RESEARCH ARTICLE

Insomnia and its associated factors among older people of selected ward of Banepa municipality, Nepal

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Abstract

Aims: The aim of this study was to calculate the prevalence of insomnia and identify the factors associated with it among older people of Banepa Municipality, Province No.3 of Nepal.

Design: A quantitative descriptive cross-sectional study was done; data were collected for three months from September–November 2018.

Methods: One hundred and fourteen older people were recruited. The data were collected through a structured interview questionnaire that included socio-demographic characteristics and Nepalese version of standard Pittsburgh Insomnia Rating Scale (20-item version). Information on general health conditions, alcohol intake and personal habits was also collected.

Results: The mean age of the respondents (N = 114) was 76.04 (SD 7.81), years and 51.8% were females. The prevalence of insomnia was 71.1% in the older population. Significant associations were found between insomnia and advanced age ($p = .002$), illiteracy ($p < .001$), not working ($p < .001$), financially dependent on others ($p < .001$), presence of comorbid disease ($p < .001$) and taking regular medicine at present ($p < .001$).

KEYWORDS
insomnia, Nepal, nurses, nursing, older people

1 | INTRODUCTION

There is an increasing trend in ageing population globally, expected to double by 2050 and more than triple by 2,100 and thus resulting 13% of the global population (United Nations. DESA/Population Division, 2015). In the context of Nepal, 7% of the total population accounts for the older population. One of the challenges confronting the ageing population, in particular, is insomnia (Yadav, 2012). Insomnia is a predominant geriatric issue, and aetiology might be multi-factorial, however, often mistakenly considered a normal part of ageing. It is characterized by dissatisfaction with sleep quantity or quality, along with early morning awakening, difficulty initiating, maintaining and non-restorative sleep that causes impairment in vital areas of functioning, that is physical, mental, social, occupational and behavioural (APA, 1980).

Globally, various studies were conducted on a global scenario which has shown variable findings about insomnia in older people (Brody, 2017; George, Paul, & Paul, 2018; Farazdaq, Andrades, & Nanji, 2018; Khagi, Timalsina, Chhantyal, Shiwakoti, & Maharjan, 2019; McCall, 2004). The prevalence of insomnia has been reported in the range of 12%–40% in the older population aged >65 years (Pathy,

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Sinclair, & Morley, 2006) whereas it has been reported to be 82.17% in India (Ahmad, Ansari, & Khan, 2016), 42.1% in Pakistan (Farazdaq et al., 2018) and 37.75% in China (Wang et al., 2016). In Nepal, the prevalence of insomnia was reported 56.4%–61.5% in different regions of Nepal (Shrestha, Roka, Shrestha, & Shakya, 2017; Subedi, 2010; Timalsina, 2017). It is predominant when a coexisting medical or psychiatric illness is taken into contemplations. Lifestyle changes associated with retirement, the increased incidence of health problems and the use of multiple medications (polypharmacy), comorbid conditions such as dementia and Alzheimer are at increased risk of disrupted sleep (National Sleep Foundation, 2018; Shrestha, Shrestha, & Khanal,2019; Pathy et al., 2006). If not tended to legitimately, insomnia itself incites numerous different diseases and causes significant morbidity, negative impact on well-being, as well as degrades the quality of life (Aritake et al., 2015; National Sleep Foundation, 2018).

Previous studies have identified various factors associated with insomnia among the older population. For instance, gender, educational level, occupational status, financial dependency, marital status, accompanying chronic diseases, medical comorbidities, drug use, current smoking, caffeine intake before bedtime and environmental factors were identified as associated factors in one or more studies (George et al., 2018; Hosseini, Saadat, Esmaili, & Bijani, 2017; Luo et al., 2013; Mendoza-Meléndez, Jimenez-Correa, Gallegos-Cari, Ayala-Guerrero, & Jiménez-Anguiano, 2016; Miner et al., 2018; Sagayadevan et al., 2017).

