



# A Cross-sectional Study to Assess the Effect of COVID-19 Stressors and Knowledge on Infection Control Measure on Nurse's Performance at a Selected Hospital at Sirsa Haryana

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## Abstract

**Background:** The SARS-CoV-2 virus, which causes the coronavirus disease (COVID-19), was initially discovered in Wuhan, China, in December 2019. A current study purpose was to evaluate how COVID-19 stresses affected nurses' performance during the epidemic.

**Methods:** A total of 30 nurses were selected through convenient sampling technique; 18 were female nurses and 12 were males. A descriptive cross-sectional research design has been utilized to evaluate the COVID-19 stressors effect on nurses. The data were collected with self-structured questionnaire to measure the knowledge and infection control measures on COVID-19 and COVID-19 stress scale to measure the varied stress levels among nurses.

**Results:** 70.0% of the studied participants had a satisfactory level of knowledge and infection control measures and 30.0% had good knowledge. 60.0% of the nurses who took part in the study reported moderate psychological stress levels on the COVID-19. Nurses' adequate degree of knowledge and COVID-19 psychological stressor levels are significantly correlated.

**Conclusion:** The majority of nurses possessed satisfactory knowledge and infection control measures. The majority of them had moderate amounts of COVID-19 psychological stress.

**Keywords:** COVID-19 psychological stressors, infection control measures, nurses work performance

## INTRODUCTION

The 2019 coronavirus disease (COVID-19) is brought on by the same virus that causes SARS-CoV-2 or severe acute respiratory syndrome. The first instance was reported in December 2019 from Wuhan, China. COVID-19 can be contracted by breathing virus-contaminated droplets and particles. Although they can be absorbed from a wide distance, indoors is the only place

where the risk of breathing them is most when individuals are close. Infection can also happen if infected liquids are sprayed or splashed into the mouth, nose, or eye detection devices, and in rare cases, through contaminated surfaces. Even in the absence of symptoms, people can still spread the virus and remain contagious for up to 20 days. Numerous techniques for COVID-19 testing have been developed to diagnose the illness.<sup>[1]</sup>

Three Indian doctors returned from Wuhan, the pandemic's epicenter, to report the first COVID-19 cases in India on January 30, 2020. The doctors were found in three different locations in Kerala. Notification of the shutdowns was sent to Kerala on March 23 and to rest of the country on March 25. September marked the start of the infection's decline. Around 90,000 instances were reported daily at its height in mid-September, and by January 2021, that number had dropped

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to <15,000. The second wave, which began in March 2021, was far more destructive than the first wave since it was accompanied by shortages in some parts of the country of medical supplies, hospital beds, oxygen tanks, and vaccines. At the end of April, India led the globe in both new and active cases. On April 30, 2021, it made history by becoming the first country to register more than 400,000 new cases in 1 day. Experts predict that rather than going completely extinct, the virus may become endemic in India.<sup>[2]</sup>

According to Soumya Swaminathan, India is in an endemic stage of the virus where the nation is adapting to live with it as of the end of August 2021. Nurses can get infectious infections from blood, bodily fluids, or the air. When providing direct patient care, working with biological samples from patients, or handling the environment, nurses are most vulnerable. Higher infection rates have been connected to lower levels of schooling. Nurse misunderstandings jeopardized patient safety, slowed down surveillance attempts to deliver critical care, and allowed infections to spread quickly throughout hospitals. Because of their prior experiences and perceptions, nurses' perceptions can be influenced by training.<sup>[3]</sup>

Due to the rising risk of secondary infection and virus transmission to friends, family, and coworkers, nurses should be knowledgeable about the virus and infection control practices to prevent spread. Notwithstanding, the available data indicate that COVID-19 poses a challenge for nurses due to peculiarities of the illness, inadequate knowledge, education, and training for the management of infected patients, as well as the emotional strain resulting from patient deaths.<sup>[4]</sup>

A vital component of the health-care team and system is nurses. Health-care professionals, particularly nurses, are combating the pandemic on the front lines while tending to patients' needs. They are contributing to the COVID-19 pandemic's containment and prevention. These days, everyone is grateful for the coronavirus fighters, particularly the nurses who put in endless hours, sacrificed their lives, and worked nonstop to stop the pandemic.

