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Research Article

Relationship between Occupational Stress and Sleep Quality: A Study of Professionals in Lockdown

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ABSTRACT

The COVID-19 pandemic has heightened mental health issues and lifestyle disorders worldwide. Occupational stress is increasingly impacting the physical and mental health of workers due to shifts in workplace dynamics. Adequate sleep is crucial for maintaining overall health. This study examines the relationship between job-related stress and sleep quality using data from sixty-two professionals, collected *via* the Occupational Stress Index (OSI) and Pittsburgh Sleep Quality Index (PSQI). A strong positive correlation was found between OSI and PSQI scores ($r_{(60)}$=.41, p<.001), indicating that higher occupational stress is associated with poorer sleep quality. Significant correlations were also observed across genders, marital status, and work modes, with females exhibiting poorer sleep quality than males ($F_{(1,60)}$=4.25, p<.04). The study highlights a significant link between occupational stress and sleep quality, particularly affecting women. These findings underscore the need for targeted interventions to improve sleep and reduce stress in the workplace.

Keywords: Occupational stress; Sleep quality; Mental health; COVID-19

INTRODUCTION

Claude Bernard once said that in view of a continuously changing environment, stabilizing internal homeostasis is important for maintaining a healthy life. There are various stressors in the environment that can affect homeostasis. According to Selye, stress is an actual or perceived threat to the organism. Selye further said that long-term stress can lead to a diseased state [1].

The sudden outbreak of COVID-19 (2019) has created havoc worldwide. The World Health Organization declared the COVID-19 outbreak a worldwide pandemic in March 2020, and by the end of April 2020, it had already spread over more than 140 countries and infected more than two million people. The pandemic's circumstances have proven to be a significant reason for stress. COVID-19 is an infectious disease that is similar to the Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). All these epidemics were biological disasters that created deep fear, anxiety, panic, depression, and insomnia among individuals. Compared to previous pandemics, COVID-19 is more likely to spread from person to person and through carriers who don't have symptoms. It also spreads more quickly and has caused more damage over a longer period. The unexpected and sudden lockdown, unemployment, fear of becoming infected and losing loved ones, stricter rules for social gatherings, daily policy changes, and many other factors have all had a mental and physical impact on everyone. In a pandemic situation, health workers were mostly affected. In the past, during and after the SARS outbreak, there have been a lot of epidemiological and controlled research studies conducted to find out how different psychosocial stressors and diseases are related. Like SARS, the COVID-19 outbreak has left people all over the world with a host of psychological issues. Several research studies have found that social isolation, risk perception, and financial distress are strongly positively correlated with factors like gender, age, religion, level of education, location, marital status, and income levels, among others. During the COVID-19 outbreak, it was found that medical workers were in a stressful job situation with a high workload, few protection tools, etc., which led to serious mental health problems. They had to work tirelessly on the

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frontlines in a very challenging and stressful environment, which took a toll on their mental health. According to some of the studies, healthcare workers were more likely to contract an infection and spread it to their friends, family, and coworkers; they also experienced a great deal of uncertainty and stigma and they had higher levels of stress, anxiety, and depressive symptoms, which may have long-term psychological effects [2].

These pandemics have also been linked to PTSD in medical personnel. Although the COVID-19 crisis and SARS crisis directly affected healthcare workers, concerns have also been raised about the psychological issues, mental health, and recovery of other professionals. Few researchers have found that the pandemic negatively affects people who do not work in the medical field in terms of their psychological health, and that people in other occupations also experience some negative effects on their psychological well-being. The research, however, is limited. A study by Piao et al., found that workers in the wholesale or retail and lodging or restaurant sectors experienced the most stress during COVID-19. They also had lower psychological well-being during the COVID-19 pandemic, which made them more susceptible to mental illness. During the COVID-19 pandemic, teachers had to work much harder to adjust to new technologies. As their workload increased, they were subjected to intensive technology use, which had a detrimental effect on their performance and quality of life. Employee well-being and perceived COVID-19 anxiety are significantly correlated, according to a study by Yuksek et al., on workers in the aviation industry. It was discovered that as the perceived COVID-19 anxiety level increased, the level of well-being significantly decreased [3].

Deteriorating sleep quality is a problem that is brought on by ongoing stress. There is a connection between stress and poor sleep quality, according to earlier studies. People with high-level professional titles were more likely to experience sleep disorders than those with lower-level titles. Additionally, they found that the high-stress group scored higher on the PSQI for subjective sleep quality, sleep time, sleep disturbance, and daytime dysfunction compared to the low-stress group.

