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Comparative Study

Sleep Quality, Anxiety Level and Mental Well-Being of Healthcare Professionals (Doctors) during COVID-19: A Comparative Study of the First & Second Wave

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ABSTRACT

The COVID-19 virus and the overall pandemic crisis have touched every sector of society for the past 1.5 years. Healthcare professionals, on the other hand, have been under the most stress and bear the most responsibilities. They've received a lot of praise and/or scrutiny from the public because of their huge role in the pandemic. Both their personal and professional lives have suffered as a result. During the COVID-19 epidemic, the current study examines the sleep quality, anxiety level, and mental well-being of healthcare workers (doctors). It also seeks to compare the effects of the first and second waves on their sleep, anxiety, and mental health. It also tries to figure out the relationship between all of the variables during wave 1 and wave 2. The Pittsburgh Sleep Quality Index (PSQI), Beck's Anxiety Inventory (BAI), and Warwick Edinburgh Mental Well-being Scale were used to assess a total of 30 doctors from throughout India (WEMWES). The results of data analysis from the first wave of the study suggest that these professionals' sleep quality was poor, and they had low anxiety levels and moderate mental well-being. The results of the second wave's data analysis show a decrease in all three of the variables studied. A triangulations study can be undertaken to better comprehend the situation, in which the participants are interviewed to check if there is any difference between the quantitative and qualitative ratings. This will aid in the in-depth study of the subject and will stimulate deeper investigation into the subject to gain more knowledge.

Keywords: *COVID-19, First Wave, Second Wave, Sleep Quality, Anxiety Level, Mental Wellbeing, Healthcare Professionals*

COVID-19

In December 2019, a widespread epidemic of COVID-19 was discovered in China. This contagious disease has had a significant impact on every country in the world to far, with about a million cases diagnosed in over 200 countries. The economy has taken a knock, and everyone's lifestyle has changed.

A novel virus termed Severe Acute Respiratory Syndrome Coronavirus 2 was discovered to be the source of this outbreak (SARS-CoV-2). On the 12th of February 2020, the World

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Health Organization (WHO) designated Coronavirus Disease 2019, often known as COVID-19.

Coronaviruses are a viral family that can cause mild to major infections in the upper respiratory tract. These infections can vary from the average cold to SARS and Middle East respiratory syndrome (MERS).

COVID-19 is thought to have started in a wet market in Wuhan, China, where merchants sell live animals. The 'wet market' gets its name from the constant washing of floors caused by animal slaughter and water from melted ice used to preserve commodities.

There was just one thing that afflicted people in China had in common. It was that everyone has been exposed to the Huanan Seafood Market in Wuhan in some way.

The new virus is thought to be a mutation of the original coronavirus, which is widespread in animals. This mutant virus was believed to have infected humans in the marketplace. If an infected person sneezes or coughs without covering their mouth or nose, the droplets can infect others via any of the 'contact channels,' such as the mouth, nose, or eyes. They might be able to inhale it. Contact with surfaces is also thought to be a route of virus transmission.

National Institute of Health clearly stated on their website, "The virus that causes coronavirus disease 2019 (COVID-19) is stable for several hours to days in aerosols and on surfaces, according to a new study from National Institutes of Health, CDC, UCLA and Princeton University scientists in *The New England Journal of Medicine*. The scientists found that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was detectable in aerosols for up to three hours, up to four hours on copper, up to 24 hours on cardboard and up to two to three days on plastic and stainless steel."

The first wave of this virus struck all nations in the year 2020. However, by the end of the year, the number of instances had decreased and the situation appeared to be under control. India was subjected to the second wave until April 2021. It was discovered to be powered by The DELTA Form, a highly contagious variant of the virus. With increasing severity, the number of instances climbed dramatically. The elderly were thought to be particularly affected by the initial wave. The second wave, on the other hand, was impacting the country's middle-aged and young people (25-50 years old). The mortality rate increased in tandem with the number of people who had been vaccinated. Vaccination was thought to be the only way to deal with the crisis.

Because it became more contagious and transmissible, this wave was dubbed "severe" because of its fatality. Along with this, a slew of other ailments proliferated. Mucormycosis, also known as the 'Black Fungus,' 'Yellow Fungus,' and Aspergillosis, also known as the 'White Fungus,' and so on. Individuals with any respiratory disease or inadequate immunity were more susceptible to this virus. During the second wave's apex, another observation was made. Because everyone was reacting to the illness and treatment, some patients' oxygen saturation dropped suddenly, despite their remarkable recovery, leaving less time for effective breathing support.

The symptoms were seen to last an average of 16 days for those who were infected. However, there were a number of long-lasting side effects. After infection, several patients reported

losing their sense of taste for months. Some people lost a lot of weight. Some persons had respiratory problems as well as diabetes.

India officially recorded around 120,000 deaths and more than 9 million infections in May alone, which experts feel is an understatement. Since the beginning of the epidemic till June 2021, India has recorded nearly 30 million illnesses and over 380,000 deaths.

