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Prevalence and Contributing Factors of Insomnia among Elderly of Pashupati Old Aged Home (Briddhashram)

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ABSTRACT

Insomnia is one of the major and unsolved problems in older people. The prevalence of insomnia increases steadily with age and is often a persistent problem, particularly in older adults and are often mistaken as a normal part of ageing. Studies investigating insomnia among elderly people living in geriatric homes, especially in Nepal, are rare. The objective of this study was to determine the prevalence and contributing factors of insomnia among elderly people of Social Welfare Centre Briddhashram (Old aged home), Pashupati, Kathmandu. A descriptive cross-sectional study design was conducted among 148 elderly people of 60-94 years of age, following simple random sampling technique. The tools used were semi-structured questionnaire, Athens Insomnia Scale (AIS) and Geriatric Depression Scale (GDS). The data was collected by using semi-structured interview schedule and was analyzed by using SPSS version 17.0. This study highlights that around three-fifth (61.5%) of the respondents had insomnia associated with different factors such as age, suffering from increased number of physical symptoms, irregular sleep, etc. Three-fourth (75%) of the respondents complained of pain; followed by weakness of extremities (65.5%). Depression, perceived poor health status as compared to one year ago and use of drugs for long term illness were also found to be contributing factors of insomnia. Insomnia is common among elderly population.

KEYWORDS

Insomnia; Elderly; Nepal.

INTRODUCTION

Ageing is a natural phenomenon and an inevitable process. Every living being born, develops, grows old and dies. With the increase in age, people lose their creativity level, problem solving ability and learning skills as well as short-term memory. All the people of the world - be they rich or poor and learned or uneducated - have to pass through this cyclical process in their lives, irrespective of their present state of strength or merit or weakness [1].

Sleep is a vital physiological process with important restorative functions. Sleep disorders and sleeping difficulties are among the most pervasive and poorly addresses problems of aging. Getting enough sleep can have a significant impact on daily function, alertness and overall quality of life [2].

Insomnia or sleeplessness, is a sleep disorder in which there is an inability to fall asleep or to stay asleep as long as desired. This sleep disorder is often practically defined as a positive response to either of two questions: “Do you experience difficulty sleeping?” or “Do you have difficulty falling or staying asleep?” [3].

With age, several changes occur that can place one at risk for sleep disturbances including increased prevalence of medical condition, increased medications use, age related changes in

various circadian rhythms, and environmental and life style changes. Insomnia is generally classified as primary or secondary to some underlying cause. Primary insomnia is usually not associated with a medical or psychiatric condition. Secondary insomnia occurs most frequently in the older adult with medical or psychiatric disorders. The causes of insomnia in the elderly are divided into four groups: (1) physical diseases or symptoms, such as long-term pain, bladder or prostate problems, joint diseases such as arthritis or bursitis, and gastroesophageal reflux; (2) environmental/behavioral factors; (3) use of drugs, such as caffeine, alcohol, or prescription medications for chronic diseases; and (4) mental diseases or symptoms, such as anxiety, depression, loss of personal identity, or perceived poor health status [2, 4].

Insomnia affects almost half of adults 60 and older. Many factors can cause insomnia. However, the most common reason older adults wake up at night is to go to the bathroom. Prostate enlargement in men and continence problems in women are often the cause. As a person ages, sleep becomes more fragmented [5, 6].

In a previous study from Thailand, nearly 50% of patients over the age of 60 years had insomnia; the factors most strongly associated with insomnia were poor perceived health status and the presence of depression. Somatic comorbidities associated with aging are known to be risk factors for insomnia and depression. Given these facts, insomnia in elderly patients merits clinical attention and research [4].

Like in other developing countries, Nepal's elderly population is increasing and facing many health problems. The increasing growth and demand of elderly people urges the active involvement of health personnel from different faculty in providing quality services to them.

This study will show the prevalence of insomnia and its associated factors among the elderly people of Pashupati Briddhashram. The findings will help in making the people aware about the possible causes of insomnia; which later on can be used in the management of insomnia at both hospital and community level.

In Nepal, very few studies are reported on insomnia among elderly people. Nepal Health Research Council (NHRC) has enlisted areas of elderly health issues in its short term research priority area. Studies on insomnia and its contributing factors in elderly are necessary to aid health planners and care professional in planning and providing appropriate promotive, preventive, curative and rehabilitative services related to insomnia to the elderly.

MATERIALS AND METHODS

Research Design Observational cross-sectional study was applied in the study.

Study Site This study site was Pashupati Briddhashram (Old Aged Home).

Study Population All the elderly people who resided in Pashupati Briddhashram (Old Aged Home).

