

Prevalence of Sleep Disorders among general population of Karachi and its associated co-morbidities

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ABSTRACT

Background: Sleep disorders are being more prevalent among general population. Its poor sleep quality causes depression, accidents, mortality, and morbidity among general population.

Aim: To know the prevalence of sleep disorder among general population.

Methods: Data was collected from general population of Karachi in 6 days. Questionnaire for Sleep-Quality Developed by Colin Espie, Professor of Sleep Medicine, University of Oxford was used to assess the sleep problems and sleep quality of respondents.

Results: Moreover, 6.2% reported had severe sleeping problems and need clinical attention. 5.9% had some sleeping problems. 38.2% of respondents have good sleep while 49.75 had great sleep quality. Majority of respondents belong to age 20 to 30 age groups, students, undergraduate, female, exercised once in a week and were vegetarian. Age 20 to 30 age groups, students, undergraduate, female, exercised once in a week and being vegetarian was associated with sleep problem ($P<0.05$). 20 to 30 age group, Health sector and inter education level, diabetes, obesity, difficult breathing, snoring while sleeping and smoking was associated with sleep problems ($P<0.05$). Wherever, >30 age group, undergraduate education level, students, exercising once in a week and eating vegetarian food were associated with good sleep quality ($P<0.05$). Poor sleep quality causes depression, accidents, mortality, and morbidity among general population.

Conclusion: This study will provide the important information to the higher authorities related to the most vulnerable groups related to sleep problems and factors associated with good sleep quality.

Keywords: Sleep disorders, sleep quality, vulnerable groups, comorbidities.

INTRODUCTION

Sleep is biological process essential for life and good health It plays important role in body metabolism and physiological conditions^{1,2}. When there is sufficient duration, good quality, appropriate timing and regularity, and the absence of sleep disturbances and disorders it induces normal sleep³. Around 70 million people in the USA and 45 million in Europe has sleep problems^{4,5}. Around 20% of road car accidents occur due to sleep problems

Lifestyle and environmental factors, psychosocial issues, and medical conditions all contribute to sleep problems⁶. The effects of sleep disorders on the body are numerous and widely varied across multiple body systems^{7,8,9}. In general population, the insomnia is prevalent in third of the population, around 6% to 15% of the population¹⁰. 30% of the adult's report sleep disorders^[11] Previous research show 4% of males and 3% of females of Denmark have obstructive sleep apnea^{12,13}. sleep quality is important for living health life. Poor sleep quality causes medical conditions and can cause mortality¹⁴.

A study done in 2009 in united states in general population showed high prevalence of sleep apnea followed by insomnia. The major sleep habits among the population were snoring while sleeping (48%), feeling unrested during the day (26.5%), and not getting enough sleep (26%). Difficulty concentrating (25%) or remembering (18%) were the main sleep-related difficulties. Insomnia, and sleep apnea had the highest impact on concentration and memory¹⁵.

Most of the available data on prevalence of sleep disorders and its associated risk factors come from European descent, US Hispanics, and African American populations. [16] Despite the lack of data in Asia the prevalence is around 2.1% to 7.5%^{17,18}. Study conducted in Karachi Pakistan showed prevalence of sleep disorder was 10% to 12.4%^{19,20}.

There is very less data regarding sleep problems in Pakistan hence this study aims to evaluate prevalence of sleep quality and sleep disorders among public of Karachi and its association with

co-morbidities. Poor sleep quality causes depression, accidents, mortality, and morbidity among general population. This study will provide the important information to the higher authorities related to the most vulnerable groups related to sleep problems and factors associated with good sleep quality.

METHOD

Research design: The cross-sectional survey was conducted.

Sample: Sample size comprised of 306 respondents and sample characteristics include public belonging to different education level and profession. Questionnaire was made using google forms. Google forms were used to spread the questionnaire. Inclusion criteria includes General population with complain of sleep problems and Exclusion criteria include known case of sleep disorders or mental disorders.

Procedure: The cross-sectional survey was conducted to determine sleep disorders among general population of Karachi during through an online questionnaire. Consent was taken from all the respondents and questionnaire was filled in English and Urdu. The collection of data was completed in six days: from 2020/06/ 05 to 2020/06/10.

Ethical consideration: Respondents were notified that their participation in this study is voluntary and can withdraw at any time. Consent was taken from all respondents and confidentiality was guaranteed. This research does not involve clinical trials hence institutional review board permission was not applicable This research does not involve clinical trials hence Institutional review board permission was not applicable.