Getting any viral-like symptoms during this time caused a lot of anxiety and stress. Individuals would instantly withdraw and attempt to be examined as soon as possible. Multiple RTPCR tests were later discovered to have created abrasions in the Nasopharyngeal and Oropharyngeal regions, making people susceptible to Mucormycosis.

SLEEP QUALITY

According to Christopher Kline (*Encyclopedia of Behavioral Medicine)*, "Sleep Quality is defines as one's satisfaction of the sleep experience, integrating aspects of sleep initiation, sleep maintenance, sleep quality, and refreshment upon awakening."

According to a report published by the National Sleep Foundation (NSF) in *Sleep Health*, a few key indicators have been noted that symbolize a good sleep quality. They are:

1. The time spent sleeping is more when in bed (85% at least of the total time)
2. Taking less than 30 minutes to fall asleep
3. Not awakening more than once every night
4. After falling asleep, initially, being awake for not more than 20 minutes

"Millions of Americans utilise sleep technology," said Max Hirshkowitz, PhD, DABSM, Chairman of the NSF Board of Directors. He elaborated that, "these gadgets offer a view into one's sleep universe, which is normally hidden. The National Sleep Foundation's sleep duration and quality guidelines make sense of it all, giving customers the tools they need to better understand their sleep. These efforts aid in making sleep science and technology more accessible to the general population, who are ready to learn more about their health in innovative ways."

"Previously, we classified sleep by its negative effects, such as sleep dissatisfaction, which were helpful in diagnosing underlying disease." Obviously, this isn't the entire tale. We are now on a better path to defining sleep health because to this work," said Maurice Ohayon, MD, DSc, PhD, Director of the Stanford Sleep Epidemiology Research Center.

ANXIETY LEVEL

American Psychological Association (APA) explains anxiety as "an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure."
Anxiety is our body's natural response to stress. Anxiety is caused by a combination of fear and apprehension about the future. When a person feels this way for more than 6 months and it begins to interfere with daily activities, it is possible that the person is suffering from Anxiety Disorders.

Such evasive methods have a long history in our history. An attack from a predator or any other threatening incomings would set off our bodily alarm and cause us to take such evasive movements in the early days. Greater heart rate, profuse sweating, shortness of breath, and increased awareness to one's environment are all signs of an alert.

The causes of the trigger, on the other hand, have evolved over time. Previously, any threat, whether it was from animals or life-threatening scenarios, would set off the alarms. However, numerous aspects of life, such as occupation, money-related concerns, life stability, family, health, and a variety of other vital issues, have increasingly become the principal causes of these warnings. Instead of rushing into 'fight or flight' mode, people should pay attention to these characteristics.

Anxiety levels can be influenced by a variety of factors. Personality type, life circumstances, gender, and coping mechanisms are just a few of the causes. The amount of distress and impairment experienced by an individual is used to categorize anxiety levels. There are 4 levels of anxiety,

1. **Mild Anxiety**

This might cause an effect on various areas of functioning of an individual, such as, emotional, social and professional aspects. It is mostly described as ‘sub-clinical’ or ‘clinically non-significant’ level of anxiety. If not treated in time, it may severe.

2. **Moderate Anxiety**

Mild and persistent presence of the symptoms as compared to mild anxiety is a major highlight of this level of anxiety. These are troublesome in nature but can be managed with the help of a doctor or self-help strategies.

3. **Severe Anxiety**

This level of anxiety is extremely debilitating and the symptoms displayed often meet the diagnostic criteria for a ‘clinically-significant anxiety disorder’. These symptoms are frequent and persistent and may also result in loss of work and increased health costs. The observed symptoms are tachycardia, social withdrawal and feelings of panic.

4. **Panic Level Anxiety**

It is also referred to as ‘Panic Disorder’. It is categorized by the frequent, recurring and unexpected panic attacks. Symptoms of a panic attack can be the rapid onset of extreme fear, palpitations, rapid breathing, nausea, dizziness and fear of death. A panic attack usually lasts for 10 minutes. The trigger is different for everyone and the actual cause of an attack may be known or unfamiliar to the person.

MENTAL WELL-BEING

World Health Organization (WHO) defines Mental health as not just the absence of mental disorder. “It is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community."

It describes a person's mental state as dynamic in nature, meaning that it changes and evolves through time.

It can be said that a person with a healthy mental well-being has increased positive self-esteem, greater self-confidence, a productive lifestyle, better work capability, improved sense of emotions in both expression and feeling, is better able to cope with life's stressors, builds and maintains healthy relationships with others, and is better able to adapt to life changes or situations of uncertainty while managing self-alongside.

When a person's mental health is bad for an extended length of time, it can take a toll on them and render them vulnerable to developing a mental health problem.

The globe has been altering dramatically since the COVID-19 pandemic began. Various countries' economies have been hit hard by this transformation. Healthcare workers are one profession that has been working tirelessly to improve the situation during these trying times. They've been dealing with the infected while putting their own lives at jeopardy. They are currently the "front-line warriors."