Sample Size The sample size of the study was

$n = z^2 p (1-p)$ for finite population of size N

$$\frac{d^2 + z^2 p (1-p)}{N}$$

Where, p = proportion; d = sampling error that can be tolerated; z = 1.96; confidence level; N = size of population.

The total elderly population in the Pashupati Bridhashram (Old Aged Home) was 235.

Taking the value of p=49.3 %, the sample size calculated was; 145.7~148.

Sampling Method

Probability; simple random sampling method was used for sampling. The lottery method was implied for the sampling process.

Data Collection Techniques and Tools

Data Collection Technique

• Interview by the researcher self

Data Collection Tools

• Semi-structured questionnaire

• Athens Insomnia Scale:

Insomnia was diagnosed with the use of Athens Insomnia Scale; which assessed eight different sleep factors (rated on a 0-3 scale) among the respondents. The sleep factors are sleep induction, awakenings during night, final awakening, total sleep duration, sleep quality, well-being during the day, and functioning capacity during the day and sleepiness during the day. Elderly subject who had a total score 6 points or higher was considered as a positive case for insomnia.

• Geriatric Depression Scale (Short Form)

This scale was developed by Sheikh and Yesavage as a basic screening measure for depression in older adults. This consists of 15 questions requiring "yes" or "no" answers. Of the 15 items, 10 indicate the presence of depression when answered positively, while the rest indicate depression when answered negatively. A score higher than five suggests depression.

1-5: no depression

6-10: mild depression

11-15: severe depression

Criteria for Selection of Patients

Inclusion Criteria

• All the elderly people living in the Pashupati Briddhashram were included in the study.

Exclusion Criteria

• Elderly people who were not interested in the study were excluded.

Validity and Reliability

Pre-testing was done for validating the tools. Necessary changes were done on the basis of results obtained from pre-testing and final set of questionnaire had been prepared by accommodating necessary changes under the advice of research guide and other related expertise. Standard valid tools were also used for measuring insomnia and depression. The questionnaire was pre-tested for the reliability as well. Corrective actions were taken to remove the gaps found in the tools. Pre-testing was done among the elderly of Nijananda Briddhashram (Old Aged Home), Taudaha; constituting about 10 percent of the total sample population of the study.

Socio-demographic characteristics.

Table 1: shows socio-demographic characteristics.

				n = 148
S.N.	**Socio-demographic variables**	**Frequency**	**Percentage**	
1	**Age**			
	60-69 years	45	30.4	Mean: 73.64
	70-79 years	60	40.5	S.D.: ±8.16
	80 years and above	43	29.1	
2	**Sex**			
	Male	70	47.3	
	Female	78	52.7	
3	**Marital status**			
	Married	27	18.2	
	Unmarried	29	19.6	
	Divorced	7	4.7	
	Widowed	85	57.4	
4	**Duration of widowhood**			
	1-10 years	49	57.6	Median: 10.00
	11-20 years	19	22.8	IQR: 5.00-19.00
	21 years and above	17	20	
5	**Number of children**			
	No children	43	29.1	Median: 2.00
	01-May	86	58.1	IQR: 0.00-5.00
	More than 5	19	12.8	
6	**Ethnicity**			
	Brahmin	60	40.5	
	Chhetri	43	29.1	
	Janajati	44	29.7	
	Dalit	1	0.7	
7	**Religion**			
	Hindu	141	95.3	
	Buddhist	7	4.7	
8	**Educational status**			
	Illiterate	109	73.6	
	Informal education	32	21.6	
	Primary level	5	3.4	
	Secondary level	2	1.4	

Ethical Consideration

The objectives of the study were clearly explained to the respondents as well as the concerned authority of the Briddhashram, before data collection. A letter from college was submitted to the concerned authority and permission for data collection was taken from the Briddhashram (Old Aged Home). Letter of approval was obtained from the review committee of the campus. Informed consent was taken from respondents. No one was forced to give their consent or participate in the study. Respondents were free to withdraw participation at any point during the interview. Privacy, confidentiality and anonymity were maintained.

Table 2: shows that majority of the respondents (60.1%) stated lack of care taker as being the reason for leaving home, followed by personal wish (25.7%). About two fifth (43.9%) of the respondents were living in the Briddhashram (Old Aged Home) since more than 5 years. Around three fourth of the respondents (71.6%) said that their family members didn't visit them. All of the respondents didn't have any kind of financial support from the family.