The purpose of this study was to investigate the relationship between poor sleep and work-related stress in non-healthcare professionals. The goals of the current study are to (1) Further the understanding of the relationship between work-related stress and sleep quality, and (2) Investigate the impact of various demographic factors on work-related stress and sleep quality [4].

MATERIALS AND METHODS

Participants

A total of 62 (mean age: 33.56 ± 8.79 years) participants, including 39 males (mean age: 33.38 ± 8.80 years) and 23 females (mean age: 33.86 ± 8.94 years), participated in this study. All the participants were professionally engaged in different professions. All participants filled out the Occupational Stress Index (OSI) and Pittsburgh Sleep Quality Index (PSQI) questionnaires online [5].

This study was conducted online and employees from different professions participated in this online survey. All the participants filled out a Google Docs form and gave their informed consent. There was no incentive given to participants, and participants were free to opt out of the study at any time during their participation. Participants were told how the study would work and that their participation would be kept secret. The Google-doc form for the OSI and PSQI questionnaires was made and shared on Facebook, WhatsApp groups, and other social media sites. Within seven days, the data were collected. During the second lockdown, which was when working-class people worked from home on an online or virtual platform, the online survey was done.

Tools

Occupational Stress Index (OSI): The OSI is one of the psychological research tools that is used to find out how stressed out an organization's employees really are. All these workplace stresses are caused by the workplace's constituents and conditions. The OSI consists of a total of 46 items, which are rated on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree), and the middle point is 3 (uncertain). All the items contained in this list are almost directly related to the job lives of employees, which have somehow induced stress. This scale consists of twelve sub-scales, including role overload, role ambiguity, role conflict, unreasonable group, and political pressure, responsibility for persons, under-participation, powerlessness, poor peer relations, intrinsic impoverishment, low status, strenuous working conditions, and unprofitability. The scores of the OSI are divided into three categories: high, moderate, and low, with score ranges of 46–142, 123–155, and 156-230, respectively [6].

Pittsburgh Sleep Quality Index (PSQI): The PSQI is a validated instrument for the assessment of sleep quality and the pattern of sleep. This assessment tool measures one month's sleep quality and can distinguish between poor and good sleep by measuring the seven components. These components include subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, the use of sleeping medications, and daytime dysfunction. The PSQI includes a total of 10 elements, for which different questions are asked with respect to the seven components. The quality of sleep is assessed by calculating 1 to 9 elements, where the 10^{th} is excluded because it is related to the bed partner. The PSQI global score is calculated by adding all the scores of the 7 components. The global PSQI scores range from 0 to 21, with a score of 5 indicating poor sleep quality.

Design and statistical analysis

A correlation analysis was used to find out how OSI and PSQI relate to each other in different ways. The descriptive statistics tell us everything we need to know about the people in the sample, such as their level of education, gender, marital status, jobs, how they get to work, etc. Population inferences were made using a one-way ANOVA, where the significant value was set at 0.05. All data were analyzed using IBM SPSS 20 software [7].

RESULTS

Descriptive analysis

The socio-demographic profiling of all the participants has been done with the IBM SPSS software (Table 1). Gender (male, female), Age, Education (undergraduate, postgraduate), marital status (married, unmarried), working mode (online, offline), and occupations (private, government) were analyzed.

Table 1: The socio-demographic profile of the sample.

Variables	Levels	Total (N)	Percentage (%)
Gender	Male	39	62.9
	Female	23	37.1
	Undergraduate	18	29.03
Educational status	Postgraduate	44	70.96
	Married	39	62.9
Marital status	Unmarried	23	37.09
	Government	20	33.25
Occupational status	Private	42	67.74
	Online	40	64.51
Working mode	Offline	22	35.48

A total of 62 volunteers (male: 39, 62.9%; female: 23, 37.09%), ranging in age from 21 to 58 years (mean ± SD: 33.56 ± 8.79) took part in the study. Among all participants, there were undergraduates (N: 18; 29.03%), postgraduates (N: 44; 70.96%), married (N: 39; 62.90%), unmarried (N: 23; 37.09%), and occupationally government (N: 20; 32.25%) and private (N: 42; 67.74%). Due to the partial lockdown implementation, the working mode of employees has changed from online (N: 40, 64.51%) to offline (N: 22, 35.48%), which were the main working strategies [8].

