IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 11, Issue 6 Ser. III (Nov. – Dec. 2022), PP 29-35
www.iosrjournals.org

Prevalence of Insomnia among Elderly in Selected Community of Makawanpur, Nepal

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Abstract
Insomnia is one of the major and unsolved problems of elderly. The prevalence of insomnia increases steadily with age and is often a persistent problem, particularly in older adults and is often mistaken as a normal part of ageing. Studies investigating insomnia among elderly people are rare in Nepal. The objective of this study was to assess the insomnia among the elderly of selected community Makawanpur district in Nepal.
A descriptive cross-sectional research design was carried out among the elderly of Hetauda Sub-Metropolitan. Non- probability purposive sampling was adopted for the selection of the 210 respondents. Data was collected through structured interview schedule and Modified Pittsburgh insomnia rating scale. Data was analyzed by using SPSS version 16. Data was analyzed by using descriptive statics and chi square test and logistic regression.
The findings of the study revealed that 46.2 percent of the respondents had insomnia. Furthermore, insomnia had significant association with age (p0.001), pain (p=.046), having chronic disease (p= .014), medication used at present (p=.021) and different sleep hygiene. On logistic regression, the most independent factors that were significantly associated with insomnia were age, [Odds ratio (OR=3.895], Health problems during night sleep (OR=1.614), Irregular sleep (OR=2.188) and Late-night watching television (OR=2.629).
Based on the findings, it is concluded that insomnia is present in more than one third of the respondents and elderly with co-morbid illness have insomnia. Therefore, community level awareness program regarding insomnia should be raised for early detection and appropriate management in order to decrease sleep related health problems and improve quality of life.

Key Words: *prevalence, insomnia, elderly, associated factors*

Date of Submission: 02-12-2022 Date of Acceptance: 14-12-2022

I. Introduction

Aging is the continuous process of growing older at cellular organ or whole-body level throughout the life span. Most of the developed countries have accepted the chronological age of 65 years as elderly individuals.[1]In Nepal; "Senior Citizen" means a citizen of Nepal having completed the age of Sixty years.[2] Insomnia is commonly seen in elderly populationand the sleeping hours decreases as age advances.[3]The Prevalence of insomnia is varied in elderly population in USA from 23-34%, France-30%, Japan 26.4%,Norway-38.6%, Spain- 36.1%, and Egypt-33.4%.[4]There is a higher incident rate of insomnia in nursing homes and rural areas i.e. 62.1% in Egypt.[5] In Canada, the percentage of insomnia in male and female were 40% and 59% respectively. Outcomes of insufficient sleep were obesity, type 2 DM, cardio-vascular disease, injuries, depression, irritability and reduced wellbeing.[6]

In India 32% of the elderlysuffered from insomnia with comorbidities.[7] Among the total study population, suffered from insomnia were 82.17%, females were most sufferer.[8] Age, suffering from increased number of physical symptoms, pain and weakness are factors contributing to insomnia.[9]The contributing factors of insomnia were stress, residence of geriatric home, physical illness or symptoms, side effects of medication, changes in physical activity or social life and death of spouse or loved ones.[10]Likewise, age, educational status, past occupation, current working status as well as dependent on others were associated with insomnia.[11]Gender, appetite, exercise, depressive symptoms and sleep related condition such as short sleep duration, sleep apnea were also associated with insomnia.[12]

II. Materials And Method

Study design, setting and population

Community based descriptive cross sectional research design was adopted for this study to assess the insomnia among elderly. This study was conducted at the Hetauda sub-metropolitan ward No 8 and study population was Elderly (60 years and above). The general objective of this study was to assess the insomnia among the elderly in selected community ofHetauda. Nepal. Total elderly Population of Hetauda Sub-Metropolitan city is 11,877 (7.76%). The estimated population of elderly of ward no 8 is 591 by taking the reference of elderly population of sub-metropolitan.

Sampling technique

Hetauda Sub-Metropolitan of Makawanpur district was selected purposively. There was total 19 wards. Out of that, ward no 8 was selected by Simple random sampling, lottery method. The total population and household details were obtained from the ward office. Then social mapping was developed by consulting with Female Community Health Volunteer (FCHVs), ward staffs and staff of Urban Health Clinic to identify the elderly household. After that Non-probability sampling technique was used to select the 210 respondents. Data was collected from 2nd September 2019 to 1st October 2019 at hetauda-8. The response rate of the study was 99%.

Instrumentation

The instrument for data collection was self-developed structured interview schedule and modified Pittsburgh insomnia rating scale.

Exclusion criteria

The senior citizens, who were suffering from dementia, psychotic disorder, seriously ill, deaf, who were taking medicine for insomnia, and who were unwilling to involve in the study was excluded in this study.