Socio-demographic characteristics

				n = 148
S.N.	Socio-demographic variables	Frequency	Percentage	
1	**Reasons for leaving home***			
	Low economy	15	10.1	
	Family conflict	22	14.9	
	Lack of care taker	89	60.1	
	Loss of spouse	9	6.1	
	Personal wish	38	25.7	

2	**Duration of stay in ashram**			
	Upto 5 years	83	56.1	Median: 5.00
	More than 5 years	65	43.9	IQR: 2.00-10.00
3	**Frequency of family visit in past 6 months**			
	No			
	1-5 times	106	71.6	Median: 3.00
	More than 5	32	21.6	IQR: 2.00-5.25
		10	6.8	

*multiple response

Data Analysis Procedure

After the collection of data, it was overviewed, checked and verified checked for completeness, consistency and accuracy. The raw data collected was processed, analyzed and interpreted using the SPSS 17.0 version software. The data were analyzed by using different statistical technique. The findings were interpreted through frequency table.

Table 3: shows that among the respondents, three fifth (61.5%) of them had insomnia. Insomnia was diagnosed with the use of Athens Insomnia Scale which assessed eight different factors (rated on a 0-3 scale) among the respondents.

Assessment of insomnia.

		n=148
Insomnia	Frequency	Percentage
Yes	91	61.5
No	57	38.5

RESULTS AND DISCUSSION

Data was obtained from 148 elderly people, yielding a 100% response rate. The elderly people included in the study were 60-94 years of age. The mean age was 73.64 years and the Standard Deviation (S.D.) was 8.167.

This study was conducted in order to find out the prevalence of insomnia and identify its contributing factors among elderly people of Pashupati Briddhashram (Old Aged Home).

Table 4: shows that majority of the respondents had the physical symptom of pain i.e. 75.0%. Around two third (65.5%) of them had weakness of extremities, followed by problem of blurred vision (54.1%). Each 8.8% of them had diarrhea and skin itching, and 4.7% had constipation.

Presence of physical symptoms.

		N = 148	
S.N.	**Name of symptoms**	**Yes**	**No**
1	Pain	111 (75.0)	37 (25.0)
2	Shortness of breath	53 (35.8)	95 (64.2)
3	Weakness of extremities	97 (65.5)	51 (34.5)
4	Fatigue and malaise	54 (36.5)	94 (63.5)
5	Poor appetite	28 (18.9)	120 (81.1)
6	Skin itching	13 (8.8)	135 (91.2)
7	Dizziness	25 (16.9)	123 (83.1)
8	Diarrhea	13 (8.8)	135 (91.2)
9	Constipation	7 (4.7)	141 (95.3)
10	Urinary frequency	36 (24.3)	112 (75.7)
11	Urinary incontinence	18 (12.2)	130 (87.8)
12	Urinary difficulty	16 (10.8)	132 (89.2)
13	Blurred vision	80 (54.1)	68 (45.9)
14	Difficulty hearing	29 (19.6)	119 (80.4)
15	Dry mouth	28 (18.9)	120 (81.1)

Prevalence of Insomnia

This study has revealed that the prevalence of insomnia among elderly of Pashupati Briddhashram (Old Aged Home) is three fifth (61.5%). This finding is similar to a study conducted in three French cities [7], where more than 70% of the elderly reported at least one insomnia symptom. The finding is also similar to the study conducted in Panchthar district of Nepal [6]; which reported that difficulty maintaining sleep was the most common form of insomnia among the elderly i.e. 61.3% and 49.3% had difficulty initiating sleep. Moreover, the finding is similar to the study conducted in Northern Taiwan [4], where insomnia criteria were met for 41.4% individuals. The finding is in contrast with the finding of the study done in Hong Kong [8], where the prevalence of insomnia was reported to be 11.9% respectively. The finding is also in contrast with the study conducted in long-term care residents of Canada [9], where the prevalence of insomnia was 6.2%.

Table 5: shows that most of the respondents had the physical symptoms for more than 6 months. Majority of them had difficulty hearing (96.6%) and blurred vision (93.8%) for more than 6 months. Similarly, 92.6% of them had fatigue; 91.8% had weakness of extremities; 90.6% had shortness of breath; 89.3% had dry mouth; 88.9% had urinary incontinence; 88.3% had pain; for more than 6 months.

Duration of physical symptoms.

