

EVALUATION OF SLEEP DURATION, THE PREVALENCE OF INSOMNIA, AND THE RELATIONSHIP BETWEEN INSOMNIA AND MENTAL HEALTH

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ABSTRACT: Sleep is a fundamental psychological and physiological aspect of human life. Lack of sleep, or sleep of low quality, can affect various biological processes in the human body. The goal of this study was to study the prevalence of insomnia and its correlation with mental health. The information was gathered through a wide survey based on a structured questionnaire from the public and private educational institutions in Pakistan. The questionnaire was comprised of questions related to insomnia and mental health. According to the results of the current study, many members of the academic community regularly suffer from disturbed sleep. The results of this study showed that few respondents enjoyed normal sleep (35.68%), and some reported being short (46.62%) or long-sleepers (13.93%) due to sleep problems. Furthermore, the results showed that 75.63% of respondents were suffering from mild to severe insomnia. Anxiety and mental stress were positively associated with sleep problems more than any other health condition. This study concluded that sleep disturbance and insomnia are positively correlated with mental health in terms of anxiety and stress.

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INTRODUCTION

Sleep is essential to one's health (1). One-third of a person's life is devoted to sleeping. Sleep disturbances and poor sleep quality have been linked to a wide variety of bodily problems (2). This includes problems with the brain's cortex, metabolism, and hormones (3). Neurological issues may have their roots in sleep disorders. Daytime dysfunction and irritability are common symptoms of sleep problems, which can influence when you fall asleep, the quality of your sleep, and the quantity of sleep you obtain. Some people may sleep less than the minimum amount recommended by the World Health Organization (WHO), while others may sleep more (2).

Lifestyle and daily basis activities of older individuals are correlated with disturbance or changes in sleep cycle or sleep patterns. Long-term illness, changes in the circadian rhythm as well as in routine activities, and tranquilizer agents are some factors that influence sleep patterns badly. Levels of growth hormone, cortisol, and melatonin decreased in the oldster population (4).

Aging does not mean the occurrence of sleep disorder in oldsters; however; it increases the chances that oldsters will go for professional assistance to solve the problem (5, 6).

Insomnia is a common disorder among the old-age population. Insomnia is the inability to get to sleep or remain asleep (7, 8). This sleep disorder severely disrupts natural deep sleep cycles. Insomnia can be a temporary condition that lasts for a couple of nights or a chronic condition that lasts for years. A person with insomnia has been through some trying times. Insomnia in people over the age of 60 is often caused by issues related to mental health, physical health, drug usage, and environmental factors (9). Increased sleeplessness in the elderly has been related to an major risk of depression, respiratory issues, and cardiovascular disease, according to a 2003 survey conducted by the National Sleep Foundation (10). However, a strong correlation is found between insomnia and nocturia, GERD & chronic arthritic pain (9).

Sleeplessness plays a significant role in the increased prevalence of depression in the elderly. One of the many symptoms of depression is an inability to get to sleep or stay asleep. Becoming mentally hazy, gaining weight, having difficulties concentrating, and sleeping excessively during the day are all common symptoms of depression(11) . Insomnia is strongly correlated with depressive symptoms like drowsiness throughout the day, waking up frequently throughout the night, and having trouble going asleep. Insomnia is frequently blamed on depression. Depression is more common in people who have problems in sleeping (12).

The relationship among sleep and stress disturbances is complicated and frequently bidirectional, with both direct and indirect effects. Insomnia can both come from and cause stress, which accounts for the frequently noticed positive correlation between the two. Stress and sleep disorder have a mutual association that disturbs the metabolism and central nervous system (13).High tension and hormone level are interlinked with decreased sleep duration both tension and disturbance in sleep connected with obesity and metabolic syndrome (14). The Current study was designed to investigate the prevalence of insomnia, its major risk factors and correlation between insomnia and mental health of education community.

MATERIALS AND METHODS

Research Design

In the current study the Cross-section research design was applied.

Study Population

Male and female educators in Pakistan's Punjab province taught in both the private and public sectors and made up the study population. The information was gathered using a large-scale questionnaire survey. In-depth interviews with the study's primary investigator were conducted with each participant to collect responses to self-administered questionnaires and In our investigation, we specifically targeted the faculty. People who weren't teachers or students weren't allowed to take part in the study.

Data Collection

General survey to find patients with the sleep disorder.