In Nepal, there are limited number of studies (Shrestha et al., 2017; Subedi, 2010; Timalsina, 2017) that have explored insomnia and its associated risk factors in older population. Published studies on this issue of insomnia in older people from our part of geography are scarce. Therefore, the current study aimed to study the twofold: (a) the prevalence of insomnia in the older population and (b) the associated factors with insomnia.

2 | THE STUDY

2.1 | Design

The study used a descriptive, cross-sectional research design.

2.2 | Setting and samples

We included 114 older people aged ≥65 years residing in Ward No. 9 of Banepa Municipality, Kavrepalanchok, situated at Province No. 3 using a non-probability purposive sampling technique.

2.3 | Sample size

The sample size for the study was calculated using Slovin's formula based on the total number of older people residing in the study area was 165 and assumed 6% of error tolerance. The minimum sample size required for the study was calculated as 104. Considering 10% of non-response rate, the total sample was increased to be 114.

2.4 | Ethical considerations

The study was conducted only after getting permission from the ethical board of Nepal, Nepal Health Research Council (NHRC), Ref No. 665. Permission to conduct the research was also obtained from Banepa Municipality. Permission to use standard questionnaire of Pittsburgh Insomnia Rating Scale—20-item version (PIRS_20) and translate it into Nepali was obtained from Moul et al., who developed the scale (Moul, Pilkonis, Miewald, Carey, & Buysse, 2002). Prior to the data collection, formal permission was obtained from each respondent and the respondents were informed about the purpose and objectives of the study. Privacy and confidentiality were maintained by not disclosing the name of the participants and ensuring them, that collected information was used only for the research purpose. Human right and justice were maintained as respecting all respondents with due respect.

2.5 | Data collection tool

Data were collected for three months from September–November 2018. The face-to-face interview was taken by the researcher using a structured pre-designed questionnaire. The allocated time for each interview was 20–25 min. The questionnaire was designed to cover three main sub-headings:

1. Socio-demographic characteristics including age, sex, marital status, educational status, religion, ethnic group, current working status and financial status.
2. Questionnaire regarding possible risk factors of insomnia in older people including daytime napping family complains of older people snoring while sleeping, presence of comorbid diseases, regular intake of medications, frequent urination at night, health problems during sleep time and smoking and alcohol habits.
3. Pittsburgh Insomnia Rating Scale—20-item version (PIRS_20) (Nepalese Version).

PIRS_20 scale is highly standardized with 20 items was used to assess insomnia. The question of this instrument asks about sleep pattern in the past 7 days and nights. The scale is divided into three parts. Part A has 12 items related to sleep problems in the past 7 days. The respondents answered on Likert scale from 0 to 3 with 0 indicating not at all bothered, 1 indicating slightly bothered, 2 indicating moderately bothered and 3 indicating severely bothered. Part B has 4 items related to time to fall asleep, time to fall back to sleep, actual sleep during the worst night and days of trouble coping because of poor sleep. The respondents rated from 0 to 3. Part C has 4 items related to sleep quality, sleep satisfaction, regularity and soundness of sleep. The respondents answered on Likert scale from 0 to 3 with 0 indicating excellent, 1 indicating good, 2 indicating fair and 3 indicating poor. Addition of all the answers gives the final score 60. Minimum score 0 is a good, maximum score of 60 is bad, and score >20 is diagnosed as insomnia (Moul et al., 2002).

2.6 | Validity and reliability

The tool developed was discussed with experts, and suggestions were incorporated. The validity of the instrument was maintained by developing the research tool based on objectives of the study, extensive literature review, consulting with a statistician, seeking the opinion of research experts for accuracy and adequacy of the content and peer review at the beginning and throughout the study.