S.N.	Name of symptoms	Yes	No
1	Pain	111 (75.0)	37 (25.0)
2	Shortness of breath	53 (35.8)	95 (64.2)
3	Weakness of extremities	97 (65.5)	51 (34.5)
4	Fatigue and malaise	54 (36.5)	94 (63.5)
5	Poor appetite	28 (18.9)	120 (81.1)
6	Skin itching	13 (8.8)	135 (91.2)
7	Dizziness	25 (16.9)	123 (83.1)
8	Diarrhea	13 (8.8)	135 (91.2)
9	Constipation	7 (4.7)	141 (95.3)
10	Urinary frequency	36 (24.3)	112 (75.7)
11	Urinary incontinence	18 (12.2)	130 (87.8)

12	Urinary difficulty	16 (10.8)	132 (89.2)
13	Blurred vision	80 (54.1)	68 (45.9)
14	Difficulty hearing	29 (19.6)	119 (80.4)
15	Dry mouth	28 (18.9)	120 (81.1)

Age

In this study, about three fourth (76.7%) of the elderly who were 76 years and above had insomnia, whereas around half (51.1%) of the elderly who were 60-75 years had insomnia. There was strong statistical significance between age and insomnia (p=0.002). The finding is similar to the finding of the study in Zagazig city [2], where it was reported that the prevalence of insomnia was higher among the elderly who were above 65 years (63.9%). The finding is consistent with the study in Alexandria, Egypt [10], where it was concluded that advanced age was significantly associated with the insomnia symptoms. The finding is also similar to the study conducted in Hong Kong [8] in which the prevalence of insomnia was shown to increase with age (p<0.001). The finding is also consistent to one of the study done among Greek population [11], where it was found out that insomnia increased with age (p<0.001).

Table 6: shows the total number of physical symptoms present among the respondents. More than half of the respondents (52.7%) had more than 3 physical symptoms. The median of number of physical symptoms is 4.00.

			n = 148
Number of physical symptoms	**Frequency**	**Percentage**	
Up to 3 symptoms	62	41.9	Median: 4.00
More than 3 symptoms	78	52.7	IQR: 2-6

Sex

In this study, more than two third (67.9%) of the females and just more than half (54.3%) of the males had insomnia; but there was no statistical significance between sex and insomnia (p>0.005). The finding is similar to the study by [12] in which it was concluded that men were less likely than female to develop insomnia symptoms. The result is consistent with the result of the study in Zagazig city [2] where females developed insomnia more commonly than males (61.1% vs. 38.9%). Similarly, the study in Hong Kong [8] reported that the insomnia symptoms were more common in females than males (14% vs. 9.3%). Similarly, a study in china [13] showed that women reported more insomnia symptoms than men (36.4% vs. 28.7%, p=0.001). Similarly, according to the study by [7]; women reported more insomnia symptoms than men (75% vs. 70%, p=0.0001). The result is similar to the study by [4] in Northern Taiwan, which concluded that insomnia was more common in women than in men (63.3% vs. 36.7%). The finding is in contrast to the study conducted in Cairo, Egypt [13]; where a significantly higher percentage of males suffered insomnia more than females (45% vs. 22.6%).

Table 7: shows that two fifth of the respondents experienced cough during night (41.2%). About 28.4% of them had the problem of nocturia. Only 1.4% of them had the problem of snoring during sleep.

Presence of problems during night sleep.

			n = 148
S.N.	**Problems**	**Yes**	**No**
1	Cough	61 (41.2)	87 (58.8)
2	Nocturia	42 (28.4)	106 (71.6)
3	Snoring	2 (1.4)	146 (98.6)
4	Bad dreams	15 (10.1)	133 (89.9)
5	Apnea	11 (7.4)	137 (92.6)

Marital status

In this study, more than two third (72.4%) of the unmarried group of elderly, followed by less than two third (62.0%) of divorced and widowed, and less than half (48.1%) of the married had insomnia. The result is similar to the study done in Zagazig city [2]; where insomnia was found to be highest among divorced, widowed and single group of elderly i.e. 66.7%. The result is in contrast with the study conducted in Cairo, Egypt [13]; where it was reported that married individuals suffered insomnia at a significantly higher percentage than unmarried, divorced, separated and widows. The finding also contrasts with the study done by [7] which concluded that widowed or divorced condition was significantly associated with insomnia symptoms (p<0.0001).

Table 8: shows that about half (47.3%) of the respondents suffered from cold weather during night; whereas 35.1%of them suffered from excessive noise in the bedroom at night.

All of the respondents said that they had to share the room with other people. Although they shared the room, they didn't have to share the bed. 100% respondents agreed that there was no excessive light in the bedroom at night and they didn't have the problem of uncomfortable bedding. No one among them suffered from hot weather at night.