Survey Development: Sleep quality was assessed by using QUESTIONNAIRE FOR SLEEP-QUALITY* Developed by Colin Espie, Professor of Sleep Medicine, University of Oxford²¹. The sleep quality questionnaire consists of 9 question regarding. duration to fall asleep, duration of awaking, sleep quality, sleep problems, troubled concentration and relationship etc. Each question consists of 5 options and score ranges from 0 to 4. Table 1 shows interpretation of sleep scale. In questionnaire questions were asked about Age, Gender, Education, Profession, having diabetes, having obesity, having difficulty in breathing, snoring

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while sleeping, uncontrollable urge to move your feet, exercise, diet and smoking.

Table 1: Interpretation of questionnaire for sleep quality

Scale	Interpretation
0-9	Your sleep problems seem to be severe. You should definitely seek help
10-18	You have some sleep problems. It's important to examine your sleep habits and see how you can make
19-27	Your sleep is in good shape, but there are still many steps you can take to make it even better.
28-36	Your sleep is in great shape. Keep doing what you're doing and spread the world

Data Analysis: Descriptive statistics was calculated for sociodemographic variables, obesity, diabetes, exercise and diet. Mean and standard deviation of sleeping score was also calculated. Chi square test was done between sociodemographic characters, diabetes, breathing problems, exercise, diet and sleeping problems. All tests were two-tailed, with a significance level of $P < 0.05$. Statistical analysis was performed using SPSS 21.0

RESULTS

In our research total 313 respondents were involved and 306 completed the research form so survey competition rate was 97.7%. Furthermore, around 29.7% respondents belong to age <20, 65.4% belong to age 20-30, 4.9% belong to age >30. 0.6% were businessman, 91.7% were student, 2.9% belong to health sector, 2.6% were housewives, 2.2% were self-employed. Around 15.4% participants were from inter, 7.4% were from postgraduate, 77.2% were from undergraduate. Around 28.6% were male and 71.56 were female. 6.2% reported had severe sleeping problems and need clinical attention. 5.9% had some sleeping problems. 38.2% of respondents have good sleep while 49.75 had great sleep quality. Mean sleeping scores are 26.859. Table 04 shows 20-30 age groups were more prevalent to sleep problems ($P = 0.771$, 95% CI=25.754-27.585) while < 30 age ($P = 0.771$, 95% CI=25.856-31.877) group was associated with Good sleep quality. Health sector ($P = 0.02$, 95% CI=8.0201 to 32.1921) is highly prevalent to sleep disorders while students ($P = 0.02$, 95% CI=22.498 to 39.101) were more likely to have sleep of Good quality. Inter education level ($P = 0.116$, 95% CI=25.893 to 30.787) respondents are highly prevalent to sleep problems while undergraduate education level ($P = 0.116$, 95% CI=25.731 to 27.407) is more likely to have good quality of sleep. Male ($P = 0.284$, 95% CI=26.856 to 29.484) are more likely to have good sleep quality sleep while female ($P = 0.284$, 95% CI=25.395 to 27.265) is more likely to have sleep disorders. Diabetes ($P = 0.009$, 95% CI=19.847 to 26.921), obesity ($P = 0.03$, 95% CI=22.415 to 27.119), difficulty in breathing ($P = 0.001$, 95% CI=17.802 to 26.297) and snoring while sleeping ($P = 0.115$, 95% CI=21.776 to 27.722) were associated with sleep disorders. Not doing exercise ($P = 0.002$, 95% CI=24.473 to 26.856) was associated with sleep problem while exercising once in a week ($P = 0.002$, 95% CI=25.118 to 28.548) was associated with good sleep quality. Vegetarian ($P = 0.881$, 95% CI=26.005 to 27.664) was associated with good sleep quality while non vegetarian ($P = 0.881$, 95% CI=24.896 to 29.104?) was associated with sleep problem. Smoking ($P = 0.560$, 95% CI=24.833 to 30.351) was associated with good sleep quality while not doing smoking ($P < 0.569$, 95% CI=25.985 to 27.592) was associated with sleep problem. Urge to move the legs ($P < 0.000$, 95% CI=22.651 to 25.410) was associated with sleep problems.

Table 2: Mean score of sleep score
Descriptive Statistics

	n	Min.	Max.	Mean	Std. Deviation
Sleeping Scores	306	5.00	36.00	26.8595	6.82353
Valid N (list wise)	306				

Table 3: Results of sleep problems

Scale	n
Having severe sleeping problems need clinical attention	6.2
Having some sleeping problems	5.9
Good sleep quality	38.2
Great sleep quality	49.7

Table 4: Association of demographic data, diabetes, obesity, difficult breathing, snoring, exercising, dieting, smoking, urge to move the legs with sleeping scores and 95% Confidence Interval.

