the findings of the study done in Pashupati old age home in which more than two third (67.9%) of the female population had insomnia.[7] This finding is also similar to the study done by Quan et al. in which men were less likely than women to develop

Table 4: Effects of insomnia and their relationship with insomnia

Variables		Insomnia		Statistics
		Present, n (%)	Absent, n (%)	
Morning Headache	Present	30 (100)	0	p<0.001 Fisher's Exact
	Absent	1 (4)	24 (96)	
Irritability	Present	28 (93.3)	2 (6.7)	X <sup>2</sup> =36.7, df=1, p<0.001
	Absent	3 (12)	22 (88)	
Unhappiness	Present	27 (96.4)	1 (3.6)	X <sup>2</sup> =40.4, df=1, p<0.001
	Absent	4 (14.81)	23 (85.19)	
Fatigue	Present	28 (84.84)	5 (15.15)	X <sup>2</sup> =27.8, df=1, p<0.001
	Absent	3 (13.63)	19 (86.36)	
Lack of concentration	Present	24 (100)	0 (0)	p<0.001 Fisher's Exact
	Absent	7 (22.58)	24 (77.41)	
Sleeps at day time	Yes	26 (83.87)	5 (16.12)	X <sup>2</sup> =23.3, df=1, p<0.001
	No	5 (20.83)	19 (79.16)	
Avoids interaction with people	Yes	25 (92.59)	2 (7.40)	X <sup>2</sup> =27.6, df=1, p<0.001
	No	6 (21.42)	22 (78.57)	
Need of sedative for sleep	Yes	27 (93.10)	2 (6.89)	X <sup>2</sup> =34.3, df=1, p<0.001
	No	4 (15.38)	22 (84.61)	

insomnia symptoms.[8] The result is consistent with that of the study by Allah et al. in Egypt where females developed insomnia more commonly than males (61.1% vs. 38.9%).[9]

Another finding was that 78.9% of the patients with medical illness had insomnia, the most common medical illness being hypertension (18.2%). This finding is similar to a study done in India by Panda et al. where hypertension (42.6%) was the most common medical illness among insomniac elders.[10]

In this study presence of headache and psychiatric illness were significantly associated with insomnia. This finding is supported by another study in which insomnia was associated with exacerbation of headache symptoms and psychiatric co-morbidities. [11]. Presence of irritability, unhappiness and fatigue were significantly associated with insomnia. These findings agree with those of other studies [12,13] in which depression and insomnia were independent risk factors for each other. This might be due to individuals with insomnia who do not recognize their depressive symptoms. Preventive education can be initiated by concerned authorities in VDC for reducing the prevalence in vulnerable groups and promoting the mental health of older adults.

Daytime sleeping, avoidance of interaction with other people and need of sedation were significantly associated with insomnia. Katz et al. [14] have also reported similar findings in which limitations in activities of daily living, and use

of benzodiazepines is strongly associated with insomnia.

#### CONCLUSION:

This study indicates a higher prevalence of insomnia in older adults. The most common sleep problem in older sub-population was night awakenings. Similarly males had slightly higher amount of insomnia. Majority of insomniac elders experienced effects of insomnia like headache, sadness, feeling of tiredness, irritability and inability to concentrate in work. There was also significant association between prevalence and effect of insomnia in the study population.

#### Conflict of interest:

The authors declare that no competing interests exist.

#### Source of funds:

No funds were available.

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