CROSS SECTIONAL INVESTIGATION ON THE PREVALENCE AND FACTORS INFLUENCING INSOMNIA AMONG THE URBAN POPULATION BY USING ATHENS INSOMNIA ASSESSMENT SCALE

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ABSTRACT

Insomnia is a disorder characterized by inability to sleep or a total lack of sleep, prevalence of which ranges from 10 to 15% among the general population with increased rates seen among older ages and in female gender. The main objective of the present study is to investigate the prevalence and factors influencing Insomnia among the urban population. Observational study comprises of 200 participants were chosen for the individualized in-depth evaluation and subjected to survey on the complaint of insomnia. Our research brings out some of the most significant finding that included the high prevalence of insomnia 37.5% among adult population aged between 18 to 60 years. Females are more prone (29.5%) to insomnia than males. In spite of that, most of them did not seek any medical help (85%) for their condition. According to the Athens insomnia assessment scale it was notified that the difficulty in sleep induction (55.5%), frequent midnight awakenings (56%) and day-time sleepiness (49.5%) were the major complaints. In conclusion the etiology and pathophysiology of insomnia involve genetic, environmental, behavioral, and physiological factors culminating in hyperarousal. Efficacious treatments for insomnia include behavioral, cognitive, and pharmacologic interventions. Sleep is important for overall health and well-being. Insufficient sleep and sleep disorders are highly prevalent among adults and children and therefore a public health burden, particularly because poor sleep is associated with adverse health outcomes. Emerging evidence has demonstrated that environmental factors at the household- and neighborhood-level can alter healthy sleep

KEY WORDS: *Insomnia, Athens scale, Factors, Gender, Population, Etiology*

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1. Introduction

Various studies have noted insomnia to be quite a common condition with symptoms present in about 33–50% of the adult population [1]. The prevalence, however, ranges from 10 to 15% among the general population,[2] with higher rates seen among divorced, separated, or widowed people [3],older ages, female gender [4],White population [5], and in the presence of co-morbid medical or psychiatric illness [6].About 30% of all adults complain of occasional insomnia and 10% of chronic insomnia, of whom 40% may have a psychiatric illness [7,8].Despite these high prevalence rates, evidence suggests that insomnia is mostly under-recognized, under-diagnosed, and under-treated [8], with the condition continuing to remain persistent in 50–85% of individuals over follow-up intervals of one to several years [9].

Insomnia consists of three basic types: acute insomnia, primary chronic insomnia, and associated insomnia [10]. Acute insomnia results from a triggering causal factor that is easily identifiable in an individual who has not had insomnia before. By definition, the acute form does not last longer than four months [11].

Primary chronic insomnia may be caused by several predisposing (genetic and constitutional) factors, including hyperactivity of stress response mechanisms or of the HPA axis; anxiety and depression; and abnormalities in the circadian rhythm (circadian sleep-wakefulness control) [12]. Precipitating and perpetuating factors, such as psychosocial features (e.g., fatigue and irritability), behavioral changes, and cognitive characteristics, also contribute to insomnia. Associated insomnia is primarily related to an underlying mental or mood disorder, such as depression, dysthymia, cyclothymia, bipolar disorder, anxiety, or schizophrenia [13]. This form of insomnia may also be caused by inadequate sleep hygiene

Although progress has been made in our understanding of the nature, etiology, and pathophysiology of insomnia, there is still no universally accepted model. Greater understanding of the pathophysiology of insomnia may provide important information regarding how, and under what conditions, the disorder develops and is maintained as well as potential targets for prevention and treatment [14].

A bidirectional association is noted between Gastroesophageal Reflux Disease (GERD), symptoms and sleep disturbances [15]. In 2009, Mody et al., noted the effect of GERD on sleep quality. Out of 11,685 individuals with GERD, 88.9% experienced sleep disturbances, out of which 49.1% complained of difficulty in initiating sleep, and 58.3% had difficulty in maintaining sleep [16]. The main objective of the present study is to investigate the prevalence and factors influencing Insomnia among the urban population.

2.Materials and Methods

2.1. Study design

Observation study comprises of 200 participants who were chosen for the individualized in-depth evaluation and subjected to survey over the period of three months. Cross -Sectional observation study was conducted among the outpatients attending out-patient department of Aringnar Anna Government Hospital of Indian Medicine-Chennai-106. Participants were also explained that completion and submission of the questionnaire would be taken as consent to participate in this study. Data were dealt with the high level of anonymity and confidentiality.

2.2. Study Approval

This study was approved by institutional ethical committee of government siddha medical college for Indian medicine, Chennai, Tamil Nadu, India and also registered in Clinical Trial Registry India.

