

Original Article

Prevalence of Insomnia and Its Impact on Daily Function Among Mid-Aged (35-54yrs.) Population in Bhubaneswar, Odisha: A Cross-Sectional Study**Running Title:** Insomnia among Mid-Aged Population*Jitendriya A. Pritam^{1,2}, Jaya Tiwari³, Hitesh Kumar Jain⁴¹Asian Institute of Public Health, Bhubaneswar, Odisha, India²All India Institute of Medical Science, Bhubaneswar, India³Post Graduate Institute of Medical Education and Research, Chandigarh, India⁴Regional Medical Research Centre, Bhubaneswar, Odisha, India**Corresponding Author:** *Jitendriya A. Pritam**E-mail :** pritamja.sahu@gmail.com**Abstract**

Insomnia is defined as an unsatisfied or poor sleep experience that is characterized by more resulting symptoms which make it difficult to fall asleep, waking up often during the night with difficulty returning to sleep, waking up too early in the morning, or having an unpleasant sleep. This community-based cross-sectional study was conducted to assess the prevalence of insomnia amongst individuals aged between 35-54yrs.inBhubaneswar Cityin the Khordhadistrict of Odisha, India. Further, the study aimed to explore the association between insomnia and personal habits as well as socio-demographic characteristics. A total of 366 individuals participated in the study.Insomnia Severity Index (ISI) scale was assessed using a standardthat is adopted universally.The study reported a 52% prevalence of insomnia among the study subjects. Socio-demographic characteristics like age ($P=0.014^*$), gender ($P=0.007^*$), and education ($P=0.015^*$) are significantly associated with insomnia, whereas income and occupation have no such association. Personal habits like tea consumption (54.10%), coffee consumption (35.79%), and cigarette smoking (21.31%) have a negative impact on sleep on the other hand, physical activities (16.67%) help to get a satisfactory sleep.This study found a high prevalence of insomnia among study participants as well as a significant association with socio-demographic characters and personal behaviors. The findings of our study would support efforts to reduce insomnia by raising awareness through public health campaigns, yoga, exercise, legal reforms, and community action through behavioral change communication and informing, educating, and communicating.

Keywords: Insomnia, Mentalhealth, Personal habits, Poor sleep, Socio-demographic**Introduction**

Insomnia refers to a sleep disorder characterized by unsatisfactory or poor sleep, including difficulties falling asleep, frequent awakenings during the night with difficulty returning to sleep, early morning awakenings, or unpleasant sleep experiences [1]. It is considered the most common sleep disorder.According to a recent global study, the prevalence of insomnia in the general population was found to be 22%. In India,

specifically, the prevalence of insomnia was reported to be 21%. Additionally, a study conducted among university students of Bhubaneswar, Odisha, revealed that the prevalence of moderate to severe insomnia in the area was 9%. These findings indicate the widespread nature of insomnia both globally and within India. Bhubaneswar demonstrates a relatively lower prevalence of moderate to severe insomnia compared to the overall population.

In clinical terms, a sleep disorder called somnipathy is "a disturbed pattern of sleep that may cause difficulty having a regular sleep or abnormal behaviors associated with sleep[2]. Insomnia is the most common sleep disorder nowadays. If untreated, insomnia often results in significant negative health effects such as psychiatric conditions such as dementia, anxiety, depression, and mood disorder [3]. Sleep is a physiological process perceived in higher animals, and sleep consists of two main phases: rapid eye movement and non-rapid eye movement REM and NREM [4-6]. Sleep plays a crucial role in controlling the central nervous system (CNS) and the physiological functions of the body, controlling metabolism, catabolism, temperature, learning, and consolidating memory.

Several studies have been conducted among elderly persons, but there are very few studies have been conducted among the mid-aged group population. Mid-age groups are more prone to develop sleep-related disorders because the male and females of this age group are mostly the working population. They have more burden at the workplace as well as responsibility for household chores and other related stress. Insomnia is associated with substantial impairment in an individual's quality of life, impacting health, work, and healthcare cost. Insomnia directly affected work performance, both in the office and at home [7-8].