Outcome variable

Assess the insomnia among the elderly

Explanatory variables

Socio-demographic Factors- Age, Sex, Marital Status, Educational Status

Co-morbid Variables- Pain, Chronic Disease, Medicine use at present, Health problems during night sleep

Behavioral Factors- Smoking & alcohol consumption, chewing tobacco, irregular sleep habit, eating closed too bed time

Ethical committee approval

Ethical approval was obtained from institutional review board of Tribhuvan University, Institute of Medicine. Informed verbal and written consent were obtained from the respondents prior to data collection. Confidentiality was maintained by not disclosing the information given by them. Anonymity was maintained by using coding system. In order to confirm the diagnosis of chronic illness and current use of medicine, the researcher checked the medical prescription and the medicine taken by the respondents.

Questionnaire design

Content validity of the instrument was established by consultation with research advisor and subject expert. English questionnaire was translated in to the local Nepali language to maintain simplicity and comprehensibility with the help of a language expert. Reliability of the instrument was maintained by pretesting of the Nepali version of instrument among 21 (10%) elderly residing in ward no 4 of the Hetauda Sub-Metropolitan city and necessary modification was done in the question related to sleep hygiene. Internal consistency was maintained by calculating the Cronbach's alpha value. The Cronbach's alpha coefficient for the Pittsburgh insomnia rating scale was 0.80. This finding showed higher degree of internal consistency of the tool.

Data management and statistical analysis

The collected data was checked, reviewed and organized for accuracy, completeness and consistency. All collected data were analyzed by suing the statistical package for social science (SPSS-16 version). Chi square test was used to examine the association between selected variables and logistic regression analysis was used to identify the factors associated to insomnia.

TABLE-1
Demographic and Socio-economic Characteristics of the Respondents
n=210

Variables	Number	Percent
Age in Years		
60- 69	110	52.4
70-79	64	30.5
80 and above	36	17.1
Mean age±SD = 70.45±8.649		
Gender		
Female	107	51.0
Male	103	49.0
Ethnicity		
Upper Caste Group	143	68.1
Disadvantages Janajati	32	15.2
Relative advantages Janajatis	27	12.9
Dalit	07	3.3
Disadvantage Non-dalitTerai Caste group	01	0.5
Religion		
Hindu	172	81.9
Buddhist	28	13.3
Christian	10	4.8
Marital Status		
Married	140	66.7
Widow/Widower	70	33.3
Educational Status		
Illiterate	144	68.6
Primary	36	17.1
Secondary	14	6.7
SLC and above	16	7.6
Currently engaged in occupational activities	38	18.1
Financial Dependency on Others	169	80.5
Received of Senior Citizen Allowance	80	38.0

Table 1 represents that, 52.4% of the respondents lie under 60-69 years of age. More than half of the respondents were female. More than half of the respondents were lie upper caste group. Majority of the respondents were Hindu. Among total population, married were 66.7%, majority of the respondents were illiterate. Currently majority of the respondents (81.9%) were not engaged in occupational activities. Majority (80.5%) of the respondents were financially dependance on others whereas only 39% of respondents received senior citizen allowance.

TABLE 2
Prevalence of Insomnia among Respondents

n=210

Insomnia	Number	Percent	95% CI
Yes	97	46.2	0.39-0.53
No	113	53.8	
prevalence of insomnia (n= 97)			
Male	41	42.3	0.39-0.49
Female	56	57.7	0.43-0.62

(Score >20 = Insomnia present and Score ≤ 20 = Insomnia absent)
Table 2 shows that 46.2% of the respondents had insomnia. Among them 56% were female respondents suffered from insomnia.

TABLE 3
Association between Insomnia and Selected Socio-demographic Variables of Respondents
n=210

Variables	Insomnia		χ^2	*p*-value
	Yes	No		
	n (%)	n (%)		
Socio-demographic				
Age group				
60-74 years	54 (37.5)	90 (62.5)	13.992	<0.001
75 years and above	43 (65.2)	23 (34.8)		

Sex				
Male	41 (39.8)	62 (60.2)	3.315	.069
Female	56 (52.3)	51 (47.7)		
Educational Status				
Illiterate	76 (52.8)	68 (47.2)	7.999	.005*
Literate	21 (31.8)	45 (68.2)		
Comorbid variable Physical symptoms- pain				
Yes	52 (53.6)	45 (46.4)	3.991	.046*
No	45 (39.8)	68 (60.2)		
Use of medicine				
Yes	65 (52.8)	58 (47.2)	5.290	.021*
No	32 (36.8)	55 (63.2)		
Health Problem during night sleep				
Yes	58 (64.4)	32 (35.6)	21.115	<0.001
No	39 (32.5)	81 (67.5)		

χ^2Pearson Chi Square test. *P* value significant at <0.05.