Variables	n%	95% confidence interval	P Value
Age			
<20	29.7%	25.371 to 28.518	0.771
20 -30	65.4%	25.754 to 27.585	
<30	4.9%	25.85 to 31.877	
Profession Businessman	0.6%	-75.649 to 127.649	0.02
student	91.7%	22.498 to 39.101	
Health sector	2.9%	18.02 to 32.19	
housewives	4.8%	25.72 to 34.049	

Table 5: Association of demographic data, diabetes, obesity, difficult breathing, snoring, exercising, dieting, smoking, urge to move the legs with sleeping scores and 95% Confidence Interval.

variables	n%	95% confidence interval	P value
Education			
Inter	15.4	25.893 to 30.787	0.116
Postgraduate	7.4	24.138 to 29.498	
Undergraduate	77.2	25.731 to 27.407	
Gender			
Male	28.56	26.856 to 29.484	0.284
Female	71.56	25.395 to 27.265	
Do you have diabetes?			
Yes	4.2	19.847 to 26.921	0.009
No	95.81	26.228 to 27.799	

Table 6: Association of demographic data, diabetes, obesity, difficult breathing, snoring, exercising, dieting, smoking, urge to move the legs with sleeping scores and 95% Confidence Interval.

Variables	n%	95% confidence interval	P value
Do you have obesity?			
Yes	14.4%	22.415 to 27.119	0.03
No	85.6%	26.396 to 28.006	
Do you have difficulty breathing?			
Yes	6.4%	17.802 to 26.297	0.001
No	93.6%	26.436 to 27.955	
Do you snore?			
Yes	7.7%	21.776 to 27.722	0.115
No	92.3%	26.243 to 27.83	

Table 7: Association of demographic data, diabetes, obesity, difficult breathing, snoring, exercising, dieting, smoking, urge to move the legs with sleeping scores and 95% Confidence Interval.

Variables	n%	95% confidence interval	P value
Exercise			
Once in a week	23.5	25.118 to 28.548	0.002
Never	46	24.473 to 26.856	
Regularly	15	29.356 to 32.492	
Thrice a week	14.7	24.886 to 28.138	0.881
Diet Non veg	85.3	24.896 to 29.10	
Veg	14.7	26.005 to 27.664	

Table 8: Association of demographic data, diabetes, obesity, difficult breathing, snoring, exercising, dieting, smoking, urge to move the legs with sleeping scores and 95% Confidence Interval.

Variables	n%	95% confidence interval	P Value
Do you smoke?			
Yes	8.8	24.833 to 30.351	0.560
No	91.2	25.985 to 27.592	
Do you have any urge to move your leg?			
Yes	31.7	22.651 to 25.410	0.000
No	68.3	27.297 to 29.047	

DISCUSSION

Researchers collected the responses in 3 days. 6.2% reported had severe sleeping problems and need clinical attention. 5.9% had some sleeping problems. 38.2% of respondents have good sleep while 49.75 had great sleep quality. Majority of respondents belong to age 20 to 30 age groups, students, undergraduate, female, exercised once in a week and were vegetarian. Previous researchers show that males are more likely to develop sleep problems²². Our research contradicts with it. Females showed poor sleep quality and were more prevalent to sleep problems. Moreover, 20 to 30 age group, Health sector and inter education level was associated with sleep problems wherever <30 age group, undergraduate education level, students were associated with good sleep quality. These vulnerable groups need urgent clinical attention for their sleep problems.

Previous researchers show sleep problems were more likely prevalent in diabetic patients²³ our research corresponds to it. Patients having diabetes, obesity, difficult breathing and snoring while sleeping were more prevalent to sleep problems. Exercising once in a week and eating vegetarian food was associated with good sleep quality hence government can recommend the people to exercise once in a week and eat health leafy vegetables for having sleep of good quality. Previous researchers show smoking was associated with sleep problems²⁴ while this research that smoking was associated with good sleep quality.

This study has several limitations. We did not collect any personal information for privacy reasons hence we did not provide any feedback related to the sleep problems to our respondents. Despite of above limitation our research provides important information related to sleep problems and the vulnerable groups more likely to get sleep problems, beside that it provides information for making policies to enhance the sleep quality.

CONCLUSIONS

Poor sleep quality causes depression, accidents, mortality, and morbidity among general population. This study will provide the important information to the higher authorities related to the most vulnerable groups related to sleep problems and factors associated with good sleep quality so that government can make psychological policies.

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