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Prevalence of Sleep Disorders And Its Association With Socio-Demographic Variables Among Elderly People of Bardiya District, Nepal

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Abstract

Sleep disorders constitute a substantial public health concern in an ageing society. It encompasses any disruption in the quantity or quality of sleep. This research aims to ascertain the prevalence of sleep disorders and its association with socio-demographic variables among the elderly residing in the Bardiya district of Nepal. A descriptive cross-sectional research design was adopted for the study. This study relies entirely on primary data, and a sample of 60 elderly people from community of Mainapohar-06, Badhaiyatal, Bardiya, Nepal was selected using simple random sampling method. The data were analyzed employing descriptive and inferential statistics through software (SPSS version 21). The findings of the research revealed that 75% of the sixty elderly had sleep disorders, while 25% did not, and 38.3% of them had daily trouble getting off to sleep. Among the various factors; gender, health condition, and educational status have a statistically significant association with sleep disorders. It can be inferred that a majority of the participants experienced sleep disturbances, thereby exposing themselves to more severe physical and mental health consequences.

Keywords: Sleep disorders, Elderly people, Prevalence, Socio–demographic variables, Chi-square test

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Introduction

Sleep is an essential daily function that allows for physical and mental wellbeing. Even though our sleep patterns change as we age, sleep is still essential. Sleep disorder is an emerging public health problem (Stranges et al., 2012). Sleep disorders pose a substantial public health concern in an ageing society. An estimated 50% of individuals 55 years and elderly suffer from insomnia (Cybulski et al., 2019). Diverse negative consequences may result from sleep disruption (Lu et al., 2021). In the context of Nepal, the elderly constitute 7% of the overall populace. Sleep disorders have emerged as a significant challenge for the geriatric population (Yadav, 2012).

Insomnia, hypersomnia, sleep-related respiratory disorders, parasomnia, circadian rhythm sleep disorders, and sleep-related movement disorders are the six symptoms that collectively comprise the International Classification of Diseases-10 for sleep disorders. Globally, at least one sleep disorder is estimated to affect between 25% and 30% of individuals. Ramaswamy et al. (2020) found in their study on global ageing and adult health and Collaborative Research on Ageing in Europe that 9.2% of those aged 50 and older experienced sleep difficulties.

Inadequate sleep or sleep deprivation can negatively affect one's perception, response, and interaction with others. Insufficient sleep is additionally associated with executive dysfunction, a condition characterised by deficits in memory, planning, organisation, emotional regulation, and impulse control (Unsal et al., 2021).

The prevalence of symptoms associated with sleep disorders was validated by the National Sleep Foundation's 2003 Sleep in America Poll, which found that 46% of community-dwelling adults aged 65-74 reported experiencing symptoms of insomnia, and 39% of individuals in this age bracket reported dozing. In participants aged 75-84 years, these prevalence rates escalated to 46% and 50%, respectively (Miner & Kryger, 2017).

In Shiraz, Iran, a cross-sectional study was undertaken to ascertain the prevalence of sleep disturbances. The findings revealed that 55.2% of the elderly population experienced sleep disturbances (Honarvar et al., 2019). Additionally, another research conducted in Iran revealed that the elderly population faced sleep problems at a rate of 24.8%. Furthermore, elderly women had a higher prevalence of sleep disorders (35.9%) than elderly men (15.8%) (Hosseini et al., 2018). Moreover, as per a study conducted in the Galte district of Sri Lanka, the prevalence of inadequate sleep quality among the elderly was 55.5%. Also, males had a lower prevalence rate of (37.8%) compared to females (62.2%) (Abeysekera & De Zoysa, 2021). As indicated by a research study conducted in the city of Dhaka, Bangladesh, 72% of the elderly population had a sleep disorder, 71% had reported insomnia ,2% had sleep apnea, 18% had psychiatric disorder, and 13% had movement disorder (Hossen, 2022).

The level of sleep quality among 100 elderly in Andhra Pradesh, India was assessed

through a cross-sectional study. As shown by the results, 67% of the elderly had highly impaired sleep pattern. 36% had reported sleep induction, 43% had reported awakening during the night and 39% reported severe insomnia and sleepiness during day (Jesudoss, Lazarus, & Wahid, 2023). Additionally, research conducted in India revealed that 10% of the elderly reported having a severe sleep disorder, while 90% reported having a moderate sleep disorder. Moreover, as per a study carried out in China, the prevalence rates of substandard sleep quality were 33.8% overall, with elderly women having a higher rate (39.2%) than elderly men (26.3%) (Wang, 2020).