To examine sleep patterns and prevalence of insomnia correlation with mental health both in male and female's teachers in the province of Punjab, Pakistan. The survey was done through a questionnaire. Different questions about sleep, physical activity, lifestyle, and mood will be asked by participants and note their responses (15).Both genders showed signs of sleep problems such as difficulty getting asleep, nocturnal awakenings, daytime laziness, frequent urge to move legs at night (16) further assessment was done.

Insomnia Severity Index (ISI)

Although insomnia affects a large percentage of the population, it is often misdiagnosed. Students' insomnia rates were calculated using the severity score for insomnia (ISI) (Morin et al., 2011). Measures of sleep impairment include how much trouble you have falling asleep or staying asleep, how much sleep you need, how much it disrupts your day-to-day life, and how easily other people can see that you have a problem. Each fact is assigned a value from 0 to 28 based on a Likert scale with five points. From 0 to 7, no clinical insomnia is interpreted; from 8 to 14, mild insomnia is understood to be between 15 and 21; and from 22 to 28, severe insomnia is understood to be between 22 and 28. The initial recommended cutoff for clinical insomnia was 15. (17).

Mental health evaluation

Anxiety and depression evaluation

Both anxiety and depression were evaluated through a self-reported questionnaire. Question confirming that respondents were suffering from tension and anxiety were asked.

STATISTICS

Using Minitab, we analysed data collected using a self-reported questionnaire. All calculations were weighted by factors (sex, age, and education level) in accordance with demography statistics from the investigated area. Prevalence of insomnia severity index was statically calculated by using the Rao Scott the chi-square Test.

Correlation between insomnia and mental health was calculated by using Pearson correlation test. Data was considered significant when the P value was less than 0.05.

RESULTS

Respondents Demography

The consent was given by 1998 people, and data for 1600 participants was chosen. 818 (51.125%) of the 1600 participants were male, while 782 (48.875%) were female.

The respondents' ages ranged from 22 to 60 years, with the greatest number falling in the 26-35 age bracket (n = 561, 35.06%). The age group of 25 years had the biggest number of respondents (n = 504, 31.5%), followed by 36-45 years (n = 319, 19.93%), and respondents over 45 years (n = 216, 13.5%). Thus, the bulk of respondents were in the mature adult and young adult age groups (26-35 years & 25 years), while the older adults (>45 years) had few respondents from government schools.

Sleep duration and quality of sleep respondents.

Table 1 gave a side-by-side evaluation of short, average, and long sleepers. A short sleeper (less than 7 hours) did not get enough sleep and were often warned about the poor condition of their slumber; normative sleepers (those who slept for the recommended amount of time) constituted the second group. The third group consisted of those who said they slept for more than 8 hours per night and had an excellent quality of sleep each night. There were fewer "normal" sleepers (n=571, 35.68%) within the whole sample than there were those who reported poor sleep quality, whether because they slept too little or too much. When compared to long sleepers (n=223, 13.93%), short sleepers (n=746, 46.62%) ranked higher and followed the norm. The p-value of 0.01 indicates that gender significantly affects sleep length and quality (Table 1A).

Prevalence of insomnia Disorder

This table represented the prevalence of insomnia severity among respondents. Respondents were divided into three categories: Insomnia sub threshold (ISI Score ≤ 15), Mild insomnia (ISI Score > 15), and severe insomnia (ISI Score > 22). Among all

respondents, about 5.6875 % (n=91) of respondents were suffering from severe insomnia, 69.93 % (n=1119) were suffering from mild insomnia and 26.25% (n=420) were suffering from sub-threshold insomnia. Statistical analysis showed no significance for the prevalence of insomnia severity in gender while it was highly statistically significant in age groups ($P > 0.001$) (Table 1B).

Respondents suffering from tension and anxiety.

This table represented the prevalence of tension and anxiety among respondents. Respondents were divided into three categories: Yes (suffering from tension and anxiety); No (not suffering from tension and anxiety); suffered in past. Gender clearly did not have a major role in the occurrence of tension, as seen in the table 2A. This research also found that there was a significant ($P > 0.001$) age factor for the prevalence of tension and anxiety (Table 2A).

Associated risk factors

It was found that roughly 55% of respondents in this study used either tea or coffee as a means of unwinding. Medical issues were the cause of sleep disruptions for 33% of respondents. The demands of work caused mental strain and a disruption in sleep patterns. 70% of respondents reported using their smart phones for extended periods of time each night, increasing their risk of developing sleep problems such as insomnia (Table 2B).