The reliability of the instrument tool was maintained by pretesting with 10% (11 samples) of the total sample size at Thaiba 7, Lalitpur, which was a non-study area, and Cronbach's alpha for insomnia scale was .935. A simple and understanding language was used in the questionnaire for obtaining a response from older people. The questionnaire was translated from English to Nepalese and back to the English language. The translated questionnaire was checked by English and Nepalese language expert. For clarity and easiness, the Nepalese translated questionnaire was used for data collection. After pretesting, necessary changes were made such as simplified to the level of understanding by respondents. The sequence of the question was also restructured based on the findings of the pretesting for the smooth conduction of the interview.

2.7 | Data analysis

The collected data were checked, organized, reviewed and analysed on the basis of the objectives of the study. After the data collection, the data were edited, classified, organized, coded and entered into Statistical Package for Social Science (SPSS version 23). The data were interpreted in terms of descriptive statistics such as frequency, mean, percentage and standard deviation and inferential statistics such as the chi-square test to find out the association between selected variables. Differences at a p value .05 or less were considered statistically significant.

3 | RESULTS

3.1 | General characteristics

More than half of the respondent's age (56.1%) ranged from 65 to 76 years with the mean age 76.04 I (SD 7.81) years. More than half of the respondents (51.8%) were female, following Hindu religion (84.2%) and Janajati (56.1%). Most respondents (43.9%) were illiterate. Most respondents (76.3%) were married. More than half of the respondents (55.3%) were currently working. More than half of the respondents (54.4%) were financially dependent on others. Most respondents (74.6%) take a daytime nap. Half of the respondents' family (50.9%) reported that that they snore at night. Most respondents (64.0%) had the comorbid disease. Among them, 47.9% of the respondents had hypertension and taking regular medicine for hypertension. Here, 75.4% of the respondents were smokers and 65.78% of the respondents were alcoholics (Table 1).

3.2 | Pittsburgh insomnia rating scale

Analysis of part A of PIRS_20 revealed that in the past week more than half (58.8%) of the respondents were slightly bothered by one or more awakenings after getting to sleep, poor alertness during the daytime (53.5%), difficulty keeping thoughts focused (54.4%), too many difficulties to overcome (54.4%) and bad mood(s) because of poor sleep (57.0%). Most respondents were not getting enough sleep (60.5%), sleep that does not fully refresh them (64%), noticing them appeared tired or fatigued (62.3%), lack of energy because of poor sleep (64.0%) and being able to do only enough to get by (60.5%). However, most of the respondents (94.7%) were not at all bothered by poor sleep that interferes with their relationships. More than half of the respondents (51.8%) were moderately bothered by being unable to sleep (Table 2).

Analysis of part B of PIRS_20 revealed that most respondents (71.9%) were able to fall asleep between half to 1 hr. Most respondents (67.5%) were able to fall back to sleep on most nights between half to 1 hr. Similarly, most respondents (78.9%) had between 4–7 hr of actual sleep during the worst night. Most respondents (65.8%) did not have nor had up to one day for trouble coping because of poor sleep (Table 3).

Analysis of part C of PIRS_20 revealed that most of the respondents (84.2%) rated their sleep quality, as fair. Most respondents (65.8%) rated their satisfaction with sleep as fair. Among the total respondents, 46.5% rated their regularity of sleep as poor. More than half of the respondents (51.8%) rated their soundness of sleep as fair (Table 4).

3.3 | Prevalence of insomnia among the study sample

The data revealed that most respondents (71.1%) had insomnia which was shown in Figure 1.

3.3.1 | Relation between insomnia and other variables

Table 5 shows the relation between insomnia and other measured variables. There is a significant association between insomnia and age (p = .002) and educational status (p < .001), past occupation (p = .003), current working status (p < .001) and financially dependent on others (p < .001) among older people. The present study did not find any associations between sex, religion, caste (ethnic group) and marital status with insomnia among older people. There was no significant association between daytime naps, family complains of snoring at night, smoking and alcohol habit with insomnia. There was a significant association of the presence of comorbid disease (p < .001) and taking regular medicine at present (p < .001) with insomnia among older people. However, there was no association with the frequency of urination at night and the presence of health problems during night sleep with insomnia (p = .931 and .111, respectively).

