

Effect of Covid-19 on Sleep Quality, Anxiety Level and Mental Well Being of Medical and Paramedical Staff

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Abstract

As almost everyone in the world is aware, an outbreak of COVID-19 was detected in China sometime in December 2019. Till today, every continent in the planet has been highly affected by this contagious disease, with almost a million cases diagnosed in over 200 countries worldwide. This research focuses on these healthcare professionals and tries to study the impact of the situation on their sleep quality, anxiety levels and mental well-being. As explained above, sleep is essential to ensure proper functioning during the day. But due to the constant rise in the number of infected people, the anxiety level may increase and disrupt the sleep quality resulting in poor mental well-being and due to this, they might not be able to work up to their full potential. Hence, with the help of this study, the main focus is to understand the impact of this pandemic situation on the mental health of the healthcare professionals to be able to help them improve, if required. Pittsburgh Sleep Quality Index (PSQI), Beck's Anxiety Inventory (BAI) and Warwick Edinburgh Mental Well-being Scale (WEMWES) were the used scales to assess the variables. A total sample of 81 healthcare professionals was considered. The results showed that the sleep quality, anxiety level and mental well-being were 9.439, 5.654 and 50.918 respectively, which suggests that the sleep quality of these professionals was poor and they exhibited low anxiety levels along with moderate mental well-being. It was concluded that the healthcare professionals require their mental health to be catered and maintained. This means that the government should initiate a protocol to ensure that every healthcare professional has a mental health professional, whose help they can seek.

Key words: COVID-19, Sleep Quality, Anxiety Level, Mental Wellbeing, Healthcare Professionals

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I. INTRODUCTION

COVID-19

As almost everyone in the world is aware, an outbreak of COVID-19 was detected in China sometime in December 2019. Till today, every continent in the planet has been highly affected by this contagious disease, with almost a million cases diagnosed in over 200 countries worldwide.

The cause of this outbreak is a new virus, called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). WHO officially named it Coronavirus Disease 2019, commonly referred to as COVID-19 on 12th February 2020.

Coronaviruses are a family of viruses that may lead to mild and moderate illnesses in the upper- respiratory tract. These illnesses may be common cold, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS).

It is assumed that COVID-19 might have originated in the market in Wuhan, China where vendors sell live animals. It is also referred to as the 'wet market' because of the constant washing of floors due to animal slaughter and melted ice used to preserve foods for longer durations.

The only thing common among those who got infected and were found to have positive results in China, was that they had some level of exposure to the Huanan Seafood Market situated in Wuhan.

It is believed by the researchers that the new virus possibly mutated from the original coronavirus that is common in animals. This mutated virus infected humans in the marketplace. Researchers say that when an infected person sneezes or coughs without covering his/ her mouth, the expelled droplets may act as the source of infection for others through any of the 'contact routes' such as nose, mouth and eyes or they may inhale them. Another mode of transmission is believed to be the contact with various surfaces.

As clearly stated by the National Institute of Health 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."

SLEEP QUALITY

As defined by Christopher Kline in the Encyclopedia of Behavioral Medicine, "Sleep Quality is defines as one's

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satisfaction of the sleep experience, integrating aspects of sleep initiation, sleep maintenance, sleep quality, and refreshment upon awakening.”

According to a report published by National Sleep Foundation (NSF) in Sleep Health, there are a few key indicators of a good sleep quality. They are:

1. While in bed, the time spent sleeping is more (85% at least of the total time)
2. Not taking more than 30 minutes to fall asleep
3. Not waking up more than once per night
4. After falling in sleep, initially, being awake for not more than 20 minutes

Max Hirshkowitz, PhD, DABSM, Chairman of the Board of Directors of the NSF stated, “Millions of Americans are sleep technology users. These devices provide a glimpse into one’s sleep universe, which is otherwise unknown. The National Sleep Foundation’s guidelines on sleep duration, and now quality, make sense of it all—providing consumers with the resources needed to understand their sleep. These efforts help to make sleep science and technology more accessible to the general public that is eager to learn more about its health in bold new ways.”

“In the past, we defined sleep by its negative outcomes including sleep dissatisfaction, which were useful for identifying underlying pathology. Clearly this is not the whole story. With this initiative, we are now on a better course towards defining sleep health,” noted Maurice Ohayon, MD, DSc, PhD, Director of the Stanford Sleep Epidemiology Research Center.

ANXIETY LEVEL

The American Psychological Association (APA) defines anxiety as “an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure.”