Correlation with mental health (Tension or anxiety)

Insomnia is positively correlated with mental health in terms of stress and anxiety. Insomnia is positively correlated in both genders but in male it is significantly positively correlated with mental health. Among age groups insomnia is positively correlated and in the age group of 26-35 years it is significantly positively correlated with mental health (Table 3).

DISCUSSION

Sleep is crucial to our well-being and cannot be ignored. The average individual sleeps for one-third of their lifetime. Lack of quality sleep and sleep disruptions have been linked to several health issues (3, 18). People who suffer from sleep difficulties are unable to function at their full potential and may experience a wide variety of additional health issues. It is also possible for it to cause pathological disorders

in the human body, which impair the functioning of the endocrine, metabolic, and brain systems (3).

The following study was planned to investigate the prevalence rate of insomnia and its correlation with mental health in terms of stress and anxiety among educational community of Pakistani population. Results of this study showed that few respondents were enjoying normal sleep (n=571, 35.68%) than there were those who reported being short (n=746, 46.62%) or long-sleepers (n=223, 13.93%) due to sleep problems. Similar to the findings of the current study, Umar, Khan (1) reported in their survey study that among educational community of Pakistani population 41.89% teachers were short sleepers and 14.26% teachers were long sleepers while 43.84% teachers were enjoying proper normal sleep. There may be various reasons for abnormal sleeping including depression (19), use of electronic devices before bed (1), hectic job with extra burden (20).

Furthermore, the results showed that 75.63% respondents were suffering from mild insomnia to sever insomnia. 69.94% teachers were suffering from mild insomnia while 5.69% teachers were suffering from severe insomnia. Prevalence rate in these results is much higher than the results reported by Umar, Khan (1) in last year. They reported that 45.20% teachers were suffering from insomnia. The reason behind this elevated insomnia may be the economic status of teachers in Pakistan. In current situation inflation elevated more than 100 times but the income of teachers is not much enough to fulfill their livelihood. The other reason may be extra work assigned to teachers by government in election duties and census. According to Chen (21) low financials and elevated inflation may be the a societal structure that leads to sleep disturbance.

The current study reported various risk factors for sleep disturbance and insomnia. In this survey, approximately 55% of people reported relaxing with a cup of tea or coffee. For one-third of people, sleep interruptions were brought on by health problems. Stress and disturbed sleep habits resulted from the pressures of work. Seventy percent of people polled said they spend too much time on their smartphones every night, raising the likelihood that they may suffer from insomnia and other sleep disorders. These findings are supported by existing literature. The disturbed sleep and insomnia may be associated with depression (19), use of electronic devices before bed (1), hectic job with extra burden (20).

Current study revealed a positive correlation between insomnia and mental health in terms of stress and anxiety. There is a favorable correlation between insomnia and mental health in both genders; however, there is a statistically significantly positive correlation between insomnia and mental health in men. There is a positive correlation between insomnia and mental health throughout age groups, and in the age range of 26-35 years, there is a strong positive correlation between insomnia and mental health. Similar to these findings Huang, Wang (22) reported a positive association between sleep disturbance and anxiety. According to the findings reported by Lin, Broström (23) and Umar, Khan (1) insomnia is positively correlated with mental stress.

CONCLUSION

This study concluded that prevalence of low-quality sleep and insomnia is much elevated among individual of educational community of Pakistani population. Financial conditions, inflation, medical conditions, extra workload, caffeine and extra use of electronic devices are major risk factors of sleep disturbance and insomnia. Furthermore, the research was concluded that sleep disturbance is ignored major health issues and individuals are not aware about sleep insomnia. Government should announce sleep administrative programs and under such program's government should be aware about the significance of sleep insomnia among the general community.