A number of psychological and sociodemographic factors have been linked to elevated stress, providing care, depressive symptoms, and sleeplessness among nurses. Generally speaking, nurses working in intensive care units, emergency rooms, and hospitals treating infectious diseases had varied degrees of stress, restlessness, and insomnia. Nurses who rely on infection control experience the least amount of stress. They experience isolation and a strict mindset as they integrate, which might cause them to become angry, anxious, or suspicious of an outburst.<sup>[5]</sup>

## Objectives

1. To assess the knowledge and infection control measures of nurses on COVID-19
2. To assess effect of COVID-19 stressors among nurses' performance during COVID-19 pandemic
3. To correlate the COVID-19 psychological stressor levels and satisfactory level of knowledge among nurses.

## METHODS

A correlational cross-sectional research design has been utilized. This research has been performed at Shah Satnam Ji Speciality Hospitals, Sirsa, Haryana. Participants were all available nurses by convenience sampling method. Questionnaire was given to all available nurses to meet the objectives of the study. Of 30 nursing staffs, 18 were female nurses and 12 were male nurses who consented to participate in a study between 1 and 20 June 2021.

### Tools for data collection

The following tools were used to gather data for the current study:

Tool I: Section 1 was utilized to assess the studied nurse's demographic characteristics, such as age, sex, education, years of experience, marital status, and place of residence. Section 2 had 15 items, used to assess the studied nurses' brief level of knowledge regarding COVID-19 (definition, risk factors, mode of transmission, clinical manifestation, prevention, and management). Section 3 had 20 items, utilized to evaluate the nurse's level of knowledge on infection control measures.

Tool II: COVID-19 stress scale is a stable 5-factor solution which has utilized to evaluate COVID-19-related stress and anxiety symptoms:

1. Danger and contamination fears
2. Xenophobia
3. Fears about economic consequences
4. Traumatic stress symptoms about COVID-19
5. Compulsive checking and reassurance seeking.

Scoring system: Adapted from a 30-item survey by Taylor *et al.*, total scores will fall between 0 and 120. 0 means very well, 1 means mild, 3 means moderate, and 4 means severe. In summary, score under 50 is likely to be well, 50–66 are likely to have a mild, 66–82 are likely to have moderate, while over 82 and over are likely to have a severe mental stress disorder.

### Data collection

Participants' data were gathered in different sessions according to the time on their roster. Within 2 weeks, the researcher used questionnaires to gather data. To begin collecting data on nursing personnel, an official letter was received from the head of the ethics committee. The Shah Satnam Ji Speciality Hospitals Sirsa authorized signatory provided formal consent for the collecting of data.

The following are some of the ethical considerations in this research:

1. Study's goals and objectives were made clear to the participants.
2. The research nurses received guarantees about the privacy and confidentiality of the information gathered.
3. Despite giving their consent, the health-care personnel under study were told that they might opt out of the study at any time.

## Statistics

Descriptive and inferential statistics have been employed to analyze the data. Utilizing frequency and percentage distribution, the staff nurses' total knowledge score was analyzed. The association between the knowledge score and the demographic factors was examined utilizing the Chi-square test. Quantitative data were represented utilizing mean and standard deviation.

## RESULTS

Table 1 shows that 80% of the participants were in the age group of 20–29, 10% were in the age group of 30–39, and 10% were in the age group of more than 39. 60% of the participants were females and 40% were males. 60% of the nurses had experience of 1–5 years and most of them were from rural areas. Half of the nurses were married and 90% of the participants were diploma holders in nursing.

Table 2 shows the level of knowledge on COVID-19 and infection control measure to prevent COVID-19 among the nurses. Most of the nurses (70.0%) had a satisfactory knowledge score on COVID and its infection control practices.

In this study [Table 3], there is a substantial relationship between medical participants' levels of COVID-19 psychological

stressors and their satisfaction with their level of knowledge. This conclusion may be due to the fact that nurses' knowledge of infection prevention and control procedures, efficient communication, appropriate information dissemination, and emotional support would all significantly reduce the amount of anxiety and tension that would otherwise be experienced. Evidence-based pandemic preparedness training for nurses improves hospital staff experience, skills, and mental health. Additionally, a lower level of stress has been reported among nurses who are confident about infection control, which has been linked to a greater infection rate.