Table 3 depicts the association between insomnia and selected variables. Insomnia is significantly associated with age (*p*=0.001) and educational status (*p*=.005), pain (*p*=.046), having chronic disease (*p*=.014), medicine used at present (*p*=.021) and health problem during night sleep (*p*=0.001).

Table 4
Association between Insomnia and Personal Habits of Respondents
n=210

personal habits	Insomnia		χ^2	*p*-value
	Yes n (%)	No n (%)		
Irregular sleep				
Yes	56 (62.9)	33 (37.1)	17.396	<0.001*
No	41 (33.9)	80 (66.1)		
Daytime long nap				
Yes	48 (60.8)	31 (39.2)	10.815	<0.001*
No	49 (37.4)	82 (62.6)		
Drinking tea/coffee before bedtime				
Yes	17 (65.4)	09 (34.6)	4.398	.036*
No	80 (43.5)	104 (56.5)		
Late night watching TV				
Yes	52 (56.5)	40 (43.5)	7.031	.008*
No	45 (38.1)	73 (61.9)		
Daily perform exercise				
Yes	14 (30.4)	32 (69.6)	5.883	.015*
No	83 (50.6)	81 (49.4)		

Significance level < 0.05

Table 4 shows the association between insomnia and personal habit. There is significantly association between insomnia and irregular sleep habit (*p*=0.001), day time long nap (*p*=0.001), drinking tea/coffee before bedtime (*p*=.036), late night watching TV (*p*=.008), and daily performed exercise (*p*=.015). However, no significant association was observed between insomnia and habits of eating 30 minutes prior to bedtime, tobacco chewing habit, alcohol drinking habits and smoking habits.

TABLE 5
Bivariate Analysis of Insomnia and Selected Socio-demogrphic Variables of Respondents
n=210

Factors	Insomnia		Unadjusted OR	*95% CI*	*P* value
	Yes n(%)	No n(%)			
Age in Years					
60-74	54 (37.5)	90 (62.5)	ref		

75 and above	43 (65.2)	23 (34.8)	3.895	1.770-8.572	<0.001
Sex					
Male	41 (39.3)	62 (60.2)	ref		
Female	56 (52.3)	51 (47.7)	1.001	.480-2.088	.977
Marital status					
Married	59 (42.1)	81 (57.9)	ref		
Widow/Widower	38 (54.3)	32 (45.7)	0.96	.443-2.077	.917
Educational status					
Uneducated	76 (52.8)	68 (47.2)	ref		
Educated	21 (31.8)	45 (68.2)	0.562	.250-1.266	.164
Physical symptoms (Pain)					
Yes	52 (53.6)	45 (46.4)	1.128		
No	45 (39.8)	68 (60.2)	ref	.562-2.264	.736
Presence of Chronic Disease					
Yes	62 (53.9)	53 (46.1)	1.614		
No	35 (36.8)	60 (63.2)	ref	.654-3.978	.299

Table 5 reveals the logistic regression analysis of the factors contributing to insomnia. Variables which were statistically significant on chi square test were tested for muticollinearity Variance Inflation Factor (VIF) was calculated (VIF<10).The logistic regression model explained 37.7 percent (NagelKerke R^2) of the variance and correctly classified 78.0 percent of the cases.

Elderly of age group 75 years and above were 3.75 times more likely to have insomnia than elderly between 60-74 years which was statistically significant (p<0.001). Likewise,female respondent's was 1.00 time (p=0.977), marital status were 0.96 times (0.91), and present of chronic disease had 1.61) times more insomnia than others group.

TABLE 6
Bivariate Analysis of Insomnia and Selected Variables of Respondents
n=210

Factors	Insomnia		Unadjusted OR	*95% CI*	p-value
	Yes n(%)	No n(%)			
Health Problems during Night Sleep					
Yes	58 (64.4)	32 (35.6)	1.614	.654-3.978	.003
No	39 (32.5)	81 (67.5)	1		
Irregular Sleep					
Yes	56 (62.9)	33 (37.1)	2.188	1.114-4.300	.023
No	41 (33.9)	80 (66.1)	1		
Daytime Long nap					
Yes	48 (60.8)	33 (37.1)	1.573	.779-3.175	.206
No	49 (37.4)	82 (62.6)	1		
Drinking Tea/Coffee Before bedtime					
Yes	17 (65.4)	09 (34.6)	2.621	.955-7.190	.061
No	46 (45.1)	104 (56.5)			
Late night Watching TV					
Yes	52 (56.5)	40 (43.5)	2.629	1.249-5.804	.021
No	45 (38.1)	73 (61.9)	1		
Physical Exercise					
Yes	14 (30.4)	32 (69.9)	0.53	.235-1.197	.127
No	83 (50.6)	81 (49.4)	1		

Table 6 reveals the logistic regression analysis of the factors contributing to insomnia. Elderly having health problems during night sleep were 1.61 times (p=0.003) , irregular sleep had 2.18 times (0.023)and late night watching TV had 2.62 times (p=0.021) more likely to have insomnia as compare to respondents with no health issues and sleep problem.