2.3. Questioner Pattern

A predesigned, semi structured inter-view pattern were used to obtain data. Pattern of questionaries' have three sections: Section A was used to collect the data related to the socio-demographic variables like age, sex, occupation, marital status. Section B was to assess insomnia by a validated Athens Insomnia Scales (AIS) based on ICD-10 criteria. It is measured by assessing 8 factors out of which the first 5 are related to nocturnal sleep and the last 3 related to day time dysfunction. A cut off score $\geq$ 6 on the AIS is used to establish the diagnosis of insomnia. Section C was used to collect the data related to associated factors of insomnia like environmental issues, snore, medical illness, method to help asleep etc.

2.4. Data variables and Study tools

Information on demographic characteristics like age, gender, marital status, occupation data on sleep

pattern, quality, duration, associated complex medical condition such as pain, depression, Nocturia etc. were collected from the participants by using questionnaire.

2.5. Statistical Analysis

All these data entered in Microsoft excel and analysis was done by SPSS statistics version 26. Percentage, Chi-square test and logistic regression were used in final analysis.

3.Results

3.1. Result analysis on general demography and prevalence of Insomnia

In this study among 200 participants screened, the overall prevalence of Insomnia was observed in 37.5% with a female preponderance (29.5%). Out of the total 200 participants, around 69.5% were older than 40 years of age, 71% were females, Majority of the females were house wife (47.5%), and about 89% were married. Majority of the study participants belong to normal BMI (51.5%), and 38.5% were overweight. As shown in Table 1.

3.2. Result analysis on Distribution of sleep related symptoms based on Athens Insomnia Scale

Data's obtained from the Athens insomnia scales it was observed that the difficulty in sleep induction (55.5%), frequent midnight awakening (56%) and sleepiness during daytime (49.5%) were more common symptoms observed in this study. As shown in Table 2.

3.3. Result analysis on correlation between medical condition and associated risk factors

Among 200 participants it was observed that associated factors of insomnia and medical condition primarily disrupts sleep. We found a statistically significant association of insomnia for method to help asleep (none-85%), bothering of sleep problem (none-43.5% & little bit-30.5%), and nocturia (14.5%). Further among associated risk noise exposure predominates, followed by light and snore. Minimal population observed with using sleep medication further majority of the population found to have chronic medication for management of diabetes and hypertension. As shown in Table 3 and 4.

4.Discussion

Insomnia is defined as dissatisfaction with sleep quantity or quality that results in clinically significant distress or impairment in social, occupational, or other important areas of functioning. Insomnia is associated with one or more of the following symptoms: difficulty initiating sleep (sleep-onset insomnia or initial insomnia); difficulty maintaining sleep (sleep-maintenance insomnia or middle insomnia); and early-morning awakening with the inability to return to sleep (late insomnia) [17].

Although insomnia is considered a sleep disorder, its pathophysiology suggests hyperarousal during sleep and wakefulness [18]. Evidence of hyperarousal in insomnia includes elevated whole-body metabolic rate during sleep and wakefulness, elevated cortisol and adrenocorticotropic hormone during the early sleep period, reduced parasympathetic tone in heart rate variability, and increased high-frequency electroencephalographic activity during non-rapid eye movement sleep. Functional imaging studies demonstrate smaller wake-sleep differences in regional brain metabolism in individuals with insomnia compared to good sleepers [19].

A multinational study done in Latin American countries using Athens Insomnia Scale and other sleep scales in middle-aged females showed 56.6% of surveyed women suffered from either insomnia, poor sleep quality, or both [20]. The prevalence of insomnia increased with age and menopausal stage. In our present study among 200 participants screened, the overall prevalence of Insomnia was observed in 37.5% with a female preponderance (29.5%). Out of the total 200 participants, around 69.5% were older than 40 years of age, 71% were females, Majority of the females were house wife (47.5%), and about 89% were married. Majority of the study participants belong to normal BMI (51.5%), and 38.5% were overweight.

A self-report questionnaire can be used to easily assess difficulties in the sleep of chronic pain patients. The Athens Insomnia Scale (AIS) [21], [22] may be one of the useful measures because it assesses all 3 major insomnia symptoms (difficulties in initiating sleep [DIS], difficulties in maintaining sleep [DMS], and early morning awakening [EMA]) [23] and important sleep domains (sleep quality and quantity as well as daytime functioning) [24]. In the present study data's obtained from the Athens insomnia scales it was observed that the difficulty in sleep induction (55.5%), frequent midnight awakening (56%) and sleepiness during daytime (49.5%) were more common symptoms observed in this study.

The World Health Organization (WHO) has documented seven categories of adverse health and social effects of noise pollution, whether occupational, social or environmental: hearing impairment, interference with spoken communication, cardiovascular disturbances, mental health problems, impaired cognition, negative social behaviors and sleep disturbances. The latter is considered the most deleterious non-auditory effect because of its impact on quality of life and daytime performance [25]. Environmental noise, especially that caused by transportation means, is a growing problem in our modern cities [26]. It is considered a major cause of exogenous sleep disturbances, after somatic problems and day tensions [27].