A multitude of variables, encompassing demographic, psychological, and social attributes, have been associated with insomnia. The increased rates of prevalence of insomnia among older individuals are associated with female gender, divorce, separation, or widowhood, reduced income, educational attainment, smoking, lowered physical movement, and alcohol consumption (Ohayon, 2002). Comorbid sleep disorders, including obstructive sleep apnea and restless limb syndrome, as well as clinical conditions like depression and physical ailment, are associated with insomnia (Sweetman et al., 2021). Sleep quality disparities may also be influenced by sex (Tang et al., 2017; Mong & Cusmano, 2016). Mong and Cusmano (2016) assert that the lifetime prevalence of sleep disorders and insomnia is twice among women compared to men. Sleep quality disturbances may potentially be ascribed to the administration of libido stimulants as per clinical research (Mong & Cusmano, 2016). Numerous factors, including marital status, depressive symptoms, smoking, pre-bedtime meals, prolonged daytime rests, and irregular sleep schedules, have been found to be significantly associated with insomnia, according to Allah et al. (2014). Additionally, insomnia was notably interconnected with nocturnal apnea, asthma, nocturia, and the overall quantity of medications taken daily (Allah et al., 2014).

A number of studies conducted in Nepal have reported that insomnia is extremely prevalent among the geriatric population. A study conducted in the Lalitpur community disclosed that 40.6% of the elderly had insomnia (Chhantyal & Timalsina, 2017), in contrast, a study conducted in Palpa identified 56.4% of the elderly with insomnia, with medical ailment being a significant factor (Pokharel et al., 2018). In a similar vein, the prevalence of insomnia in the Panchthar district exceeded 50%, with associated factors including drinking tea and coffee before bed, using tobacco and alcohol, and eating too close to bedtime (Subedi, 2010). The research conducted in Banepa revealed the prevalence of insomnia to be 71.1%, with significant factors including age, literacy, physical illness, and financial dependence (Pradhan, et al., 2023). Similarly, a descriptive cross-sectional study conducted in an old age home in Pashupatinath unveiled that 61.5% of the participants were afflicted with insomnia attributable to age, an excess of somatic symptoms, and disrupted sleep patterns (Shrestha et al., 2017). Moreover, a cross sectional study conducted in Sarangdanda VDC, Nepal, noticed

that among the elderly, 49.3% had trouble falling asleep, 61.3% had trouble staying asleep, and 28.9% complained of early morning awakenings (Subedi, 2010). Additionally, a cross-sectional study conducted in Sarangdanda VDC, Nepal, came across that among the elderly, 49.3% had trouble falling asleep, 61.3% had trouble staying asleep, and 28.9% complained of early morning awakenings (Subedi, 2010). Likewise, another study carried out in Makwanpur, Nepal, revealed that insomnia was reported by 46.2% of the elderly population, with a higher prevalence rate of 52.9% among elderly females compared to 39.8% among elderly males (Bajracharya, Adhikari & Tamrakar, 2022). Also, a study was undertaken within a Medical College, Bengaluru, Karnataka, India disclosed that high prevalence of insomnia in female than male. Additionally, factors such as gender, chronic diseases, stressful life and economic status were significantly associated with sleep disorder (Thittamaranahalli et al., 2023).

The aforementioned study indicates that the prevalence of sleep disorders are prevalent among the elderly, which may boost their risk of developing noncommunicable diseases Furthermore, the majority of elderly individuals reported experiencing various sleep disorders complaints, which may contribute to an increased likelihood of developing mood disorders, fatigue, tiredness, psychological issues, pathological phenomena, and a decline in quality of life. Sleep disorders among the elderly are becoming an increasing concern not only in Nepal but globally as well. However, limited studies have been done pertaining sleep disorders among elderly in Nepal. That's why, this research piques the interest of a researcher to explore the prevalence of sleep disorders among the elderly. Thus, this research aims to ascertain the prevalence of sleep disorders and its association with socio-demographic variables among the elderly residing in the Bardiya district of Nepal.

Methods and Materials

Study Design, Area, Population and Sample

The prevalence of elderly's sleep disorders and its association with socio-demographic variables was evaluated using a community-based, descriptive cross-sectional research design. This research was conducted in Mainapokhar-06 of Badhaiyatal Rural Municipality, Bardiya, Nepal and the study population consisted of senior citizens (55 years and older). This study relies entirely on primary data, and a sample of 60 elderly people from community of Mainapokhar-06, Badhaiyatal, Bardiya was selected using simple random sampling method. There are a total of 9 wards, and the study was conducted in ward no. 6 in September, 2023. Badhaiyatal Rural Municipality, in Bardiya District, is located in Lumbini Province, in the mid-western part of Nepal.

Data Analysis Procedure

The collected data were input and analysed using descriptive and inferential statistics through IBM-Statistical Package for the Social Sciences (SPSS version 21.0). For categorical

variables, descriptive statistical measures such as frequency, percentages with frequency tables, minimum, and maximum values were calculated. In inferential part, chi-square test (or Fisher's exact test, as applicable, was used to ascertain the association between two categorical variables. The association was presented as finally, if variables with P-value < 0.05 as a level of significance were considered statistically significant for a two-tailed test otherwise insignificant.