This study focuses on the impact of the COVID-19 Wave-II on the sleep quality, anxiety levels, and mental well-being among previously selected healthcare professionals (doctors). It also tries to compare the impact of the first and second wave on the same.

As previously said, sufficient sleep is necessary for accurate daytime performance. However, as the number of infected persons continues to climb and the pandemic continues to spread, anxiety levels may rise, disrupting sleep quality and resulting in low mental well-being, which may cause disruption in the individual's work.

As a result, the primary goal of this research is to determine the influence of the second wave on the mental health of healthcare professionals (doctors), as well as to compare the effects of Waves I and II. We hope to be able to assist them in improving in essential areas as a result of these findings.

REVIEW OF LITERATURE

Chatterjee S. S. et al (2021) directed a cross-sectional study that aimed to investigate the levels of mental distress among healthcare professionals during the First Wave of COVID-19 in India. It was found that different categories of healthcare workers experienced varied mental health problems, such as anxiety, stress etc.

Sharma V. et al (2021) focused to assess the effects of the COVID-19 on anxiety, sleep outcomes and change in clinical management practices among orthopaedic surgeons following a nation-wide lockdown. Majority exhibited minimal levels of anxiety along with change in management styles. It was also seen that sleep disturbances was significantly associated with the change in management.

Moitra M. et al (2021) conducted a scoping review that summarized the present evidence on the effect of COVID on the mental health of the HCWs. The main outcomes studied were depressive symptoms, anxiety symptoms, psychological trauma, insomnia and sleep quality, workplace burnout and fatigue, and distress. Majority of the studies considered established a high number of symptoms recognized for depression, anxiety, and other conditions.

Kaur T. et al (2021) conducted a study to assess the traumatic impact of the COVID-19 Second Wave on depression, anxiety, stress, sleep quality, mental well-being, and resilience amongst the general population of India. The findings revealed that majority exhibited symptoms of Anxiety, depression and PTSD. Very few showed symptoms of stress and sleep patterns. Major chunk of the population also demonstrated disturbed mental well-being and very of these individuals showed resilience capacity.

Dolev T. et al (2021) did a comparative study to see the effect of treating COVID and NON-COVID patients on the mental health of the physician. After 3 months of dealing with COVID patients, the physicians started reporting high levels of anxiety and poor sleep quality.

Parthasarathy R. et al (2021) examined the prevalence of mental health issues among HCWs and correlated among HCWs in the State of Karnataka, India. Anxiety disorder and depression was highest among those with frontline COVID-19 responsibilities. Incidence was significantly higher among those with clinical responsibilities compared to those with supportive responsibilities.

Chaudhuri A. et al (2021) studied the correlation of perceived stress levels and sleep quality midst physicians during the Coronavirus Disease-19 Pandemic. Doctors were found to have higher levels of perceived stress and poor sleep quality.

Vitale, E. (2021) aimed to assess the levels of anxiety, depression and insomnia among Italian nurses directly involved in patient care of the infected, bearing in mind the first and the second wave of the pandemic. While a significant difference was seen between the two groups for depression and insomnia, no significant differences were recorded between the two waves for the anxiety, depression and insomnia disorders.

Chalhub R. A. et al (2021) aimed to elaborate the health-related quality of life, and burnout in frontline physicians pre-diagnosed with anxiety during the COVID-19 pandemic. Out of the all the participants, very few exhibited symptoms of anxiety and they showed greater emotional exhaustion, less personal accomplishment and poor life quality.

Sirois F. M. and Owens J. (2021) performed a rapid systematic review and examined the factors associated with psychological distress among HCWs during the outbreak. Consistent evidence indicated that individuals such as females, nurses, anyone experiencing stigma, maladaptive coping, being in contact or risk of contact with infected patients, and experiencing quarantine acted as risk factors for psychological distress among the workers.

Norhayati, M. N. et al (2021) aimed to ascertain the estimated prevalence of psychological impacts among healthcare providers in the Asian region. It identified a higher prevalence rate of anxiety, depression, stress, and insomnia but a lower prevalence rate of post-traumatic stress disorder among healthcare providers in Asia regions.

Sriperambudoori V. et al (2021) conducted a study on the resident doctors working in a tertiary care center during the outbreak and assessed them for the symptoms of depression, anxiety, and stress along with the factors associated with their mental health status. A considerable proportion had symptoms of depression, anxiety and stress while 33% reported negative emotional states.

Arafa, A. et al (2021) chose two Middle East countries, Egypt and Saudi Arabia to investigate the psychological impacts of COVID-19 on their HCWs. It was observed that the HCWs on the frontlines in both the countries experienced depression, anxiety, stress, and inadequate sleeping.

Saragih I. D. et al (2021) conducted a review study that focused on identifying the mental health issues faced by the HCWs in various countries throughout the pandemic. The results indicated that mental health problems were present on a global level. The most common issue was found to be PTSD closely followed by distress, depression and anxiety.