Our body’s natural response to stress is anxiety. It’s a combination of fear and apprehension that one feels about the future. In case this feeling is prolonged for more than a period of 6 months and starts interfering with the daily living, it is possible that one might be suffering from Anxiety disorders.

As we can see from the earliest days of humanity, the attack from predators or any incoming dangers triggers the alarms in the body and allows the evasive action. These alarms come into notice as raised heartbeats, increased sweating, breathlessness and an increased sensitivity to the surroundings.

Over the years due to evolution, the reasons for the triggering have changed. Earlier running from dangerous animals and any possible danger was the reason behind the trigger. But now, the major reasons revolve around the various aspects of living such as work, financial stability, familial life, health and other critical issues that require the attention of the individual without the ‘fight-or-flight’ response.

Personality, coping strategies, life experiences and gender may influence the levels of anxiety. Anxiety levels are generally categorized by the amount of distress and impairment experienced. There are 4 levels of anxiety,

1. Mild Anxiety

This may affect the emotional, social and professional areas of functioning. It is often described as ‘sub-clinical’ or ‘clinically non-significant’ anxiety. If not treated on time, it may transform into a severe form of illness.

2. Moderate Anxiety

The symptoms experienced are frequent and persistent than those in mild anxiety. They are also disruptive in nature but can be managed with the help of a doctor or self-help strategies.

3. Severe Anxiety

This level of anxiety is intensely debilitation and the symptoms exhibited meet the diagnostic criteria for a ‘clinically-significant anxiety disorder’. These symptoms are frequent and persistent and can also result in loss of work and increased health costs. The symptoms often observed are increased heart rate, feelings of panic and social withdrawal.

4. Panic Level Anxiety

Also referred to as ‘Panic Disorder’, it is characterized by the frequent, recurring and unexpected panic attacks. Symptoms of a panic attack can be rapid onset of extreme fear, heart palpitations, rapid breathing, nausea, dizziness and fear of death. A panic attack usually lasts for 10 minutes. Since every individual is different, the trigger differs from person to person and the cause of an attack may be known or unfamiliar to the individual.

MENTAL WELL-BEING

According to the World Health Organization (WHO), “Mental health is 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 the mental state of an individual and is dynamic in nature as it varies from time to time, every other day, month, year etc.

If an individual has a good mental well-being, he/she may be able to have positive self-esteem, increased self-confidence, better able to feel and express emotions, live and work productively, be able to cope with the stresses of daily life, build and maintain good relationships with others and lastly, adapt and manage better in times of changes or uncertainty.

Poor mental well-being for a prolonged period of time may make an individual prone to develop a mental health disorder.

During the times of a pandemic, COVID-19, the world is at still. The economies of various countries have been hit hard. In these difficult times, the healthcare professionals are constantly working to treat the infected. They are the ‘front-line warriors’ at the moment.

This research focuses on these healthcare professionals and tries to study the impact of the situation on their sleep quality, anxiety levels and mental well-being. As explained above, sleep is essential to ensure proper functioning during the day. But due to the constant rise in the number of infected people, the anxiety level may increase and disrupt the sleep quality resulting on poor mental well-being and due to this, they might not be able to work up to their full potential.

Hence, with the help of this study, the main focus is to understand the impact of this pandemic situation on the mental health of the healthcare professionals to be able to help them improve, if required.

II. REVIEW OF LITERATURE

Lima C. K. et al (2020) studied the emotional impact of Coronavirus-2019 on the general population. It was concluded that older adults and international migrants required maximum tailored interventions.

Li S. et al (2020) measured the impact of COVID-19 on the psychological consequences on the general population through Weibo posts. It aimed to study the impact on mental health of people, policy makers, clinical practitioners etc. The results showed that negative emotions and sensitivity to social risk increased and positive emotions and life satisfaction decreased.

Wang C. et al (2020) conducted a longitudinal study measuring the mental health of the general population of China during COVID-19. There were 1738 respondents from 190 Chinese cities. Psychological impact was assessed by IES-R, Depression, DASS-21. The study found that there was a statistically significant longitudinal reduction in mean IES-R scores after 4 weeks. During the initial evaluation, moderate-to-severe stress, anxiety and depression were noted respectively and there were no significant longitudinal changes in stress, anxiety and depression levels.

Huang J.Z. et al (2020) investigated the mental health of clinical first-line medical staff in COVID-19 epidemic and provide theoretical basis for psychological intervention. SAS and PTSD-SS were used to assess the same. Cluster sampling was used and 230 responses were received. It was found that the incidence of anxiety and stress disorder was high among the medical staff.