Environmental factors

			n = 148
S.N.	**Environmental problems**	**Yes**	**No**
1	Excessive noise in the bedroom at night	52 (35.1)	96 (64.9)
2	Cold weather	70 (47.3)	78 (52.7)

Educational status

This study shows that insomnia was significantly present among the illiterate group of elderly than the literate ones (67.0% vs. 46.2%, p=0.022). The finding is similar to a study of Alexandria, Egypt [10], where it was revealed that higher education was significantly associated with lower symptoms as compared to lower education level and illiterate. The finding is also similar

with the study among selected Greek population [11], where it was reported that the individuals of middle or high education level had a lower likelihood for having insomnia as compared to those of low education level (41.9%). The result contrasts with one of the study in China [13]; in which it was found that there was no statistical difference in the prevalence of insomnia between those without (35.5%) and with (30.8%) literacy (p=0.052).

Table 9: shows that about 14.9% of the respondents were current smokers, 22.3% of them were past smokers and 62.8% of them never smoked. Among the current smokers, 63.6% have been smoking since 50 years and above {the median duration of smoking was 52.50 years}; 63.6% smoked up to 3 sticks of cigarettes per day and 40.9% of them had habit of smoking just before sleeping. Among the past smokers, 36.4% had left smoking for more than 10 years {median duration of smoking=10.00 years} and 66.7% of them had smoked for 36 years and above.

Behavioral factors – Smoking

S.N.	Behavioral factors	Frequency	Percentage	
1	**Smoking habit (n=148)**			
	Yes	22	14.9	
	No	93	62.8	
	Past smoking	33	22.3	
2	**Current smokers (n=22)**			
	2.1 duration of smoking			
	20-29 years	4	18.2	
	30-39 years	1	4.5	Median: 52.50
	40-49 years	3	13.6	IQR: 37.5-60.0
	50 years and above	14	63.6	
	2.2 Number of sticks per day			
	Up to 3 sticks			
	More than 3 sticks	14	63.6	Median: 3.00
		8	36.4	IQR: 2-5.25
	2.3 Habit of smoking just before sleeping			
	Yes	9	40.9	
	No	13	59.1	
3	**Past smokers (n=33)**			
	3.1 duration left smoking			
	Up to 10 years	21	63.6	Median: 10.00
	More than 10 years	12	36.4	IQR: 5.0-15.0
	3.2 duration smoked in the past			
	Up to 35 years	11	33.3	Median: 40.00
	36 years and above	22	66.7	IQR: 30.0-48.0

DURATION OF STAY

In this study, the elderly who stayed in the Briddhashram (Old Aged Home) for more than 5 years had higher prevalence of insomnia as compared to those who stayed for less than or equal to 5 years (76.9% vs. 49.4%; p=0.037). The result is similar to the study in Cairo [14]; which reported that the elderly with increased length of stay in geriatric home had insomnia. The result is in contrast with the study from Alexandria, Egypt [10]; which concluded that short stay in geriatric homes (<1 year) was significantly associated with increase of non-restorative sleep.

Table 10: shows that about one fifth (19.6%) of the total respondents had consumed alcohol in the past and four fifth (80.4%) of them had never consumed alcohol. Among the past alcohol consumers, only 13.8% had left alcohol for 16 years and above; and 44.8% had consumed alcohol for 31 years and more.

Behavioral factors - Alcoholism.

S.N.	Behavioral factors	Frequency	Percentage	
1	**Alcohol consumption (n=148)**			
	Yes	0	0	
	No	119	80.4	
	Past alcohol consumption	29	19.6	
2	**Past alcohol consumers (n=29)**			
	2.1 duration left alcohol			
	Upto15 years	25	86.2	Median: 10.00
	16 years and above	4	13.8	IQR: 5.0-13.5
	2.2 duration consumed alcohol			
	Up to 30 years	16	55.2	Median: 30.00
	31 years and above	13	44.8	IQR: 27.5-42.5

Total number of physical symptoms

In this study, 15 physical symptoms were included in the questionnaire and the total number of symptoms reported by each individual was calculated; the elderly with more than 3 symptoms were found to be at the risk of insomnia as compared to those with 3 or less than 3 symptoms (93.6% vs. 29.0%, p=0.001). The finding is similar to the study in Northern Taiwan [4], which reported that physical symptoms were more common in those with insomnia than in those without, and the total number of physical symptoms was greater in those with insomnia (p<0.001). The result is also consistent with the study of Alexandria, Egypt [10]; where it was found that participants with history of three or more chronic diseases had increased risk of insomnia symptoms.

Table 11: shows that only 17.6% of the respondents had the habit of eating 30 minutes prior to bed time. The respondents having irregular sleep habit was 25.7%. Only 5.4% of them took long naps during daytime.