Gupta B. et al (2020) intended to evaluate and measure the effects of the COVID-19 pandemic on the anxiety levels and sleep quality among health care workers in India, and tried to determine how the unavailability of personal protective equipment affects their willingness to provide patient-related care. The pandemic resulted in significant levels of anxiety and sleep disturbances among health care workers, predominantly associated with the females, younger age group, and inadequate availability of personal protective equipment.

Spoorthy M. S. et al (2020) conducted a review study which aimed to analyze the literature about mental health issues faced by healthcare workers (HCW) amidst the COVID-19 pandemic. It was observed that various socio-demographic variables such as gender, profession, age, place of work, department of work along with some psychological variables like poor social support, self-efficacy were found to be associated with increase in the levels of stress, anxiety, depressive symptoms, insomnia in the sample.

Selvaraj P. et al (2020) aimed to study the incidence of psychological distress, depression, anxiety, stress, and insomnia faced by the Indian healthcare professionals. Among the total sample, 55% reported moderate levels of depression. In case of anxiety and stress, it was seen that females showed greater anxiety and stress in comparison to males. Both males and females exhibited moderate levels of insomnia.

Batra K. et al (2020) piloted a meta-analysis that aimed to provide additional (and updated) proof related to the psychological impact among healthcare workers. The subgroup analysis showed that females, nurses and frontline responders had a higher prevalence rate for anxiety and depression than males, doctors and second line workers.

Sahin M. S. et al (2020) tried to evaluate the predominance of depression, anxiety, distress, and insomnia and related factors in HCWs during the COVID-19 pandemic in Turkey. HCWs also experienced high levels of depression, anxiety, insomnia, and distress symptoms. The intensity of these symptoms was greater in women.

Holten S. et al (2020) focused on assessing the psychological well-being of the hospital clinical staff in Australia during the pandemic. Approximately 25% of respondents reported symptoms of psychological distress.

METHODOLOGY

Aim

The purpose of this study is to see the effect of COVID-19 Pandemic – SECOND WAVE on the Sleepy Quality, Anxiety Level and Mental Well Being of Healthcare Professionals (Doctors). It also tries to compare the impact of the first and second wave on the variables considered.

Objective

1. To measure the effect of COVID-19 SECOND WAVE on Sleep Quality, Anxiety Level and Mental Well-Being
2. To draw a comparison between the First and the Second wave and their impact on Sleep Quality, Anxiety Level and Mental Well-Being
3. To study the relationship between Sleep Quality, Anxiety Levels and Mental Well-being in the sample during the First Wave

4. To study the relationship between Sleep Quality, Anxiety Levels and Mental Well-being in the sample during the Second Wave

Hypothesis

1. There will be a significant impact of COVID-19 SECOND WAVE on the Sleep Quality, Anxiety Level and Mental Well Being of Healthcare Professionals (Doctors).
2. There will be a significant difference in the levels Sleep Quality, Anxiety Level and Mental Well Being of Healthcare Professionals (Doctors) between the First and the Second wave.
3. There will be a significant relationship between Sleep Quality, Anxiety Levels and Mental Well-being in the sample during the First Wave
4. There will be a significant relationship between Sleep Quality, Anxiety Levels and Mental Well-being in the sample during the Second Wave

Design

Correlational Research Design was used to evaluate the relationship between Sleep Quality, Anxiety Levels and Mental Well-Being in the sample.

Experimental Research Design was used to equate the Sleep Quality, Anxiety Levels and Mental Well-Being of the sample between both the COVID-19 waves.

Variables

1. Sleep Quality
2. Anxiety Level
3. Mental Well-Being

Sample & Its Selection

Healthcare Professionals (doctors) working in hospitals during the COVID-19 Pandemic (First Wave) were selected using snowball sampling, otherwise known as Convenience sampling technique. The same sample was contacted during the Second Wave for collection of data for comparison. Google Forms were used to collect data due to the pandemic situation.

Description of the Tools Employed

Sleep Quality was evaluated using the Pittsburgh Sleep Quality Index (PSQI). It comprises a total of 9 items out of which, 4 are subjective in nature and 5 are to be measured on a 4-point scale.

Anxiety Levels were evaluated using the Beck's Anxiety Inventory (BAI). It encompasses a total of 21 items with each item having 4 possible responses.

Mental Wellbeing was evaluated using the Warwick Edinburgh Mental Well-being Scale (WEMWES). It comprises total of 14 items with each item having 5 possible responses.

Procedure

A Google form was created that contained 5 separate sections. Section-1 consisted of the Demographic details of the subjects, Section-2 evaluated the Sleep Quality, Section-3 assessed the Anxiety levels, Section-4 gauged the Mental Wellbeing and Section-5 was devoted for the acknowledgment of the individuals who filled the form. The form was circulated among the previously studied sample and data was collected in the course of the

Second Wave. After the collection was complete, the valid responses were selected and scored. The t-score was calculated and interpreted. Pearson's Correlation was conducted to identify the relation between the variables during both the waves, separately.