Tan B.Y.Q et al (2020) examined the psychological distress, depression, anxiety and stress experienced by healthcare workers in Singapore due to Coronavirus 2019. The study used DASS-21 and IES-R. The results revealed that the prevalence of stress, anxiety, depression and post-traumatic stress among the healthcare workers was high.

Lu W. et al (2020) aimed to measure the psychological status of medical workforce during COVID-19 pandemic. The authors conducted a single-center, cross-sectional survey via online questionnaires. Scales like NRS, HAMA and HAM-D were used to assess the same on a total of 2042 medical staff and 257 administrative staff. The level of fear, anxiety and depression was different between the two groups. The medical staff had a higher prevalence rate for developing psychological condition as compared to the administrative staff.

Zhang W. et al (2020) explored whether medical health workers had more psychosocial problems than nonmedical health workers during the COVID-19 outbreak. They used online survey as a mode to collect data of 2182 Chinese subjects. Tools such as ISI, SCL-90-R, PHQ-4 and PHQ-2 were used for the same. The results showed that healthcare workers had a higher prevalence of insomnia, anxiety, depression, somatization and obsessive-compulsive symptoms.

Xiao H. et al (2020) aimed to observe the effect of social support on sleep quality of medical staff treating patients with COVID-19 in China during the months of January and February. They used a one-month cross-sectional observational study that included 180 medical staff fulfilling the desired criteria. Scales such as SAS, GSES, SASR, PSQI and SSRS were used. The results showed that the levels of social support for medical staff were significantly associated with self-efficacy and sleep quality and negatively associated with the degree of anxiety and stress. Levels of anxiety were significantly associated with the levels of stress, which negatively impacted self-efficacy and sleep quality. Anxiety, stress, and self-efficacy were mediating variables associated with social support and sleep quality.

Kang L. et al (2020) studied the impact of COVID-19 on the mental health and perceptions of psychological care among medical and nursing staff in Wuhan. They conducted a quantitative study to measure the same on a sample of 994 medical and nursing staff. 36.9% had sub-threshold mental health disturbances, 34.4% had mild disturbances, 22.4% had moderate disturbances and 6.2% had severe disturbances.

Liu Z. et al (2020) investigated the mental health status of health staff and to identify the key population of psychological intervention. They measured the level of psychological distress, anxious symptoms and depressive symptoms using SRQ-20 by WHO, SAS and SDS. A total sample of 4679 doctors and nurses filled the survey. The prevalence of psychological distress, anxious symptoms, and depressive symptoms was moderate to high.

Cai H. et al (2020) investigated the psychological impact and coping strategies of frontline medical staff in Hunan province. A total sample of 534 frontline medical staff was taken. It was concluded that their anxiety and stress levels were raised.

Chew N.W.S et al (2020) investigated the association between psychological outcomes and physical symptoms among healthcare workers. The questionnaires used were DASS-21 and IES-R. Out of 906 healthcare workers who participated in the survey, 48 were screened positive for moderate to very-severe depression, 70 for moderate to very severe anxiety, 20 for moderate to extremely-severe stress and 34 for moderate to extremely severe levels of psychological distress.

Neto M.L.R et al (2020) studied the effect of COVID-19 on depression, anxiety of healthcare professionals. They identified studies in well-known journals found in two electronic databases, Scopus and Embase. This data was cross-checked with the information from the main international newspapers. They concluded that work-related stress is a potential cause of concern for health professionals. It has been associated with anxiety including multiple clinical activities, depression in the face of the coexistence of countless deaths, long work shifts with the most diverse unknowns and demands in the treatment with patients with COVID-19. Therefore, it is an important indicator of psychic exhaustion.

Roy D. et al (2020) attempted to assess the knowledge, attitude, anxiety experience and perceived mental healthcare need among adult Indian Population during COVID-19.

an online survey was conducted for the same and a total of 662 responses were received. The results show that the responders had a moderate level of knowledge about the COVID-19 infection and adequate knowledge about its preventive aspects. The attitude towards COVID-19 showed peoples' willingness to follow government guidelines on quarantine and social distancing. The anxiety levels identified in the study were high.

Zaka A. et al (2020) studied the impact of COVID-19 on the psychological health of the frontline medical staff. They concluded with the suggestion and a strong belief that health care systems universally require a step-change to improve our preparedness for future pandemics.