Behavioral factors – Other factors.

	n = 148

S.N.	Behavioral factors	Frequency	Percentage
1	**Eating 30 minutes prior to bedtime**		
	Yes	26	17.6
	No	122	82.4
2	**Irregular sleep**		
	Yes	38	25.7
	No	110	74.3
3	**Daytime long naps**		
	Yes	8	5.4
	No	140	94.6

Night sleep problems

In this study, it was revealed that there was statistical significance of insomnia with the problems during night sleep like cough (p=0.001), nocturia (p=0.001), bad dreams (p=0.010) and apnea (p=0.007). The finding is consistent with the study conducted in Zagazig city [2]; which concluded that insomnia is statistically higher among the elderly suffering from cough (p=0.04), nocturia (p=0.03) and apnea (p=0.03). Similarly, a study in Cairo [14] reported that nocturia (42.7%) is the significant cause of insomnia.

Table 12: shows that 53.4% of the respondents had mild depression, 37.8% had no depression and only 13 8.8% of them had severe depression. Depression was assessed using Geriatric Depression Scale-short form.
Compared with the same age, current health status was perceived as average by 42.6%, bad by 41.9% and unknown by 4.1%. Similarly, compared with 1 year ago, current health status was perceived as worse by 57.4% of the respondents; only 2.7% said it was better.

Mental factors

			n = 148
S.N.	**Mental factors**	**Frequency**	**Percentage**
1	**Depression**		
	No depression	56	37.8
	Mild depression	79	53.4
	Severe depression	13	8.8
2	**Perceived poor health status**		
	2.1 Compared with the same age, current health status is perceived as;		
	Good	7	4.8
	Average	63	42.6
	Bad	62	41.9
	Very bad	10	6.8
	Unknown	6	4.1
	2.2 Compared with 1 year ago, current health status is perceived as;		
	Better	4	2.7
	The same	49	33.1
	Worse	85	57.4
	Unknown	10	6.8

Environmental problems

In this study, it was found that insomnia is significantly higher among the elderly who suffered from excessive noise (94.2%, p=0.000) and excessive cold (84.3%, p=0.000). The finding is similar to the study in Cairo [14]; which concluded that having noisy places of sleep (76.1%), feeling hot or cold (52.9%) during sleep were among the environmental factors associated with insomnia. Similarly, the study in Hong Kong [8] reported that those residing in the noisy area were associated with a higher risk of insomnia (p=0.001). The study contrasts with the study done in Zagazig city [2]; where it was reported that there is no statistically significant associations of insomnia with environmental problems like noise, heat and cold.

Table 13: shows that more than half of the respondents consumed drugs for long term illness (52.7%). When asked for which diseases they do consume drugs, it was found that 18.9% of the drug consumers took medicines for asthma/COPD; followed by 16.9% for hypertension. Only 2 1.4% each of the drugs consumers consumed drugs for allergy and anorexia.

Use of drugs.

			n = 148
S.N.	Drugs use	Frequency	Percentage
1	Use of drugs for long term illness		
	Yes	78	52.7
	No	70	47.3
2	Drug use for which disease? *		
	Pain	21	14.2
	Diabetes	10	6.8
	Allergy	2	1.4
	Anorexia	2	1.4
	Asthma/COPD	28	18.9
	Gastritis	15	10.1
	Hypertension	25	16.9

Smoking

In this study, there was no association between insomnia and smoking (p=0.118). This result is similar to the study done in China [13]; where there was no significant association of insomnia symptoms with smoking. The result contradicts with the finding of the study in Zagazig city [2], where there was significant relation between insomnia and smoking (p=0.04). The result also contrasts with the study in Cairo [13]; where it was found that smokers were significantly more insomniac than non-smokers (53.7%; p=0.002). Also, in a study of Hong Kong [8]; it was found that smoking became a significant factor with insomnia (p=0.033 for male, 0.001 for female).

Again, the result is inconsistent with the study in Panchthar, Nepal [6]; where majority of the respondents who smoked before sleeping hours had insomnia (p<0.05).

Table 14: shows that insomnia was more common among the age group 76 years and above (76.7%) than 60-75 years (51.1%). Similarly, females had more prevalence of insomnia (67.9%) than male (54.3%). Unmarried group of respondents had more prevalence of insomnia (72.4%). Insomnia

was more common among illiterate group of respondents (67.0%). There is statistical significance between age, educational status; and insomnia {the calculated 'p' value is less than 0.05}. Among the widowed, those who were widowed for more than 10 years, had developed insomnia commonly (75.0%). Those living in the Briddhashram for more than 5 years had more prevalence of insomnia (76.9%). Around two third (69.8%) of the respondents whose family members didn't visit them had insomnia. There is statistical significance between insomnia and the selected three factors (duration of widowhood, duration of stay and visit by family members) {the calculated 'p' value is less than 0.05}.