Correlational analysis

The relationship between OSI and PSQI was analyzed with the correlations among all the socio-demographic variables. A Pearson correlation coefficient was computed to assess the linear relationship between the OSI and PSQI among all the participants. There was a significant positive correlation ($r_{(60)}$=.41, p<.001) between OSI and PSQI. Among genders, (males ($r_{(37)}$=43, p<.006) and females ($r_{(21)}$=.51, p<.01)), marriage relationships, (married ($r_{(37)}$=.40, p<.011) and unmarried ($r_{(21)}$=.42, p<.044)), and working mode, (online ($r_{(38)}$=.42, p<. 006) and offline ($r_{(20)}$=.42, p<.049)) found to be significant positive correlation between the OSI and PSQI. But occupationally, the government employee demonstrated a non-significant positive correlation ($r_{(18)}$=.36, p>.118), whereas the private employee demonstrated a significant positive correlation ($r_{(40)}$=.44, p<.003). All the data is tabulated in Table 2.

Table 2: Pearson's correlation coefficient among all the socio-demographic.

		Occupational Stress Index (OSI)								
		All	Male	Female	Married	Unmarried	Online	Offline	Government	Private
Pittsburgh Sleep Quality Index (PSQI)	All	.41**	0.23	.51*	0.01	-0.12	-0.05	-0.11	0.16	-0.04
	Male	0.1	.43**	0.04	-0.04	-0.12	-0.18	0.07	-0.08	0.07
	Female	.51*	0.25	.51*	-0.07	-0.12	-0.03	-0.11	0.16	-0.02

Married	-0.18	0.07	-0.02	.40*	0.35	0.14	0.19	-0.08	0.07
Unmarried	-0.08	0.4	-0.08	-.47*	.42*	0.13	-0.06	0.37	-0.23
Online	-0.13	0.06	0.04	0.02	0.05	.42**	0.35	0.04	-0.03
Offline	0.02	0.02	0.02	-0.19	0.37	0.16	.42*	0.35	0.03
Government	0.1	-0.31	0.1	-0.22	0.15	0.18	0.26	.36NS	-0.01
Private	-0.17	0.05	0.06	0.27	-0.15	0.03	0.3	0.04	.44**

Note: Significance levels: *=Correlation significant at 0.05; **=Correlation Significant at 0.01; NS: Non-Significant

Inferential analysis

To draw a conclusion from the sample, all the socio-demographic variables were assessed individually through a one-way ANOVA. In this research study, for both the OSI and PSQI, the one-way ANOVA was applied separately, which is mentioned here as a sub-section. Tables 3 (for OSI) and 4 (for PSQI) contain all the mean values and their significance value.

OSI (Occupational Stress Index): A one-way Analysis of Variance (ANOVA) was performed to investigate differences in Occupational Stress Index (OSI) scores across different socio-demographic factors. The findings revealed that there were no statistically significant variations in OSI scores with respect to age, level of education, marital status, occupational status, or working style. This indicates that the levels of occupational stress, as assessed by the OSI, are consistent across various socio-demographic categories (Table 3) [9].

Table 3: Mean scores of OSI (Mean ± SD).

Socio-demographic variable	Sub level	Mean ± SD	p-value
Gender[NS]	Male	135.35 ± 25.13	0.59
	Female	131.86 ± 23.66	
Educational status[NS]	Undergraduate	132.83 ± 26.14	0.8
	Postgraduate	134.56 ± 24.04	
Marital status[(Marginal)]	Married	130.64 ± 25.46	0.15
	Unmarried	139.86 ± 21.98	
Occupational status[NS]	Government	136.15 ± 25.45	0.64
	Private	133.07 ± 24.22	
Working mode[NS]	Online	135.52 ± 26.07	0.53
	Offline	131.40 ± 21.53	

Note: NS: Non-Significant, P-values at 0.05

PSQI (Pittsburgh Sleep Quality Index): A one-way ANOVA revealed that gender was a significant factor influencing sleep quality ($F(1, 60)=4.25$, $p<.04$; M ± SD: Male=7.00 ± 2.83, Female=8.95 ± 4.64). Other factors, including educational status, marital status, occupational status, and working mode, were not found to be significant. Overall, the sleep quality score was below the threshold for poor sleep quality, indicating that participants generally experienced poor sleep quality (Table 4).

Table 4: Mean scores of PSQI (Mean ± SD).