Results

Table 1

Frequency and Percentage Distribution of socio-demographic variables among elderly people

Variables	Category	Frequency	Percentage
Age(years)	55-65	23	38.34
	65-75	18	30.0
	75-85	17	28.33
	85 & above	2	3.33
Gender	Male	29	48.3
	Female	31	51.7
Marital Status	Single	7	11.7
	Married	44	73.3
	Widowed	9	15.0
Economic Status	Less than 50,000	45	75.0
	50,000-100000	15	25.0
Educational status	Illiterate	44	73.3
	Literate	16	26.7
	If literate		
	Can read and write	7	11.7
	Primary	6	10.0
	Secondary	3	5.0
Residence	Rural	60	100
Health condition	Ill	21	35
	Healthy	39	65
	If ill		
	CVD	5	8.3
	Gastrointestinal disorder	5	8.3
	Eye, nose, throat related	2	3.3
	Musculoskeletal disorder	3	5
	Respiratory disorder	4	6.7
	Urinary system disorder	2	3.3

The above table 1 revealed that among 60 elderly people, 38.3% of respondents were from 55 to 65 years age group, 30.0% of respondents were from 65 to 75 years of age group

followed by 75 to 85 years age group with 28.3% and rest 3.3 % were from 85 and above years of age group. Nearly half (48.3%) of respondents were male and rest 51.7% were female. Majority (73.3%) of respondents were married and least (11.7%) of respondents were single. Three fourth (75%) of respondents' economic status was less than Rs 50,000 and a quarter (25%) of respondents was fifty thousand to one lakh. Furthermore, among 60 elderly majority (73.3%) of respondents were illiterate and slightly more than a quarter (26.7%) of respondents were literate. All (100%) of the respondents live in rural area. More than half (65%) of respondents were healthy and 35% were ill. Where among all ill respondents, 8.3% of ill respondents had gastrointestinal and cardio vascular disease and least (3.3%) had eye nose throat related & urinary system disorder.

Table 2

Prevalence of sleep disorder

Sleep disorder	***Frequency***	***Percentage***
Yes	*45*	*75*
No	*15*	*25*

As shown in Table 2, the prevalence of sleep disorders among the elderly people of study was found to be 75.0%

Table 3

Distributions of prevalence of sleep disorders among elderly people

Variables	**Frequency**	**Percentage**
Do you have sleep problem		
Yes	45	75.0
No	15	25.0
How often do you have trouble getting off to sleep		
Never	3	5.0
Less than once a month	12	20.0
More than once a month	22	36.7
Daily	23	38.3
How often do you wake up in the night		
Less than once a month	12	20.0
More than once a month	26	43.3
Daily	22	36.7
If you usually wake up in the night, how many times do you usually wake each night		
1 time	27	45.0
1-2 times	24	40.0
2-3 times	22	15.0
How long does it usually take to fall asleep again?		
Few minutes	32	53.3

Variables	Frequency	Percentage
Less than 1 hour	22	36.7
More than 1 hour	5	8.3
Maximum 2 hours	1	1.7
Do you do anything in bed to help you get to sleep		
Relaxation exercises	53	88.3
Reading	1	1.7
Watching TV/ listening radio	6	10.0
Do you get out of bed when you cannot sleep		
Yes	33	55.0
No	27	45.0
If you get out of bed what do you do once you are up		
Engage in some work	20	33.3
Use Mobile	1	1.7
Do nothing	39	65.0
Does poor night sleep make you		
Depressed	8	13.3
Irritable	2	3.3
Tired	37	61.7
Anxious	13	21.7
Does poor night sleep affect your		
Concentration	27	45.0
Memory	7	11.7
Ability to work	18	30.0
Do nothing	8	13.3
What are the things that disturb your sleep quality		
High screen time	34	56.7
Good and healthy conversation	2	3.3
Good food	7	11.7
High loud music	17	28.3
What will be the appropriate preventive measure for sleep disorder patient		
Make yourself mentally free and relaxed	58	96.67
What do you think the home remedy for proper sleep is		
Balance diet and avoid screen time	30	50.0
Take proper rest	30	50.0

The above table 3 depicts that among 60 elderly, three fourth (75%) of elderly had have sleep problem, more than a quarter (38.3%) of elderly had daily trouble getting off to sleep. Nearly half (43.3%) awoke at night more frequently than once per month, while 36.7% awoke daily and 45% awoke once per night. In addition, more than half of the elderly (53.3%) reported that they can fall back asleep within a few minutes, while 36.7% reported that it takes

less than an hour. Furthermore, more than half (55%) of elderly said that they get out of bed when they cannot sleep. Once they get out of bed, more than half (65%) of elderly do nothing and 33.3% engaged in some work. Likewise, 61.7% of elderly reported that poor night sleep causes them tired. Nearly half (45%) of elderly reported that inadequate night sleep affects their concentration power. Likewise, over half of the elderly (56.7%) reported that excessive screen time negatively impacts their sleep quality. Similarly, 96.67% of senior citizens believed that promoting mental freedom and relaxation would be the most effective preventative measure against sleep disorders. Half (50%) of elderly stated that adequate rest is the home remedy for proper sleep.