Association of selected socio-demographic variables with Insomnia.

S.N.	Variables	Insomnia present	Insomnia absent	p value
1	Age			
	60- 75 years	45 (51.1)	43 (48.9)	0.002*
	76 years and above	46 (76.7)	14 (23.3)	
2	Sex			
	Male	38 (54.3)	32 (45.7)	0.088*
	Female	53 (67.9)	25 (32.1)	
3	Marital status			
	Married	13 (48.1)	14 (51.9)	0.174*
	Unmarried	21 (72.4)	8 (27.6)	
	Divorced and Widowed	57 (62.0)	35 (38.0)	
4	Educational status			
	Illiterate	73 (67.0)	36 (33.0)	0.022*
	Literate	18 (46.2)	21 (53.8)	
5	Duration of widowhood			
	1-10 years	25 (51.0)	24 (49.0)	0.025*
	Above 10 years	27 (75.0)	9 (25.0)	
6	Duration of stay			
	Up to 5 years	41 (49.4)	42 (50.6)	0.037*
	More than 5 years	50 (76.9)	15 (23.1)	
7	Visit by family members			
	Yes	17 (40.5)	24 (59.5)	0.001*
	No	74 (69.8)	32 (30.2)	

Key: *chi-square test.

Other Behavioral Factors

In this study, it was found that insomnia is significantly higher among the elderly who had habit of eating 30 minutes prior to bed time (p=0.008) and irregular sleep time (p=0.000). The findings are similar to the study in Zagazig city [2]; where it was found that there was significant relation of insomnia with eating too close to bedtime (p=0.02) and irregular sleep time (p=0.047). Similar result was found in the study done in Panchthar, Nepal [6]; where majority of the respondents who had habit of eating too close to bed time had insomnia (p<0.05).

Table 15: shows that majority of the respondents having more than 3 physical symptoms (93.6%) developed insomnia. Majority of the elderly having cough (95.1), nocturia (92.9%), snoring (100.0%), and bad dreams (93.3%) and apnea (100.0%) developed insomnia. There is statistical significance between total number of physical symptoms; cough; nocturia; bad dreams; apnea; and insomnia {the calculated 'p' value is less than 0.05}.

Association of physical symptoms and night problems with Insomnia.

S.N.	Variables	Insomnia present	Insomnia absent	P value
1	Total number of physical symptoms			
	Up to 3 symptoms	18 (29.0)	44 (71.0)	0.000*
	More than 3 symptoms	73 (93.6)	5 (6.4)	
2	**Night sleep problems**			
	Cough			
	Yes	58 (95.1)	3 (4.9)	0.000*
	No	33 (37.9)	54 (62.1)	
	Nocturia			
	Yes	39 (92.9)	3 (7.1)	
	No	52 (49.1)	54 (50.9)	0.000*
	Snoring			
	Yes	2 (100.0)	0 (0.0)	
	No	89 (61.0)	57 (39.0)	0.523**
	Bad dreams			
	Yes	14 (93.3)	1 (6.7)	
	No	77 (57.9)	56 (42.1)	0.008*
	Apnea			
	Yes	11 (100.0)	0 (0.0)	
	No	80 (58.4)	57 (41.6)	0.006*

Depression

This study shows that there is higher statistical significance between insomnia and depression (93.5%, p=0.000) and elderly with severe depression had higher risk of insomnia. This result is consistent with the study in Alexandria, Egypt [10]; where it was reported that depressive status was significantly associated with an increased risk of Difficulty Maintaining Sleep. Similarly, the finding supported the study in Italy [15]; in which depression was significantly related to insomnia and patients affected by severe depression were exposed to a higher risk of developing sleep problems (OR=3.9).

Table 16: shows that most of the respondents who felt excessive cold (84.3%) had insomnia. Majority of the respondents who ate 30 minutes prior to bedtime (84.6%) and who had habit of irregular sleep time (94.7%) had insomnia. There is statistical significance between excessive noise; excessive cold; eating 30 minutes prior to bedtime; irregular sleep time; and insomnia.

Association of environmental and behavioral factors with Insomnia.