Therefore, In the present study, we have estimated the prevalence of insomnia among mid-aged (35-54yrs) people in the Bhubaneswar district of Khordha using the Insomnia Severity Index (ISI) scale and determined the personal habits and daily practices that are affecting sleeping pattern among mid-age population in Bhubaneswar and the relationship of insomnia with socio-demographics characteristics, insomnia severity index scale, and impact of daily activities of insomnia was studied.

Materials and Methods

This cross-sectional study was conducted in Bhubaneswar, Odisha, India, among mid-age group (35 to 54yrs). Data about age, gender, education, occupation, income, and personal habits were collected from 366 individuals, and using a standard questionnaire, Insomnia Severity Index (ISI) scale was administered to all the participants to find the severity of sleep disorder. In addition to this, it is used to check how susceptible an individual is to developing insomnia. Illiterate people were helped by asking the same questions in the local language. Collected data were alphanumerically coded and entered into an Excel sheet. The analysis was done using STATA 11 version software, and the Chi-square test was employed to determine the difference between variables. P - Value ($p < 0.05$) was considered statistically significant for chi-square test.

Sample Size

By applying open-epi calculator, got 335 sample sizes at 95% confidence level.

After adding 10% non-respondent, the sample size was 368. Two participants were refused to participate in the study. Hence the sample size is considered 366.

Study settings

Bhubaneswar is the capital of Odisha. The Bhubaneswar Municipal Corporation was established in the year 1994. The city is divided into 67 administrative wards and 46 revenue villages. There are 436 authorized localities situated in Bhubaneswar. Among those 436 localities, by using simple random techniques, several localities were chosen randomly.

Data collection technique

All the participants were encouraged to participate in the study. The interview was conducted by using a self-administered questionnaire.

Inclusion/exclusion criteria

Only those subjects who are residents of Bhubaneswar for at least last one year at the time of the survey were enrolled as per the protocol of the study from age group (35-54) years.

Anyone suffering from a debilitating condition and hence, unable to comprehend/respond to the questions was excluded.

Quality control and quality assurance

Pretesting of the pre-designed questionnaire guide was carried out before actual data collection. To prevent errors during data collection following 3 steps were followed:

- a. Data collection: Collected by the authors.
- b. Data entry: data entered into hard copy to Excel
- c. Data missing: 100% of the data range was checked.

Data analysis

The Socio-demographic characteristics, Insomnia Severity Index scale, and impact of daily activities of insomnia were described using frequencies, and percentages. The chi-square test was employed to determine the difference between variables, p-value ($p < 0.05$) was considered statistically significant for the chi-square test. Data was presented in the form of tables, figures & pie charts to compare.

Expected outcome

This research may be useful to healthcare providers in planning different healthcare programs that target on insomnia patient and will also help in policy making.

Results

We have conducted a study among of 366 participants to see the prevalence and to determine the relationship between insomnia and socio-demographic characteristics. The study

focused on the mid-aged group population. Maximum 238 (65.03%), number of participants were from age group of 41-54, while the remaining 128 (34.97%) were from the age range of 35-40. Among the 366 participants, 220 (60.11%) were males, and 146 (39.89%) were females. Considering the educational status, maximum number of participants, 137 (37.43%), had completed their education up to high school. This was followed by 107 (29.23%) participants with college or higher education, following 85 (23.22%) participants had primary education, and very few number 37 (10.11%) participants had no formal education. The present study found that the maximum number of participants 159 (43.44%), were involved in their own businesses, followed by 121 (33.06%) participants were housewives and a few numbers 49 (13.39%) of participants were employed in government jobs, while 37 (10.11%) were engaged in other occupations. Regarding income levels, the most common income category among the participants was 2000-13408 with 108 (29.51%) individuals. The next highest category was 0-2000; comprising 97 (26.5%) participants. 94 (25.68%) participants reported an income 13408-19,844, while 43 (11.75%) participants had a family income 19844-31,507. A very few numbers of 24 (6.56%) participants were in the highest income category, which was 31507-36,997. (Table 1)

The association between insomnia and socio-demographic characteristics have presented in Table 2. It was found that three variables (age, gender, and level of education) have a significant association with insomnia. On the other hand, occupation and family income had no significant association with insomnia.