Zhu Z. et al (2020) aimed to assess the immediate psychological impact of HWs at Tongji Hospital, Wuhan, China. They conducted a single-center, cross-sectional survey via online questionnaires evaluating stress, depression and anxiety using IES-R, PHQ-9 and GAD-7. Out of the total of 5062 responses, 1509, 681 and 1218 HWs reported stress, depression and anxiety symptoms.

Lai J. et al (2020) assessed the magnitude of mental health outcomes and associated factors among healthcare workers treating patients exposed to COVID-19 in China. A sample of 1257 healthcare workers in 34 hospitals in China was taken. The Chinese versions of GAD-9, ISI-7 and IES-R were applied. The results showed that 634 exhibited depression, 560 exhibited anxiety and 427 exhibited insomnia and 899 exhibited distress.

Ripp J. et al (2020) tried to identify the 3 priority areas in New York City that needed to be promoted and implemented to ensure emotional well-being of the healthcare during pandemic COVID-19. These 3 priority areas were meeting basic daily needs, enhancing communications for delivery of the current, reliable, and reassuring messages and developing robust psychosocial and mental health support options.

Ibáñez V. (2018) aimed to summarize and compare the currently present methods to measure and evaluate sleep. She classified the assessment methods on the basis of some set criteria and compared the validation study for each method. She also reviewed the customer reviews. She concluded with taxonomy that classifies the sleep detection methods.

III. METHODOLOGY

AIM

The purpose of this study is to see the effect of COVID-19 Pandemic on the Sleepy Quality, Anxiety Level and Mental Well Being of Healthcare Professionals.

OBJECTIVE

1. To measure the effect of COVID-19 on Sleep Quality
2. To measure the effect of COVID-19 on Anxiety Level
3. To measure the effect of COVID-19 on Mental Well Being

HYPOTHESIS

There would be a significant impact of COVID-19 on the Sleep Quality, Anxiety Level and Mental Well Being of Healthcare Professionals.

SAMPLE

Healthcare Professionals working in hospitals during the COVID-19 Pandemic

TOOL DESCRIPTION

Sleep Quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). It contains 9 items in total. In these, 4 questions are subjective in nature and 5 questions are on a 4-point scale.

Anxiety Levels were assessed using Beck's Anxiety Inventory (BAI). It contains 21 items in total. Each item has 4 responses.

Mental Wellbeing was assessed using Warwick Edinburgh Mental Well-being Scale (WEMWES). It contains 14 items in total. Each item has 5 responses.

PROCEDURE

A Google form was created having 5 separate sections, one section for Demographic details, another for Sleep Quality, another one for Anxiety Level, one for Mental Wellbeing and the last section was dedicated for acknowledgment for the people who filled the form. The form was circulated and data was collected. After the collection, the valid responses were selected and scored. The mean was calculated and was interpreted. A conclusion was drawn and analyzed.

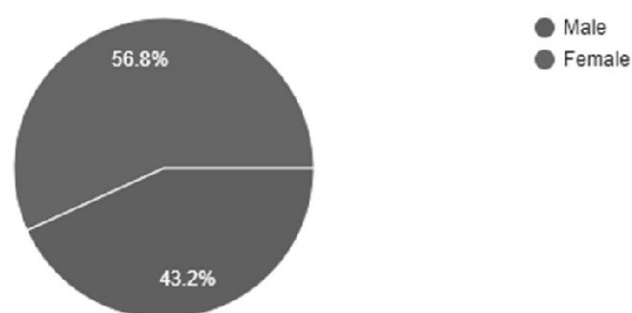
IV. RESULT AND INTERPRETATION

1. Demographic characteristics

The characteristics of participants are shown below. Of the 81 samples analyzed, 46 (56.8%) were females and 35 (43.2%) were males. Among these samples, 67 (82.7%) of participants were doctors, 9 (11.1%) of participants were nurses and 5 (6.2%) of participants were other individuals working in the hospital during the COVID-19 outbreak.

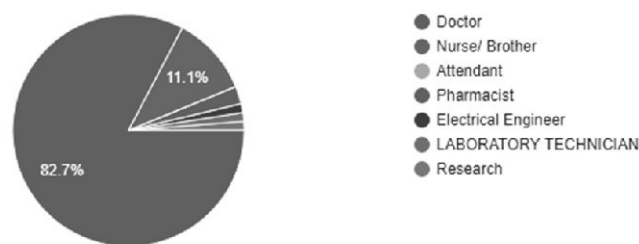
Gender Ratio observed in the study

Age Groups observed in the study



In this study, the data was collected from participants falling within the age range of 21- 60 years. Majority of our participants fell in the age range of 41-50 years.