Socio-demographic variable	Sub level	Mean ± SD	p-value
Gender*	Male	7.00 ± 2.83	0.04
	Female	8.95 ± 4.64	
Educational status^{NS}	Undergraduate	7.27 ± 2.80	0.54
	Postgraduate	7.90 ± 4.02	
Marital status^{NS}	Married	7.33 ± 3.37	0.28
	Unmarried	8.39 ± 4.19	
Occupational status^{NS}	Government	8.10 ± 3.99	0.58
	Private	7.54 ± 3.58	
Working mode^{NS}	Online	7.55 ± 4.09	0.61
	Offline	8.04 ± 2.91	

Note: NS=Non-significant, *=Significant; P-values at 0.05

DISCUSSION

The results of this study indicate that employee sleep quality and occupational stress are affected similarly by lockdowns, isolations, and other pandemic-related measures. The COVID-19 pandemic was found to have caused moderate occupational stress and poor sleep for workers across a variety of occupations, according to this study. Most office workers who worked remotely reported higher than-average levels of stress, anxiety, and depression, according to Muniswamy et al. During the Corona period, their mode of working changed from offline to online. Increased stress was a result of problems with work-life balance, a lack of organizational support, social isolation, and long workdays. All participants, except for those who work for the government, demonstrated a positive correlation between job stress and sleep quality. According to a study on anesthesiologist-intensivists conducted by Magnavita et al., a sizable proportion of healthcare workers report feeling extremely stressed at work. These medical professionals were exposed to patients' psychological and physical health because of their frequent interactions with them. They also mentioned difficulty sleeping and feelings of anxiety, depression, and sadness in addition to the stress brought on by their jobs. Our findings are in line with a few other studies that have shown that in COVID-19, there was an increase in occupational stress in occupations other than healthcare. In one type of study done by Sonmez et al., it was discovered that in the hospitality/tourism sector, there was an increase in occupational stress that had a significant impact on the mental and physical health and safety of the employees. In the past, whenever a virus or pandemic spread, people experienced elevated levels of stress, depression, anxiety, and poor sleep quality during and after the outbreak.

Our findings also show that poor sleep quality affects all demographic groups, but that women's sleep is significantly worse than men's, suggesting that women are more susceptible to poor sleep quality in pandemic-like situations. Females experienced a greater decline in sleep quality during COVID than men. Trauma-related stress is more prevalent among women, nurses, and frontline workers. They are more susceptible to poor sleep quality. They are more prone to depression, stress, anxiety, and loneliness, which are contributors to degraded sleep quality.

An intriguing result of our study was that there was no relationship between job stress and sleep quality among employees in the public sector. Due to a lower prevalence of job insecurity than employees in the private sector, government workers in Corona were less vulnerable. Numerous studies have

found that employees in the private sector experience significantly more job insecurity than those in the public sector. Those who reported job insecurity were significantly more likely to experience sleep problems. Emotional disturbances (such as anxiety, tension, job dissatisfaction, lack of concentration, etc.), sleep disturbances, major depression, and work-related disturbances (such as decreased organizational trust, increased intention to quit, lower job performance, including tardiness and absenteeism) are some of the psychosocially damaging effects of job insecurity and its stress effects. Numerous studies have found that employees in the public sector are less stressed than those in the private sector.

Employees across organizations experienced moderate occupational stress and poor sleep quality during the COVID-19 pandemic, according to the study. Except for government workers, all participants showed a positive correlation between occupational stress and sleep quality. The findings of this study suggest that lockdowns, isolations, and other imposed situations during pandemic have a similar effect on the stress levels of workers and the quality of their night's sleep. All demographics suffer from poor sleep quality, but women fare even worse than men do, suggesting they are more vulnerable to the negative effects of sleep deprivation in a pandemic.

The study's limitations include small sample size and the reliance on self-reporting through an online survey.

CONCLUSION

The research found a significant correlation between occupational stress and low sleep quality. This association was seen in both genders, marital statuses, and working modes. However, the link was more pronounced in females, who also reported experiencing poorer quality sleep compared to males. These results illustrate the significance of occupational stress on the quality of sleep, emphasising the need for focused interventions to alleviate stress and enhance sleep, especially among women. Addressing occupational stress is essential for improving the general health of the working population.

AVAILABILITY OF DATA AND MATERIAL

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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Not applicable.

AUTHORS' CONTRIBUTIONS

Kedarmal Verma: Concept development, statistical analysis, overall review.

Pallavi Ojha: Manuscript writing, application of questionaries.

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