III. Discussion

This study revealed that the prevalence of insomnia among elderly was 46.2%. Which is consistent with the study conducted in Lalitpur district of Nepal, which showed prevalence of insomnia among elderly was 40.6% (Chhantyal&Timalsina, 2017).[13] The finding of present study is in contrast with the study conducted in Pashupati Geriatric home of Nepal which shows prevalence of insomnia was 61.5% (Shrestha et al, 2017).[14]

Which difference may be due to study population, environmental factors, life style factors, social support factors, high prevalence of chronic illness among the respondents.Regarding the sex, present study reveals a significantly higher percentage of female (52.9%) suffered from insomnia more than male (39.8%). This finding is similar with the study conducted in Lalitpur District of Nepal and Egypt (Chhantyal& Timalsina, 2017; El-Gilany, Mohamed, Noshy Abd El-Aziz Mohamed, & Baleegh, 2017).[13]

The present study revealed that there is significant association of insomnia with age and educational status but there is no significant association between sex and marital status. This fiding is similar with the finding of study conducted in Geriatric home, Pashupati Nepal and Banepa(shrestha et al, 2017; Dangol, Shrestha & Rai koirala)[14] and is in contrast with the study conducted in Lalitpur (Chhantyal & Timalsina, 2017).[13] Concerning the comorbid factors, current study yielded that there is statistical association of insomonia with pain, (χ^2 = 3.991, p=.046)presence of chronic disease (χ^2 = 6.100, p=.014). This finding is similar with the study conducted in Northern Taiwan and Alexandria, Egypt (Abla I. Ayoub, et al., 2014; Tsou, 2013).[15] Behavioral factors particularly irregular sleep habit, day time long nap, late night watching TV, drinking tea/coffee before bed time significantly influences sleep pattern. The current study finding revealed that elderly who have the habit of irregular sleep is significantly associate with insomnia (χ^2=17.396, p=.000). This finding is consistent with study of the Shrestha, et al, (2017) and the study of Egypt (Abd Allah, 2014).[15]

Regarding the factors contributing to insomnia among elderly, the study reveals that elderly of age group 75 years and above were 3.89 times more likely to have insomnia than elderly between 60-74 years (OR=3.895, CI= 1.770-8.572). This finding is similar with the study conducted in China (Wang et.al, 2016).[16]This is in contrast with the study conducted in Egypt (Abdel- Hady, EI Gilary, 2017).[15]The current study reveals that elderly having health problem during night sleep (OR=1.614, CI= 1.614), Irregular sleep habit (OR= 2.188, CI=1.114- 4.300) and habit of late-night watching TV (OR= 2.692, 1.249- 5.804) were factors associated with insomnia.This finding is similar with the study conducted in Egypt (Ayoub, Abla&Attia, 2014)[17]and is in contrast with the study of Korea (Kim et.al, 2017)[18] and Northern Taiwan (Tosu, 2013).[19]

IV. Conclusion

The study concluded that prevalnce of insomia is higher among the elderly. The study showed that age, educational status, pain, having of chronic disease, present use of medicine, health problems during night sleep and behavioural factors related to sleep hygine are associated with insomina. Insomina is a common health issue among elderly that can lead to significant morbidity so awareness program regarding insomnia mong elderly should be raised for early detection and appropriate management.

Limitation of the study

This study was conducted in only one ward of Hetauda sub-metropolitan city of Makawanpur District. Therefore, the result cannot be generalized to all elderly of Makawanpur district.

Recommendation

Health educational program for elders to enhance sleep through emphasizing on the importance of sleep hygiene practice and healthy life style for the prevention of insomnia can be conducted to improve quality of life. Inservice training program to all care providers about importance of sleep and avoidance of risk factors of insomnia also can reduce the prevalence of insomnia among elderly.

Conflict of interest

The authors do not have any conflict of interest arising from the study.

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Anu Bajracharya, et. al. "Prevalence of Insomnia among Elderly in Selected Community of Makawanpur, Nepal." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 11(6), 2022, pp. 29-35.