The responses of participants regarding their satisfaction or dissatisfaction with their current sleeping patterns have been furnished in Table 3. The Insomnia Severity Index (ISI) scale was used to assess the severity of insomnia, and participants were asked seven different questions related to their sleep difficulties and overall satisfaction. The responses were categorized into five segments: very satisfied (0), satisfied (1),

moderately satisfied (2), dissatisfied (3), and very dissatisfied (4).

Descriptive results regarding the relationship between insomnia and participants' personal habits were provided in Table 4. The participants were interviewed about their smoking habits, tea consumption, coffee consumption, and whether they engaged in regular exercise. Participants who reported having any of the mentioned habits were further interviewed to determine if these habits had any impact on their sleep quality, and the findings are described in table 4.

Figure 1 shows that, among 366 participants 52.46% people are found to be Insomniac as they are coming under moderate, severe and very severe category of sleeping difficulties while rest are non-insomniac as per insomnia severity index (ISI) scale. Distribution of age and gender is shown in Figure 2 and 3 respectively.

Discussion

The study was carried out in Bhubaneswar, and it provided novel information about sleep disturbance among the middle-aged population (aged 35-54) for the first time in Bhubaneswar best to the knowledge of the authors. The aim of the current study was to determine the prevalence (52%) of Insomnia, effects of personal habits on sleeping pattern and find out relationship of insomnia with socio-demographics characteristics. Significant variation was observed in result of many previously conducted studies because of variation in study setting, participant's demographic characteristics and personal behaviour.

A study conducted in Haryana found 86.5% prevalence among chronic kidney disease patients [9], which is much more than our finding. This variation may be due to high stress, anxiety and depression among the chronic kidney disease patients. 38.9% prevalence among women found in Vietnam [10], where we found 43.8% prevalence among our women participants. This means there is not much difference in sleeping disorder among women in both the study. A little variation might be due to the study setting

variation. Secondary school teachers were studied in Malaysia and found 61% prevalence for poor sleep quality among them [11], where as we found 52% in general population. The authors of the study stated there is association of stress with poor sleep quality among teachers [11]. This study tried to establish relationship between Insomnia and personal behaviour like consuming tea, coffee, smoking and exercise of the participant. Finding of our study for relation between insomnia and smoking is very similar with a study conducted among U.S Army; maximum insomniac participants have smoking practice [12]. The number of coffee consumers among participants who reported poor sleep quality in Australian adults is more [13], which is similar to our finding for coffee consumption. The number of coffee consumers in our study among insomniacs is also more. Another study conducted among nursing students in Italy also found association between coffee consumption and smoking [1], as we found the same in our participants.

Current study aimed at finding out relationship between insomnia and socio-demographic characteristics. We found significant association of insomnia with age, gender and education in the current study. A study among African-Americans concluded that insomnia is associated with Increase in age [14]. In our study we also found that there is a significant association of advanced age with insomnia. A study conducted among Chinese older adults found association of gender with poor sleep quality [15]. The current study also found significant association between gender and insomnia. There has been many different research work done on different population have different findings. Our study also has some distinct finding because of variation in setting and demographic characteristic of our participants.

Conclusion

This study states that, 52% prevalence of insomnia among the subjects. Socio-demographic characters like age, gender and education is independently associated with insomnia

whereas, income and occupation have no such association. Personal habits like tea consumption, coffee consumption and cigarette smoking have a negative impact on sleep in the other hand physical activities helps to get a satisfactory sleep. Our study supports there should be efforts to combat insomnia by generating awareness with public health campaigns, legal reforms and community action through behavioral change communication (BCC) and information, education and communication (IEC). Health care providers should concentrate on yoga classes, meditation and personal counseling and therapy regarding consequences of negative impact of following sedentary life style. Insomnia is a common health problem among mid-aged and elderly people that can cause significant morbidity if not addressed properly. Therefore, awareness program regarding insomnia among elderly and mid-aged group should be raised for early detection and appropriate management of insomnia in order to decrease sleep related health problems. Also,

awareness program regarding maintenance of sleep hygiene for the prevention of insomnia should be rise which ultimately leads to improve quality of life. Overall, the study provided valuable insights into sleep disturbance among the middle-aged population in Bhubaneswar and expanded our understanding of sleep patterns across different age groups of the country.