Statistical Analyses

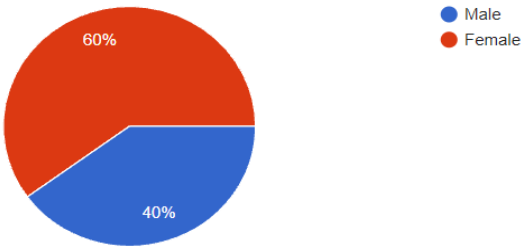
The collected data was scored as per the scoring norm. The obtained result was statistically analysis by using:

- Pearson Correlation
- Paired two-tailed t-test

RESULT & INTERPRETATION

1. Demographic characteristics

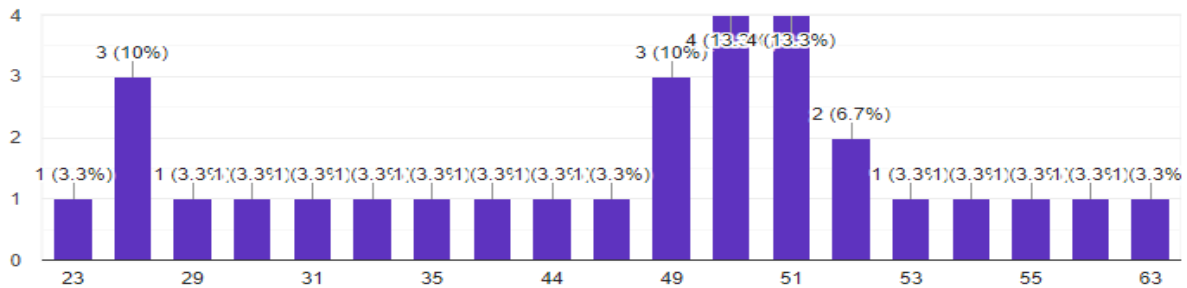
Figure 1. Representing Gender Ratio of the study



18 (60%) of the 30-sample tested were females, whereas 12 (40%) were men. 30(100%) of the individuals in the sample were doctors who worked in hospitals during both waves of the COVID-19 outbreak.

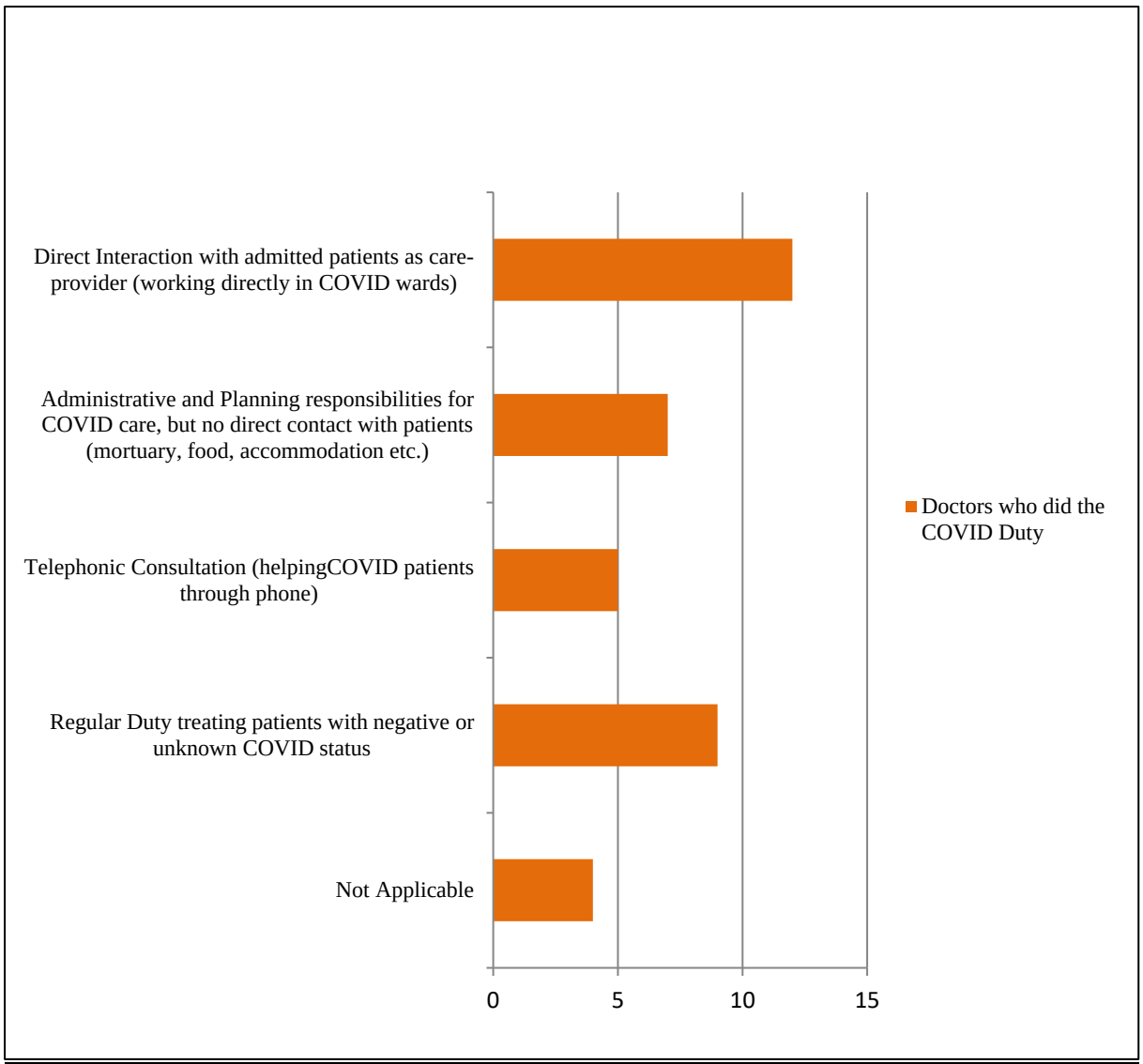
Figure 2. Representing Profession of the sample