S.N.	Variables	Insomnia present	Insomnia absent	p value
1	**Environmental problems**			

	Excessive noise in the room during night			
	Yes	49 (94.2)	3 (5.8)	0.000*
	No	42 (43. 8)	54 (56.3)	
	Excessive cold in the room	42 (43.8)	54 (56.3)	
	Yes	59 (84.3)	11 (15.7)	0.000*
	No	32(41.0)	46 (59.0)	
2	Behavioral factors			
	Smoking			
	Yes	11 (50.0)	11 (50.0)	
	No	55 (59.1)	38 (40.9)	0.118*
	Not now	25 (75.8)	8 (24.2)	
	Alcoholism			
	Yes	0	0	
	No	73 (61.3)	46 (38.7)	0.943*
	Not now	18 (62.1)	11 (37.9)	
	Eating 30 minutes prior to bedtime			
	Yes	22 (84.6)		
	No	69 (56.6)		
	Irregular sleep time			
	Yes	36 (94.7)	4 (15.4)	0.008*
	No	55 (50.0)	53 (43.4)	
			2 (5.3)	
			55 (50.0)	0.000*

Key: *chi-square test.

Perceived Poor Health Status

This study shows that there is strong association between insomnia and perception of poor health status compared to 1 year ago (p=0.001); 83.5% of elderly who perceived their health status as worse compared to a year ago had insomnia. The finding is similar to the study in Cairo [14]; where a significantly higher percentage of elderly with bad self-perception of owns health, suffered insomnia (77.8%). The finding is also consistent with the study in Italy [15], where poorer self-rated health was associated with presence of insomnia (p<0.05). Similarly, in the study of Northern Taiwan [4], good perceived health status was associated with decrease risk of insomnia and poor perceived health status was associated with an increased risk of insomnia. In comparison to this study, the study in china [13] had lower risk (45.9%) for insomnia related to poor perceived health in the elderly.

Table 17: shows that majority of the respondents having depression (93.5%) had insomnia. Among the depressive respondents, 93.7 % having mild depression had insomnia, whereas 100.0% having severe depression had insomnia. Insomnia was more common among the respondents; who perceived their health status as being worse as compared with 1 year ago (83.5%).There is statistical significance between depression; perception of poor health status – compared with 1 year ago; and insomnia {the calculated 'p' value is less than 0.05}.

Association of depression and health status perception with Insomnia.

S.N.	Variables	Insomnia present	Insomnia absent	P Value
1	Depression			
	Yes	86 (93.5)	6 (6.5)	0.000*
	No	5 (8.9)	51 (91.1)	
2	Category of depression			
	No depression	5 (8.9)	51 (91.1)	0.000*
	Mild depression	74 (93.7)	5 (6.3)	
	Severe depression	13 (100.0)	0 (0.0)	
3	Compared with 1 year ago, current health status is perceived as;			
	Better, The same and unknown	20 (31.7%)	43 (68.3%)	0.000*
	Worse	71 (83.5%)	14 (16.5%)	

Key: *chi-square test.

Drugs Use

This study revealed that there was strong association between drugs use for long term illness and insomnia (p=0.000); 88.5% elderly who consumed drugs for long term illness had insomnia. The result is similar to the study by [12]; in which medications like asthma-related, diuretics and hypertension related were associated with development of insomnia symptoms. Also the result was consistent with the study in Northern Taiwan [4]; where having the receipt for chronic disease (p<0.001) was associated with increased risk of insomnia.

Table 18: shows that majority of the respondents consuming drugs for long term illness (88.5%) had insomnia. There is statistical significance between use of drugs for long term illness and insomnia as the calculated 'p' value is less than 0.05.

Association of drugs use with Insomnia.

S.N.	**Variable**	**Insomnia present**	**Insomnia absent**	**p value**
1.	Use of drugs for long term illness			
	Yes	69 (88.5)	9 (11.5)	0.000*
	No	22 (31.4)	48 (68.6)	

CONCLUSION

Based on the findings of the present study, it can be concluded that around three fifth (61.5%) of the elderly people in Pashupati Briddhashram (Old Aged Home) were suffering from insomnia. Insomnia was more prevalent among the age group 76 years and above (76.7%). Females were found to be more insomniac as compared to males. Similarly, elderly with unmarried status had more prevalence of insomnia (72.4%). Most of the elderly were illiterate and had high prevalence of insomnia (67.0%). Longer duration of widowhood, duration of stay in Briddhashram and visit by family members were found to be

significantly associated with insomnia among elderly. Also, insomnia was found to be associated with the problems during night sleep such as cough, nocturia, bad dreams and apnea. Similarly, other contributing factors found to be associated with insomnia include; increased number of physical symptoms, excessive noise, excessive cold, eating 30 minutes prior to bedtime, irregular sleep time, depression, perceived poor health status and use of drugs for long term illness. Those suffering from severe depression had 100% developed insomnia.

Insomnia is one of the problems of the elderly population. Moreover, physical symptoms, problems during night sleep, environmental factors, behavioural factors, depression, perceived poor health status and drugs use for illness affected the risk of insomnia. The contributing factors of insomnia must be taken into account to reduce the prevalence of insomnia among elderly.

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