Ethical consideration: Ethical clearance was taken from the institutional ethical committee of Asian Institute of Public Health (AIPH), Bhubaneswar. Permission was taken from the concerned local authority; study participants and informed that, this study will not harm to anyone rather benefits for community.

Conflicts of Interest: Authors declare that they have no conflict of interest.

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Table 1: Socio-Demographic Characteristics (N=366)

Characteristics	N	%
Participant's Age		
(35-40)	128	34.97%
(41-54)	238	65.03%
Gender		
Male	220	60.11%
Female	146	39.89%
Level of Education		
No formal education	37	10.11%
Primary (Class 1 to 7)	85	23.22%
High School (Up to 10)	137	37.43%
College /Higher	107	29.23%
Occupation		
Govt. Services	49	13.39%
Business	159	43.44%
Housewife's	121	33.06%
Others	37	10.11%
Family Income		
0- 2000	97	26.50%
2000-13408	108	29.51%
13408-19844	94	25.68%
19844-31507	43	11.75%
31507-36997	24	6.56%

Table2: Association of insomnia with respect to its Socio-demographic characteristics(n=366)

Characteristics	Insomnia		Without		N		(P) value
	N	%	N	%	N	%	
Participant's Age							
(35-40)	56	43.75	72	56.25	128	100	0.014 *
(41-54)	136	57.14	102	42.86	238	100	
Gender							
Male	128	58.18	92	41.82	220	100	0.007 *
Female	64	43.84	82	56.16	146	100	
Level of Education							
No formal education	14	37.84	23	62.16	37	100	0.015 *
Primary (Class 1 to 7)	37	43.53	48	56.47	85	100	
High School (Up to 10)	74	54.01	63	45.99	137	100	
College /Higher	67	62.62	40	37.38	107	100	
Occupation							
Govt. Services	88	55.35	71	44.65	159	100	0.000
Business	38	77.55	11	22.45	49	100	
Housewife's	48	39.67	73	60.33	121	100	
Others	18	48.65	19	51.35	37	100	
Family Income							
More than 2000	41	42.27	56	57.73	97	100	0.157
2000-13,408	61	56.48	47	43.52	108	100	
13408-19,844	50	53.19	44	46.81	94	100	
19844-31,507	27	62.79	16	37.21	43	100	
31507-36,997	13	54.17	11	45.83	24	100	

Table: 3 Insomnia severity index (ISI) scale (n=366)

		None/Very Satisfied		Mild/Satisfied		Moderate/Moderately Satisfied		Severe/Dissatisfied		Very severe/Very	
		N	%	N	%	N	%	N	%	N	%
1	Difficulty falling asleep	92	25.14%	82	22.4 %	68	18.58%	88	24.04%	36	9.84%
2	Difficulty staying asleep	103	28.14%	72	19.67 %	74	20.22%	90	24.59%	27	7.38%
3	Problem waking up too early	107	29.23%	75	20.49 %	64	17.49%	92	25.14%	28	7.65%
4	How Satisfied/dissatisfied are you with your current sleeping pattern?	115	31.42%	71	19.4 %	68	18.58%	89	24.32%	23	6.28%
5	How noticeable to Others do you think your sleeping in terms of impairing the quality of life?	123	33.61%	62	16.94 %	79	21.58%	79	21.58%	23	6.28%
6	How worried /distress are you about your current sleeping problems?	129	35.25%	64	17.49 %	64	17.49%	87	23.77%	22	6.01%
7	To what extent do you consider your sleep problem to interfere with your daily functioning?	123	33.61%	64	17.49 %	80	21.86%	77	21.04%	22	6.01%

Table: 4 Personal habits with respect to insomnia (n=366)

Personal habits	Don't		Good sleep		Bad sleep	
	(N)	(%)	(N)	(%)	(N)	(%)
Smoking	274	74.86 %	14	3.83%	78	21.31%
Tea consumption	36	9.84%	132	36.07%	19 8	54.1%
Coffee Consumption	165	45.08%	70	19.13%	13 1	35.79%
Exercise	301	82.24%	61	16.67%	4	1.09%