Figure 3. Graphical Representation of the Age groups of the sample



The age range that was targeted for this study was of 23- 63 years. Majority of our participants fell in 49-52 years of age category.

Figure 4. Graphical Representation of the Types of COVID Duty done by the sample



Many Doctors did different types of COVID Duty during the mentioned time frame for the research. Few of them were not assigned any COVID Duty due to personal reasons they did not wish to disclose.

2. Sleep Quality, Anxiety Level and Mental Well Being during COVID-19 – FIRST WAVE and SECOND WAVE of sample of 30

Variable	SLEEP QUALITY	ANXIETY LEVEL	MENTAL WELL BEING
TOTAL (mean)	5.53	6.63	48.17
Result	POOR	LOW	MODERATE

Result table representing the mean value for WAVE-1

The mean of sleep quality, anxiety level and mental well-being was calculated to be 5.53, 6.63 and 48.17 respectively, which suggests that the sleep quality of these professionals was poor and they exhibited low anxiety levels and moderate mental well-being for the first wave.

Variable	SLEEP QUALITY	ANXIETY LEVEL	MENTAL WELL BEING
TOTAL (mean)	6.77	10.5	45.8
Result	POOR	LOW	MODERATE

Result table representing the mean value for WAVE-2

The mean of sleep quality, anxiety level and mental well-being was calculated to be 6.77, 10.5 and 45.8 respectively, which suggests that the sleep quality of these professionals was poor and they exhibited low anxiety levels and moderate mental well-being for the second wave.

3. PAIRED TWO-TAILED T-TEST

Table 1. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SQW1	5.53	30	3.181	.581
	SQW2	6.77	30	3.636	.664
Pair 2	ALW1	6.63	30	6.926	1.264
	ALW2	10.50	30	10.814	1.974
Pair 3	MWBW1	48.17	30	13.118	2.395
	MWBW2	45.80	30	13.818	2.523

SQ – Sleep Quality;
AL – Anxiety Levels;
MWB – Mental Well-being;
W1 – Wave 1;
W2- Wave 2

The mean of sleep quality was found to be 5.53 in the First Wave and 6.77 in the Second Wave. The standard deviation was 3.181 for Wave-1 and 3.636 for Wave-2. The mean of anxiety level was found to be 6.63 in the first Wave and 10.50 in the Second Wave. The standard deviation was 6.926 for Wave-1 and 10.814 for Wave-2. The mean of mental well-being was found to be 48.17 in the First Wave and 45.80 in the Second Wave. The standard deviation was 13.118 for Wave-1 and 13.818 for Wave-2.

Table 2. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	SQW1 & SQW2	30	.136	.472
Pair 2	ALW1 & ALW2	30	.446	.014
Pair 3	MWBW1& MWBW2	30	.561	.001

SQ – Sleep Quality;
AL – Anxiety Levels;
MWB – Mental Well-being;
W1 – Wave 1;
W2- Wave 2

A positive correlation was seen between the Sleep Quality during Wave-1 and Wave-2 as the correlational value was .136. A positive correlation was seen between the Anxiety Level during Wave-1 and Wave-2 as the correlational value was .446. A positive correlation was seen between the levels of Mental well-being during Wave-1 and Wave-2 as the correlational value was .561.

Table 3. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. error Mean	95% confidence Interval of the Difference				
					Lower	Upper			
P1	SQW1 & SQW2	-1.233	4.493	.820	-2.911	.444	-1.504	29	.144
P2	ALW1 & ALW2	-3.867	9.906	1.808	-7.565	-.168	-2.138	29	.041
P3	MWBW1& MWBW2	2.367	12.631	2.306	-2.350	7.083	1.026	29	.313

P1 – Pair 1;
P2 – Pair 2;
P3 – Pair 3;
SQ – Sleep Quality;
AL – Anxiety Levels;
MWB – Mental Well-being;
W1 – Wave 1;
W2- Wave 2

The mean difference between Sleep quality during Wave-1 and Sleep quality during Wave-2 was found to be -1.233. There was an insignificant difference in the sleep quality of doctors during Wave-1 and Wave-2, t (28) = -1.504, p = .144 (p <.05).