TABLE 1 General characteristics of the study sample (*n* = 114)

Variables	No. (%)
Age (in completed years)	
65–76	64 (56.1)
77 and above	50 (43.9)
Mean ± *SD*	76.04 ± 7.814
Sex	
Male	55 (48.2)
Female	59 (51.8)
Religion	
Hindu	96 (84.2)
Buddhist	13 (11.4)
Christian	5 (4.4)
Caste (Ethnic group)	
Dalit	2 (1.8)
Janajati	64 (56.1)
Brahman/Chhetri	48 (42.1)
Educational level	
Illiterate	50 (43.9)
Informal education	40 (35.1)
Primary level (up to 5)	14 (12.3)
Secondary level (6–12)	9 (7.89)
University level and above (>12)	1 (0.9)
Marital status	
Married	87 (76.3)
Widowed	26 (22.8)
Separated	1 (0.9)
Current working status	
Working	63 (55.3)
Not working	51 (44.7)
Financially dependent on others	
Yes	62 (54.4)
No	52 (45.6)
Daytime nap	
Yes	85 (74.6)
No	29 (25.4)
Family complain of snoring at night	
Yes	58 (50.9)
No	56 (49.1)
Presence of comorbid disease	
Yes	73 (64.0)
No	41 (36.0)
If yes[a] (*n* = 73) (Self-reported)	
Diabetes	20 (27.4)
Hypertension	35 (47.9)
Respiratory disease	26 (35.6)
Gastritis	8 (11.0)

(Continues)

TABLE 1 (Continued)

Variables	No. (%)
Thyroid disorder	5 (6.8)
Taking regular medicine	
Yes	73 (64.0)
No	41 (36.0)
Smoking habit	
Non-smoker	28 (24.6)
Smoker	86 (75.43)
Alcohol habit	
Non-alcoholic	39 (34.2)
Alcoholic	75 (65.78)

[a]Multiple responses.

4 | DISCUSSION

In this study, we aimed to calculate the prevalence of insomnia and identify the associated factors with insomnia among older people. To date, there have been limited studies conducted in Nepal highlighting insomnia in the context of its associated factors. The present study found 71% of the older population was insomniac and identified several associated factors with insomnia.

4.1 | Prevalence of insomnia

Our study showed that 71.1% of respondents had insomnia which is in line with other studies in India (Ahmad et al., 2016), Egypt (El-Gilany, Saleh, Mohamed, & Elsayed, 2017), Korea (Jeon & Choi-Kwon, 2017) and Nepal (Shrestha et al., 2017). On contrary, some other studies in the USA (George et al., 2018; Mendoza-Meléndez et al., 2016; Miner et al., 2018), Singapore (Sagayadevan et al., 2017), Iran (Hosseini et al., 2017), South Korea (Kim et al., 2017) and China (Luo et al., 2013; Tsou, 2013) have shown lower prevalence than the current study. These variations in insomnia prevalence may be attributed to the absence of standardization in the definition of insomnia. Additionally, the variance in the prevalence observed could be due to several factors such as interviewing techniques, lifestyle, physical activities and diet; however, the present study did not account for those factors.