Specific Occupation within Healthcare Professionals



2. Sleep Quality, Anxiety Level and Mental Well Being during COVID-19 of sample

The sleep quality, anxiety level and mental well-being during COVID-19 stratified by gender are shown below respectively. The mean sleep quality was found to be 9.2 in males and 9.978 in females respectively. This when interpreted suggested that both males and females have low sleep quality. The mean anxiety level was found to be 5.428 in males and 5.804 in females respectively. This when interpreted suggested that both males and females have low anxiety level. The mean mental well-being was found to be 50.628 in males and 50.913 in females respectively. This when interpreted suggested that both males and females have moderate mental well-being.

Overall mean of sleep quality, anxiety level and mental well-being was calculated to be 9.439, 5.654 and 50.918 respectively, which suggests that the sleep quality of these professionals was poor, they exhibited low anxiety levels and moderate mental well-being.

Variable	SLEEP QUALITY	ANXIETY LEVEL	MENTAL WELL BEING
TOTAL (mean)	9.493	5.654	50.918
Result	LOW	LOW	MODERATE

Result table representing the mean value

V. DISCUSSION

The pandemic, COVID-19 has definitely caused a wave of impact in everyone's life. But mostly in the lives of the healthcare professionals because they aren't allowed to do work from home and be away from all the possibilities from catching the infection. Instead, they are catering to those suffering from any illness, including Coronavirus. Due to which, the need of the hour is not only to save the world and ourselves from the virus but to also cater to the mental health of these front-line heroes.

As it can be seen from the mentioned researches, various countries are conducting researches to examine the mental health and various other psychological aspects of the lives of the healthcare professionals and take measures to improve the situation. In some researches it is found that the healthcare workers have an increased level of anxiety, stress, depression and distress than the general population. They are also prone to developing insomnia, depression, stress and anxiety disorders.

It was also believed that the healthcare systems universally need a change to improve the preparedness for future pandemics. One of the researches mentioned that people have

a moderate level of knowledge about the virus and the precautions. It was also seen that the pandemic caused an increase in the level of willingness that people had about following the government guidelines.

It was also measured that the healthcare staff was at a higher risk of developing a mental disturbance as compared to an administrative official. Another research proved that the healthcare workers had a higher prevalence rate to insomnia, depression, stress, anxiety, somatization and obsessive-compulsive symptoms.

One of the researches also mentioned that the negative emotions and sensitivity to social risk among people had increased and on the contrary, the positive emotions and life satisfaction had decreased. The aim of one research was to study the emotional impact of the pandemic on the general population. The results showed that the older population and the international immigrants required maximum interventions.

The data shows that the overall mean of sleep quality was 9.439, interpreted to be poor. This indicates that they compromise on their sleep quality due the pandemic situation. Evidence supports that the pandemic has significant effects the self-efficacy and sleep quality (Xiao H. et al 2020). But on the contrary their anxiety level was 5.654, suggesting low anxiety levels. This can be explained by the fact that they have been in this profession for long enough to understand that they will have to face constant stress and pressure. Hence, they compromise on other aspects of their living but do not exhibit greater anxiety levels. In various researches, it was concluded that work-related stress and anxiety was a potential cause of concern for health professionals. The present pandemic situation has also raised many other factors causing anxiety and stress such as, depression due to countless deaths, long work hours, most diverse and unknown situations to deal with on a daily basis (Neto M.L.R. et al 2020). But their profession has made them accustomed to it. Being a medical healthcare professional does take a toll on their mental well-being. As shown by the data. Their mental well-being was 50.918, meaning that they have moderate mental well-being. Data supports that the healthcare staff had a sub-threshold mental health disturbances (Kang L. et al 2020).

VI. CONCLUSION

The research evidences suggests that the healthcare professionals are at a higher risk to develop disorders such as Depression, Stress and Anxiety disorders, Somatization, Distress, Obsessive-compulsive symptoms and Insomnia.

As per the data showed the sleep quality, anxiety level and mental well-being to be 9.439, 5.654 and 50.918 respectively, which suggests that the sleep quality of these professionals was poor and they exhibited low anxiety levels along with moderate mental well-being.

We conclude with that the healthcare professionals require their mental health to be catered and maintained. This means that the government should initiate a protocol to ensure that every healthcare professional has a mental health professional, whose help they can seek.

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