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Table 1: Sleep durations of respondents and Prevalence of insomnia severity

A: Sleep durations of respondents								
Participant Characteristics	Shorter Sleepers (N=746)		Normative Sleepers (N=571)		Longer Sleepers (N=223)		X ²	P-Value
	N	%	N	%	N			
Gender								
Male	435	27.1875	214	13.375	109	6.8125	56.176	>0.001
Female	311	19.4375	357	22.3125	114	7.125		
Age Groups								
≤ 25 years	237	14.8125	214	13.375	53	3.3125	18.970	0.004
26-35 Years	211	13.1875	267	16.6875	83	5.1875		
36-45 Years	149	9.3125	121	7.5625	49	3.0625		
>45 Years	92	5.75	86	5.375	38	2.375		
Sector								
Private	335	20.9375	341	21.3125	125	7.8125	16.153	0.013
Government	354	22.125	347	21.6875	98	6.125		
Qualifications								
Graduation	474	29.625	495	30.9375	178	11.125	10.130	0.006
Post-Graduation	215	13.4375	193	12.0625	45	2.8125		
B: Prevalence of insomnia severity								
Participant Characteristics	Insomnia threshold sub		Mild insomnia		Severe insomnia		X ²	P- Value
	N= (420)	%	N= (1119)	%	N= (91)	%		
Gender								
Male	226	14.125	569	35.5625	53	3.3125	2.565	0.277
Female	194	12.125	550	34.375	38	2.375		
Age								
≤ 25 years	132	8.25	355	22.1875	26	1.625	35.961	>0.001
26-35 Years	170	10.625	371	23.1875	27	1.6875		
36-45 Years	70	4.375	242	15.125	12	0.75		
>45 Years	48	3	151	9.4375	30	0.1875		
Sector								
Private	175	10.9375	611	38.1875	63	3.937	22.553	>0.001
Government	245	15.3125	508	31.75	78	4.875		
Education								
Graduation	283	17.687	829	51.81	97	6.0625	7.567	0.023
Post-Graduation	137	8.562	290	18.12	44	2.75		

P<0.01 = Highly significant P>0.05 = Non-significant; P<0.05= Significant, X²= Chi-square

Table 2: Respondents suffering from tension and Associated risk factors of sleep disorder

A: Respondents suffering from tension								
Participant Characteristics	Yes (n=533)	%	No (n=986)	%	Suffered in past	%	X ²	P-Value
Gender								
Male	258	17.81	538	33.62	22	1.375	5,476	0.065
Female	275	35.93	448	28	23	1.437		
Age Group								
≤ 25 years	155	9.687	338	21.12	11		44.03	>0.001
26-35 Years	175	10.93	374	23.37	12			
36-45 Years	93	5.812	209	13.06	17			
>45 Years	110	6.875	101	6.312	5			
Sector								
Private	229	14.31	550		22		16.52	>0.001
Government	304	19	472		23			
Qualification								
Graduation	383	23.93	744		20		17.084	>0.001
Post-Graduation	150		278		25			
B: Associated risk factors of sleep disorder (N=1600)								
Risk factor			N		Percentage			
Use of Tea			886		55.375			
Bad Mood			51		3.1875			
Medical Condition			528		33			
Mental Stress			533		33.3125			
Anxiety			533		33.3125			
Work load			588		29.43			
Extra use of smart phone			1200		70.07			

P<0.01 = Highly significant P>0.05 = Non-significant; P<0.05= Significant, X²= Chi-square

Table 3: Correlation between insomnia and mental health

		Mental health (Anxiety and Tension)						
		Variables		Male	Female	≤ 25 years	26-35 Years	36-45 Years
Insomnia	Male	Coefficient r	0.99	0.957	0.993	0.991	0.998	0.705
		P value	0.088	0.188	0.076	0.083	0.043*	0.502
		Correlation	+	+	+	+	+	(Significant)
	Female	Coefficient r	0.985	0.946	0.988	0.987	0.995	0.680
		P value	0.110	0.209	0.097	0.105	0.065	0.524
			+	+	+	+	+	+
	≤ 25 years	Coefficient r	0.992	0.959	0.994	0.993	0.998	0.711
		P value	0.083	0.182	0.070	0.078	0.038*	0.497
			+	+	+	+	+	(Significant)
	26-35 Years	Coefficient r	0.999	0.979	1.000	0.999	1.000	0.766
		P value	0.030*	0.130	0.018*	0.025*	0.014*	0.444
			+	+	+	+	+	+
	36-45 Years	Coefficient r	0.974	0.927	0.978	0.976	0.987	0.637
		P value	0.146	0.245	0.134	0.141	0.101	0.560
			+	+	+	+	+	+
	>45 Years	Coefficient r	0.944	0.881	0.950	0.947	0.965	0.552
		P value	0.214	0.313	0.202	0.209	0.169	0.628
			+	+	+	+	+	+