4.2 | Factors associated with insomnia

The present study has found that increased age, being illiterate not working and financial dependency on others are significantly associated with insomnia. A significant association was found between the age and insomnia among older people, which indicates that people who were 77 years and above were insomniacs. Additionally, the present study also identified the comorbid disease as another factor associated with insomnia. These findings agreed with what other scholars have found in Northern Taiwan (Tsou, 2013). The study has concluded that increasing age is not the only contributing factor

TABLE 2 Older response on Pittsburgh insomnia rating scale part A (*n* = 114)

Characteristics	Not at all bothered No. (%)	Slightly bothered No. (%)	Moderately bothered No. (%)	Severely bothered No. (%)
In the past week, how much were you bothered by:				
One or more awakenings after getting to sleep	17 (14.9)	67 (58.8)	27 (23.7)	3 (2.6)
Not getting enough sleep	17 (14.9)	69 (60.5)	25 (21.9)	3 (2.6)
Sleep that doesn't fully refresh you	28 (24.6)	73 (64.0)	13 (11.4)	–
Poor alertness during the daytime	48 (42.1)	61 (53.5)	5 (4.4)	–
Difficulty keeping your thoughts focused	45 (39.5)	62 (54.4)	7 (6.1)	–
Others noticing you appeared tired or fatigued	28 (24.6)	71 (62.3)	15 (13.2)	–
Too many difficulties to overcome	51 (44.7)	62 (54.4)	1 (0.9)	–
Bad mood(s) because you had poor sleep	36 (31.6)	65 (57.0)	13 (11.4)	–
Lack of energy because of poor sleep	34 (29.8)	73 (64.0)	7 (6.1)	–
Poor sleep that interferes with your relationships	108 (94.7)	6 (5.3)	–	–
Being unable to sleep	4 (3.5)	48 (42.1)	59 (51.8)	3 (2.6)
Being able to do only enough to get by	15 (13.2)	69 (60.5)	30 (26.3)	–

TABLE 3 Older response on Pittsburgh insomnia rating scale part B (*n* = 114)

Characteristics	No. (%)
Time to fall asleep on most nights	
Less than ½ hr	20 (17.5)
Between ½–1 hr	82 (71.9)
Between 1–3 hr	12 (10.5)
Time to fall back to sleep on most nights	
Less than ½ hour or I didn't wake up	12 (10.5)
Between ½–1 hr	77 (67.5)
Between 1–3 hr	24 (21.1)
More than 3 hr or I didn't fall back to sleep	1 (0.9)
Actual sleep during the worst night	
More than 7 hr	3 (2.6)
Between 4–7 hr	90 (78.9)
Between 2–4 hr	20 (17.5)
Less than 2 hr or I didn't sleep	1 (0.9)
Trouble coping because of poor sleep	
None or 1 day	75 (65.8)
On 2 or 3 days	12 (10.5)
On 6 or all days	27 (23.7)

of insomnia but is associated with other chronic diseases, physical symptoms such as pain, shortness of breath, fatigue, weakness, dizziness and mental health status.

The current study found a significant association between insomnia and literacy level. Insomnia was significantly present among the illiterate group of older people than the literate ones, consistent with a previous studies in Taiwanese urban area (Su, Huang, & Chou, 2004) and South Korea (Kim et al., 2017) that has shown the individual with low education level had a higher likelihood for having

insomnia compared with those of high education level. According to a study conducted by Cutler and Lleras-Muney in 2006, education is related to general health of the population. The probable mechanisms for their relation are such as income and access to health care, problem-solving skills, social networking and comparative position in society (Cutler & Lleras-Muney, 2006).

The present study reported that there is a significant association between current working statuses and insomnia as most of the non-working group of older people (90.2%) had insomnia. The result is consistent with the study done in Canada (Bastien, Vallieres, & Morin, 2004) where the prevalence of insomnia was higher among them who were not employed. This finding is also consistent with more recent study conducted among older patients attending a geriatric centre in Nigeria (Ogunbode, Adebusoye, Olowookere, Owolabi, & Ogunniyi, 2014).

Our study reported that there was a significant association of financial dependency on others and insomnia. Similar associations were reported in a study conducted in Nigeria (Ogunbode et al., 2014) and Nepal (Timalsina, 2017). The current study findings revealed that there was a statistical significance of insomnia with regular medication use (*p* < .001). A similar finding was reported in a study conducted in Egypt (Allah, Abdel-Aziz, & El-Seoud, 2014) who reported that medications have a negative effect on sleep in older people.