The mean difference between Anxiety Level during Wave-1 and Anxiety Level during Wave-2 was found to be -3.867. There was a significant difference in the anxiety levels of doctors during Wave-1 and Wave-2, t (28) = -2.138, p = .041 (p <.05).

The mean difference between Mental Well-being Wave-1 and Mental Well-being Wave-2 was found to be 2.367. There was an insignificant difference in the levels of mental well-being of doctors during Wave-1 and Wave-2, t (28) = 1.026, p = .313 (p <.05).

4. CORRELATION

Table 4. Pearson Correlation for WAVE-1

		Sleep Quality	Anxiety Level	Mental Well-being
Sleep Quality	Pearson Correlation	1	.465**	-.405*
	Sig (2-tailed)		.010	.027
	N	30	30	30
Anxiety Level	Pearson Correlation	.465**	1	-.227
	Sig (2-tailed)	.010		.228
	N	30	30	30
Mental Well-being	Pearson Correlation	-.405*	-.227	1
	Sig (2-tailed)	.027	.228	
	N	30	30	30

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

There is a significant positive relationship between sleep quality and anxiety level r (28) = -.465, p = .010.

There is a significant negative relationship between sleep quality and mental well-being, r (28) = -.405, p = .027.

There is an insignificant negative relationship between anxiety level and mental well-being, r (28) = -.227, p = .228.

Table 5. Pearson Correlation for WAVE-2

		Sleep Quality	Anxiety Level	Mental Well-being
Sleep Quality	Pearson Correlation	1	.672**	-.414*
	Sig (2-tailed)		.000	.023
	N	30	30	30
Anxiety Level	Pearson Correlation	.672**	1	-.449*
	Sig (2-tailed)	.000		.013
	N	30	30	30
Mental Well-being	Pearson Correlation	-.414*	-.449*	1
	Sig (2-tailed)	.023	.013	
	N	30	30	30

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

There is a significant positive relationship between sleep quality and anxiety levels, r (28) = .672, *p* = .000.

There is a significant negative relationship between sleep quality and mental well-being, r (28) = -.414, *p* = .023.

There is a significant negative relationship between anxiety level and mental well-being, r (28) = -.449, *p* = .013.

DISCUSSION

The goal of this study is to see how the COVID-19 Pandemic – SECOND WAVE affects healthcare professionals' sleep quality, anxiety level, and mental well-being (Doctors). It also compares the effects of the first and second waves on the variables in question. It also tries to figure out the relationship between all of the variables during wave 1 and wave 2. Thirty doctors from throughout India were evaluated using three questionnaires: the Pittsburgh Sleep Quality Index (PSQI), Beck's Anxiety Inventory (BAI), and the Warwick Edinburgh Mental Well-being Scale (WEMWES).

The first wave's data was gathered utilizing the snowball sampling approach using an Electronic Google Form. The previously considered sample was contacted for the second wave. After the data was collected, it was statistically examined using Pearson's correlation and Paired Two-tailed t-test.

Figure 1. is a pictorial depiction of the gender ratio of the individuals who participated in the study. As shown, out of 30 individuals, 60% (18 individuals) were females and 40% (12 individuals) were males.

Figure 2. is a pictorial depiction of the profession of the sample, i.e., doctors. All the 30 individuals who participated in the study are practicing doctors by profession.

Figure 3. is a graphical representation of the age groups in which the sample falls. As it can be seen, the age range is variable but majority of the sample size falls between the age ggroup of 49-52 years.

Figure 4. is a graphical representation of the kind of COVID duty the doctors performed during the second wave. Majority were in direct contact with the infected patients but a few were not on any duty due to personal issues.

Table1. represents the mean scores and the standard deviation of Sleep Quality, Anxiety Level and Mental Well-being of the 30 individuals assessed in this study during the First and the Second Wave. In the first wave, the average sleep quality was 5.53, and in the second wave, it was 6.77. Even if the difference is little, it demonstrates that sleep quality has deteriorated with time. Another study with a larger sample size should be conducted to have a better knowledge of the subject. Wave-1 had a standard deviation of 3.181 while Wave-2 had a standard deviation of 3.636. In the first wave, the mean anxiety level was 6.63, and in the second wave, it was 10.50. The level of worry experienced by these professionals has clearly increased. This could have happened as a result of the second wave's length and lethality. Wave-1 had a standard deviation of 6.926 while Wave-2 had a standard deviation of 10.814. In the First Wave, the mean mental well-being was 48.17, but in the Second

Wave, it was 45.80. The difference is minor, but it shows that the doctors' mental health has deteriorated over time. Wave-1 had a standard deviation of 13.118 while Wave-2 had a standard deviation of 13.818.