Table 4

Bivariate analysis of variables with Sleep disorder

Variables	Category	Sleep disorder		Chi-Square (/Fisher's exact test value (P-value)
		No (%)	Yes (%)	
Age	55-65	7(11.67)	16(26.67)	5.619 (0.132)
	65-75	1(1.67)	17(28.33)	
	75-85	6(10.0)	11(18.33)	
	85 & above	1(1.67)	1(1.67)	
Gender	Male	10(16.7)	19 (31.7)	7.090(0.039) *
	Female	5(8.3)	26 (43.3)	
Marital Status	Single	1(1.67)	6(10.0)	2.365 (0.3076)
	Married	10(16.67)	34(56.67)	
	Widowed	4(6.67)	5(8.33)	
Economic status	Less than 50,000	9(15.0)	36(60.0)	2.400(0.169)
	50,000-100000	6(10.0)	9(15.0)	
Educational status	Illiterate	7(11.67)	37(61.67)	7.273(0.007) **
	Literate	8(13.33)	8(13.33)	
Health condition	Ill	1(1.67)	20(33.33)	7.057(0.008) **
	Healthy	14(23.33)	25(41.67)	

*significant at 5% level of significance, **significance at 1% level of significance

As per above table 4, the p-value for gender is less 0.05 indicates that gender is statistically significant variable for sleep disorder at 5 % level of significance. Therefore, gender (5.619, P-value < 0.05) of the respondents is significantly associated with sleep disorder. Likewise, educational status (= 7.273, p-value <0.01) and health condition (= 7.057, p-value <0.01) have found statistically significant at 1% level of significance as p-value less than 0.01. Educational status and health condition are also significantly associated with sleep disorder. Furthermore, the null hypothesis is accepted as the p-values for age, marital status, and economic status are more than 0.05. Hence, there are no association between age, marital status, and economic status with sleep disorder.

Discussion

The purpose of the study was to assess the prevalence of sleep disorder in elderly people and its association with socio-demographic variables. The findings of the study revealed that sleep disorder was prevalent among 75% of the participants, and its associated factors were gender, educational status and health condition.

The Prevalence of sleep disorder of this study was 75%, which is supported by the study conducted in old age home of Pashupati showing prevalence of insomnia 61.1% (Shrestha et al., 2017). Also, a study conducted in Banepa shows similar result of prevalence of insomnia which is 71.1% (Dangol et al., 2019). In present study, 43.3% of the female and 31.7% of the male population were affected by sleep disorder. Thus, sleep disorders are more prevalent among women than men. This finding is comparable to that of a study conducted in an old age home in Pashupati, which found that 67.9% of the female population had insomnia (Shrestha et al., 2017). and the result of current study also resembles to a study within a Medical College, Bengaluru, Karnataka, India, which disclosed that high prevalence of insomnia in female than male (Thittamaranahalli et al., 2023). Moreover, as stated by Mong and Cusmano (2016), sleep problems and insomnia are twice as prevalent among women as they are among men.

The findings of present study revealed that 38.3% of elderly had daily trouble getting off to sleep and 36.7% of elderly had more than once a month trouble getting off to sleep. Likewise, 35.7% of elderly woke up daily in night. 15% of elderly woke up 2-3 times per night. These findings of this current study were corroborated by research carried out in the United States (Pedraza et al., 2012) and the study revealed that among 1085 elderly, 16.6% of elderly had poor sleep quality. 12.6% of them had reported trouble falling asleep. 30% of them had reported waking up several times per night and 11.4% of them reported trouble staying asleep.

Delimitation of The Study

The study was limited to elderly people in selected community of Mainapokhar -06, Badhaiyatal, Bardiya. The sample size was insufficient to constitute a representative sample. Consequently, the results of this research may lack generalizability for other study population or area.

Conclusion

As per the study's findings, the prevalence of sleep disorders among elderly was 75%. Further, 38.3% of them had daily trouble getting off to sleep. Based on the results of this study, it can be inferred that sleep disorders are prevalent among the elderly people, which may have more adverse consequences on mental and physical health of elderly, these effects can be modifiable through the implementation of various sleep quality interventions for the elderly.

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