Greater prevalence of insomnia was found among older women (Kim et al., 2013; Wong & Fielding, 2011); however, in this study, we could not find significant association between gender and insomnia This finding is contrary to most of the studies (Dowd, Goldman, & Weinstein, 2011; Inoue et al., 2013). Furthermore, one study conducted in India reported that female gender was associated with increased risk for insomnia in the Indian older people (Ahmad et al., 2016). Similarly, this study also found no association of religion with insomnia. This finding is contrary to the study conducted in India which reported the Hindu religion as the factor associated with

Characteristics	Excellent No. (%)	Good No. (%)	Fair No. (%)	Poor No. (%)
Over the past week, how would you rate				
Sleep quality, compared to most people	–	12 (10.5)	96 (84.2)	6 (5.3)
Satisfaction with sleep	–	9 (7.9)	75 (65.8)	30 (26.3)
Regularity of sleep	–	13 (11.4)	48 (42.1)	53 (46.5)
Soundness of sleep	–	15 (13.2)	59 (51.8)	40 (35.1)

insomnia among older people (Ahmad et al., 2016). These contradictory findings between these studies may be related to the small sample size in the present study. The sample size of the present study was 114, whereas that of a study conducted in India comprised of 600.

We did not observe an association between factors such as marital status and daytime naps with insomnia. Our findings differed from those of the study conducted in Egypt among 107 older people. The scholars reported a significantly higher percentage of divorced, widowed and single groups of older people suffered from insomnia as well as a significant relation of insomnia with irregular sleep time (Allah et al., 2014). Also, it has been observed that daytime naps contribute to insomnia (Zdanys & Steffens, 2015). These contrasts may be due to a different setting in the studies.

The current study did not find an association of insomnia with older people who had the habit of snoring at night. In addition, the present study did not find an association between smoking habits and insomnia. A similar finding was found in the study done in Kathmandu where it was found that older people who had a habit of snoring and smoking have no association with insomnia symptoms (Shrestha et al., 2017).

The present study demonstrated urinating at night is not likely to be encountered among the insomniac older people. This was inconsistent with the study conducted in Egypt which reported a range of physical symptoms such as nocturia, restless leg, acidity, heartburn and sleep apnoea results frequent awakenings at night. Furthermore, this range of physical symptoms has more risk for insomnia among all age groups and significantly increased with age (Ayoub, Attia, Kady,

& Ashour, 2014). And also, Bakr, Ezz, Abd Elaziz, Khater, and Fahim (2011) concluded that insomnia is caused by a multitude of health problems. The difference in the tools used to assess the sleep and the size of the sample may explain these variations.

An adverse effect of alcohol on sleep and the use of alcohol as self-medication in insomniacs have been widely studied (Brower, Aldrich, Robinson, Zucker, & Greden, 2001; Stein & Friedmann, 2005). However, the current study did not find an association between alcohol habits and insomnia. The finding contrasts with the finding of Jefferson et al., 2005 and more recently in India where the scholars reported that alcohol abuse as one of the attributes with a positive correlation which exacerbates the sleep problems in older people (Gambhir, Chakrabarti, Sharma, & Saran, 2014).

5 | STUDY LIMITATIONS

This study has some possible limitations. The study was confined only to Ward No. 9 of Banepa Municipality, Province No. 3 of Nepal. In addition, the sample size of the study was small, limiting the generalizability of the findings at the national level. Recall period might have introduced recall biases in relation to questionnaires relating to insomnia as older people were asked about sleep-related information in the past weeks.

6 | CONCLUSIONS

The quantitative findings showed that insomnia is highly prevalent among most older people living in Nepal. Insomnia was associated with advanced age, lower educational level not working, financial dependency, presence of comorbid disease and taking regular medication.