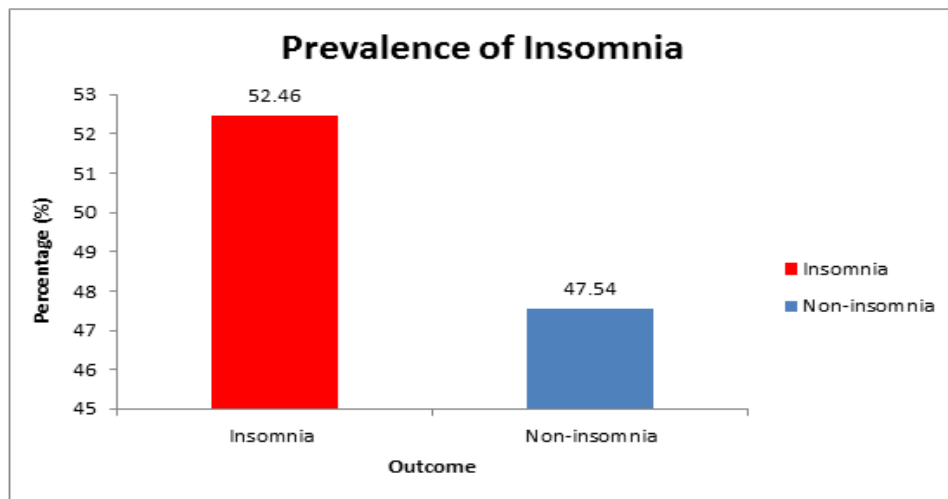


Figure1: Prevalence of Insomnia among Mid -Aged (35-54 yrs.)

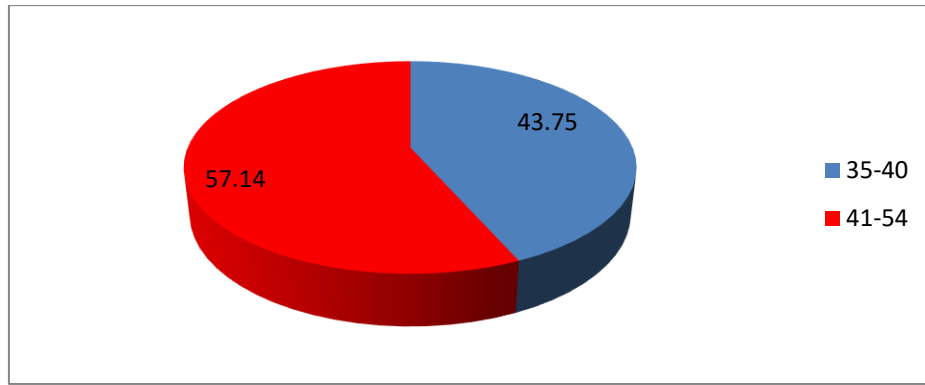


Figure2:Distribution of age among Participants found Insomniac (n=192)

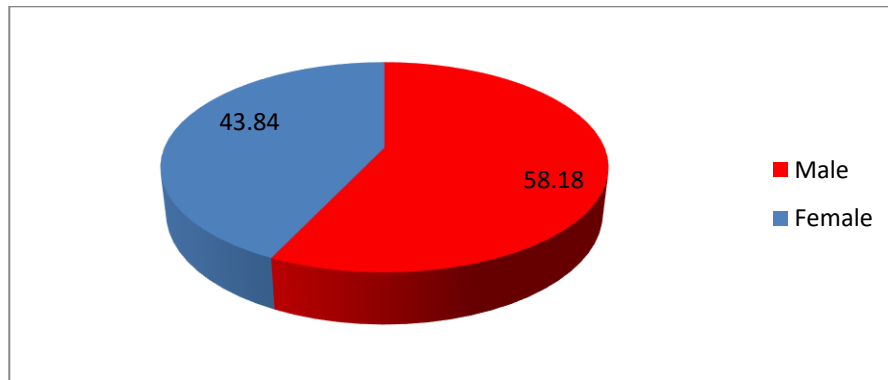


Figure3:Distribution of Gender among Participants found Insomniac (n=192)