It was observed from the present study that among 200 participants it was observed that associated factors of insomnia and medical condition primarily disrupts sleep. We found a statistically significant association of insomnia for method to help asleep (none-85%), bothering of sleep problem (none-43.5% & little bit-30.5%), and nocturia (14.5%). Further among associated risk noise exposure predominates, followed by light and snore. Minimal population observed with using sleep medication further majority of the population found to have chronic medication for management of diabetes and hypertension.

5.Conclusion

The prevalence of insomnia varies depending on the specific case definition. Broadly speaking, insomnia has been viewed as a symptom and as a disorder in its own right. Insomnia has also been defined by subtypes based on frequency, duration (acute versus chronic) and etiology. This picture is further complicated by considerations of insomnia as either a comorbid condition; as a symptom of a larger sleep, medical, or psychiatric disorder; or as a secondary disorder

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6. References

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Table 1: Association of socio-demographic variables with Insomnia

Variables	Insomnia Present (n=75) (%)	Insomnia Absent (n=125) (%)	Total (n=200)(%)	P-value
Age Group				
20-39	20(10)	41(20.5)	61(30.5)	0.362
40-60	55(27.5)	84(42)	139(69.5)	
Gender				
Male	16(8)	42(21)	58(29)	0.064
Female	59(29.5)	83(41.5)	142(71)	
Occupation				
House Wife	41(20.5)	54(27)	95(47.5)	
Business	4(2)	11(5.5)	15(7.5)	
Self-Employee	22(11)	45(22.5)	67(30.5)	0.181
Engineer	6(3)	5(2.5)	11(5.5)	
Student	2(1)	10(5)	12(6)	
Marital status				
Married	65(32.5)	113(56.5)	178(89)	
Unmarried	7(3.5)	12(6)	19(9.5)	
Divorced	2(1)	0(0)	2(1)	0.166
Widow	1(0.5)	0(0)	1(0.5)	
BMI Group				
Normal	29(14.5)	74(37)	103(51.5)	
Overweight	35(17.5)	42(21)	77(38.5)	0.016
Obese	8(4)	6(3)	14(7)	

Table 2: Distribution of sleep related symptoms based on Athens Insomnia Scales

AIS	Present	Absent
Sleep Induction	111(55.5)	89(44.5)
Midnight Awakening	112(56)	88(44)
Final Awakening	101(50.5)	99(49.5)
Sleep Duration	124(62)	76(38)
Sleep Quality	104(52)	96(48)
Sense of well Being during the day	72(36)	128(64)
Functioning during the day	100(50)	100(50)
Daytime Sleepiness	99(49.5)	101(50.5)

Table 3: Medical condition that disrupts sleep

	Insomnia		Total	
Sleep apnea	Insomnia Absent	Insomnia Present		P-Value
Yes	4	2	6	
No	121	73	194	0.831
Total	125	75	200	
Chronic pain				
Yes	9	7	16	
No	116	68	184	0.59
Total	125	75	200	
Depression				
Yes	1	2	3	
No	124	73	197	0.293
Total	125	75	200	
GERD				
Yes	5	4	9	
No	120	71	191	0.66
Total	125	75	200	
Nocturia				
Yes	11	18	29	
No	114	57	171	0.003
Total	125	75	200	

Table 4: Associated factors of insomnia

Variables	Insomnia Present (n=75) (%)	Insomnia Absent (n=125) (%)	Total(200)	P-value
Can't fall back asleep				
Stay In Bed	37(18.5)	90(45)	127	
Watch TV	21(10.5)	12(6)	33	0.465
Work	17(8.5)	23(11.5)	40	
Environmental issues				
Light Exposure	26(13)	40(20)	66	
Noise	40(20)	62(31)	102	0.489
None	9(4.5)	23(11.5)	32	
Snore				
Yes	29(14.5)	36(18)	65	
No	46(23)	89(44.5)	135	0.149
Any medication				
Diabetes	14(25.9)	14(25.9)	28	0.465

Hypertension	8(14.8)	13(24.1)	21	
Thyroid	1(1.9)	3(5.6)	4	
Kidney Disease	1(1.9)	0(0)	1	
Method to help sleep induction				
None	57(28.5)	113(56.5)	170	
Medication	12(6)	4(2)	16	
Food Habits				0.023
	4(2)	4(2)	8	
Alcohol	1(0.5)	2(1)	3	
Yoga/Meditation	1(0.5)	2(1)	3	
Sleep problem				
None	3(1.5)	84(42)	87	
Little Bit	20(10)	41(20.5)	61	<0.001**
Moderate	38(19)	0	38	
Extreme	14(7)	0	14	