7 | RECOMMENDATIONS

The findings of this study would be useful for the healthcare personnel as well as the family members and other individuals to recognize insomnia and its related factors among older people and make the fundamental move to lessen them as much as possible. The findings of this study might also be helpful to conduct health instructions and

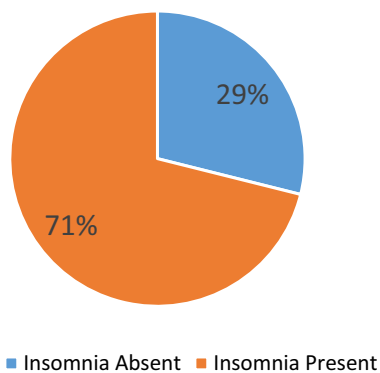### Prevalence of insomnia among the study sample (n = 114)

■ Insomnia Absent   ■ Insomnia Present

FIGURE 1 Prevalence of insomnia among the study sample

TABLE 5 Relation between insomnia and other variables

Variables	Insomnia absent No. (%)	Insomnia present No. (%)	χ^2 value	p value
Age				
65–76	26 (40.63)	38 (59.37)	9.675	.002*
77 and above	7 (14)	43 (86)		
Sex				
Male	18 (32.8)	37 (67.2)	0.738	.39
Female	15 (25.42)	44 (74.58)		
Religion				
Hindu	28 (29.17)	68 (70.83)	0.014	.905
Non-Hindu	5 (27.78)	13 (72.22)		
Caste (Ethnic group)				
Brahman/Chhetri	18 (37.5)	30 (62.5)	2.949	.086
Other than Brahman/Chhetri	15 (22.73)	51 (77.27)		
Educational level				
Illiterate	6 (12)	44 (88)	12.437	<.001*
Literate	27 (42.19)	37 (57.81)		
Marital status				
Married	29 (33.33)	58 (66.67)	3.436	.064
Other than married	4 (14.81)	23 (85.19)		
Current working status				
Working	28 (44.44)	35 (55.56)	16.443	<.001*
Not working	5 (9.80)	46 (90.2)		
Financially dependent on others				
Yes	6 (9.68)	56 (90.32)	24.539	<.001*
No	27 (51.92)	25 (48.08)		
Daytime nap				
Yes	23 (27.06)	62 (72.94)	0.579	.447
No	10 (34.48)	19 (65.52)		
Family complains of snoring at night				
Yes	17 (29.31)	41 (70.69)	0.008	.931
No	16 (28.57)	40 (71.43)		
Smoking habit				
Absent	10 (35.71)	18 (64.29)	0.826	.363
Present	23 (26.74)	63 (73.26)		
Alcohol habit				
Absent	14 (35.90)	25 (64.10)	1.392	.238
Present	19 (25.33)	56 (74.67)		
Presence of comorbid diseases				
Yes	12 (16.44)	61 (83.56)	15.442	<.001*
No	21 (51.22)	20 (48.78)		
Taking regular medicine				
Yes	12 (16.44)	61 (83.56)	15.442	<.001*
No	21 (51.22)	20 (48.78)		
Frequency of urination at night				
Two or less than two times	25 (34.25)	48 (65.75)	2.771	.096

(Continues)

TABLE 5 (Continued)

Variables	Insomnia absent No. (%)	Insomnia present No. (%)	χ^2 value	*p* value
Three or more than three times	8 (19.51)	33 (80.49)		
Health problems during night sleep				
Yes	15 (23.08)	50 (76.92)	2.534	.111
No	18 (36.73)	31 (63.27)		

*p value < .05 = statistically significant, chi-square test.

educational programmes for older people with insomnia to improve their sleeping pattern and quality of life. The result of this study would be useful to other future researchers as a source of reference or pattern data to direct research more extensive scales.

CONFLICT OF INTEREST

The authors declare that no conflict of interests .

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE [http://www.icmje.org/recommended/]):

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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