Table2. explains the correlation between the Sleep Quality, Anxiety Levels and Mental Well-being during Wave-1 and Wave-2. Sleep Quality had a correlation value of.136, indicating that there was a positive relationship between them. It suggests that persons who did poorly in Wave 1 are likely to do poorly in Wave 2. In comparison to how other people react, this is a significant difference. Because there was a minor drop in average sleep quality, it's likely that everyone got a lower score than before. Anxiety Level had a correlational value of.446, indicating that there was a positive relationship between both. It means that people who did poorly in Wave 1 are more likely to do poorly in Wave 2. In comparison to how other people react, this is a significant difference. Since there was a discernible decrease in mean anxiety levels, it's safe to assume that everyone scored lower than before. The correlational value for Mental Well-being was.561, indicating that persons who scored moderately in Wave-1 tend to score poorly in Wave-2. Because there was a reduction in mental well-being levels between wave-1 and wave-2, it can be assumed that this decline was for the vast majority of the participants.

Table3. showcases the paired differences between Sleep Quality, Anxiety Levels and Mental well-being of the sample between the First and the Second Wave. The mean difference between Sleep quality during Wave-1 and Sleep quality during Wave-2 was found to be -1.233. This suggests that people had slightly poor sleep quality during the second wave. There was an insignificant difference in the sleep quality of doctors during Wave-1 and Wave-2, t (28) = -1.504, p = .144 (p <.05).

The mean difference between Anxiety Level during Wave-1 and Anxiety Level during Wave-2 was found to be -3.867. This suggests that individuals had increased anxiety levels during the second wave. There was a significant difference in the anxiety levels of doctors during Wave-1 and Wave-2, t (28) = -2.138, p = .041 (p <.05).

The mean difference between Mental Well-being Wave-1 and Mental Well-being Wave-2 was found to be 2.367. This suggests that people had poor mental well-being during the second wave. There was an insignificant difference in the levels of mental well-being of doctors during Wave-1 and Wave-2, t (28) = 1.026, p = .313 (p <.05).

Table 4. suggests that there is a significant positive relationship between sleep quality and anxiety level during wave-1, r (28) = -.465, p = .010. This shows that, within the chosen sample, sleep quality and anxiety levels are positively associated. A higher sleep quality scale score indicates poor sleep quality and more worry. As a result, it is safe to assume that the poorer the sleep quality, the higher the individual(s) anxiety levels.

There is also a significant negative relationship between sleep quality and mental well-being during wave-1, r (28) = -.405, p = .027. This shows that sleep quality and mental health are negatively correlated in the sample. A higher score on the sleep quality measure would indicate a worse level of mental well-being in the individual (s).

An insignificant negative relationship between anxiety level and mental well-being during wave-1, r (28) = -.227, p = .228 was also seen in the table. This suggests that anxiety level and mental well-being are insignificantly related to each other in a negative manner.

Table 5. suggests that there is a significant positive relationship between sleep quality and anxiety levels during wave-2, r (28) = .672, p = .000. This means that poor sleep quality corresponds to greater anxiety levels.

There is also a significant negative relationship between sleep quality and mental well-being during wave-2, r (28) = -.414, p = .023. This suggests that high score on sleep quality index which can be interpreted as poor sleep quality resembles poor mental well-being in the subjects.

A significant negative relationship between anxiety level and mental well-being during wave-2, r (28) = -.449, p = .013 was also seen in the table. This is different than the results seen in the first wave. It suggests that with time, as the anxiety levels increased, the individual suffered deterioration in their mental well-being.

SUMMARY & CONCLUSION

The purpose of this study was to see how the COVID-19 Pandemic – SECOND WAVE affected the sleep quality, anxiety level, and mental well-being of healthcare workers (Doctors). It also compares the effects of the first and second waves on the variables in question. It also tries to figure out the relationship between all of the variables during wave 1 and wave 2. According to the research, healthcare professionals suffer from excessive anxiety and stress, as well as depression, suicidal impulses, stress disorders, bipolar disorders, and other mental health concerns. They also became prone to various medical conditions such as tachycardia, respiratory issues, high blood pressure etc. In both waves, the results showed that sleep quality and anxiety levels had a substantial positive association, whereas sleep quality and mental well-being had a significant negative link. However, anxiety levels and mental health had a minor negative association in the first wave and a large negative relationship in the second. We can also see that the degrees of anxiety and mental well-being were significantly different between the two waves. There was a difference in sleep quality as well, but it was not statistically significant. As time passes, it appears that the medical experts' situation is worse. They must be attended to as quickly as possible in order to help them improve their health and reach their full potential.

This research should be further extended in terms of sample size and qualitative methodologies should be employed to gain a deeper grasp of the same for a better understanding of the same.

In conclusion, we can state that the Second wave has a considerable impact on professional sleep quality, anxiety levels, and mental well-being when compared to the First wave. It also demonstrates that Sleep Quality and Anxiety Levels, as well as Sleep Quality and Mental Well-Being, had a substantial association in both waves, but Anxiety Levels and Mental Well-Being had an inconsequential relationship in the first wave but became significant in the second.

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Conflict of Interest

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