## DISCUSSION

Distinctive features specific to COVID-19 have played a significant role in contributing to mental health issues. These features include uncertainty surrounding its mode of transmission, its rapid spread, and the absence of well-established treatment guidelines or a vaccine. Additionally, the global interconnectedness and extensive media coverage have amplified the emotional and psychological impact of the outbreak, leading to widespread anxiety and distress.<sup>[6]</sup>

Past studies have shown that epidemics can have a wide range of significant psychological consequences on people. These consequences may show up in the general population as the emergence of fresh psychiatric symptoms or the aggravation of pre-existing illnesses. Whether or not they have been exposed to the virus, people may have emotions of powerlessness, excessive concern and anxiety, dread of getting sick or dying, and a propensity to place the responsibility for their illness on others. A wide range of mental disorders can occur, such as psychosis, delirium, sadness, panic attacks, anxiety, somatic symptoms, signs of posttraumatic stress disorder (PTSD), and even thoughts of suicide.<sup>[7]</sup>

Previous research has demonstrated that health-care workers (HCWs) are more likely to experience unfavorable psychological impacts, particularly if they work in emergency departments, ICU, or infectious disease wards. These results are supported by the current review, which demonstrates that HCWs are in fact more likely to experience unfavorable psychiatric consequences. However, results were mixed regarding frontline HCWs, with some studies suggesting a higher risk compared to their peers, while others found no significant difference in stress levels across departments.<sup>[8]</sup>

Studies undertaken within the SARS pandemic also showed that personnel working in emergency departments were more susceptible to developing PTSD in contrast to their psychiatric hospital colleagues. Regrettably, no study examined PTSD among HCWs that were included in the current review.

The effects of coping strategies and social support have been shown in a systematic review that looked at HCWs' mental health during catastrophes. Common risk factors for psychiatric morbidities were found in the review, and they included inadequate training, communication difficulties, maladaptive

**Table 1: Frequency and percentage distribution of demographic variables**

Variables	Frequency (n=30)	Percentage
Age		
20–29	24	80
30–39	3	10
>40	3	10
Sex		
Male	12	40
Female	18	60
Year of Experience		
1–5 years	18	60
6–10 Years	9	30
>10 years	3	10
Area of residence		
Urban	12	30
Rural	18	60
Marital Status		
Single	15	50
Married	15	50
Divorced	0	0
Educational Level		
ANM	1	3.3
GNM	27	90
BSc. Nursing	2	6.7

**Table 2: Knowledge score of nurses regarding COVID-19 and infection control measures**

Variable	Satisfactory score		Mean	SD
	Frequency	Percentage		
Total knowledge score of COVID-19	21	70	10.5	1.76
Total knowledge score of infection control measures	21	70	14	1.18

**Table 3: Correlation of knowledge on COVID-19 and infection control measure to prevent COVID-19 among the nurses with psychological stress level**

Variables	Psychological stress level				X <sup>2</sup>	P-value
	Very well	Mild	Moderate	Severe		
Satisfactory knowledge level of COVID-19	3	3	18	6	8.2	0.05
Satisfactory knowledge level of infection control measures	6	3	18	3	4.6	0.05

coping mechanisms, and a lack of social support.<sup>[9-11]</sup> Xiao *et al.*'s study demonstrated the beneficial effects of social support on depression, anxiety, sleeplessness, and self-efficacy. Compared to doctors, nurses tended to have higher levels of anxiety and depression symptoms. A Singaporean study, however, showed that married nurses were less likely than single doctors to experience mental health issues.<sup>[12]</sup>

During epidemics, the focus of authorities often remains primarily on the biological and physical aspects of public health, while the psychological needs of the population are frequently overlooked. The Chinese government has taken some initiatives to address these psychological issues, including issuing guidelines for emergency psychological crisis intervention for individuals infected with COVID-19 (People's Republic of China National Health Commission, 2020)<sup>[13,14]</sup> Additionally, they have put into practice methods to lessen the psychological strain on health-care professionals, such as establishing psychological intervention teams, employing shift work, and offering online resources for health advice. The four units that make up these psychological intervention teams are the psychological help hotline teams, psychological intervention technical support team, psychosocial response team, and psychological intervention medical team. Rana *et al.* have made comparable suggestions for creating psychological crisis intervention teams and developing plans for psychological crisis intervention.<sup>[15]</sup>

## CONCLUSION

The majority of nurses have adequate knowledge of infection control techniques. The majority of them experienced mild-to-moderate COVID-19 measures of psychological stress. On the other hand, very few of them displayed elevated COVID-19 levels of psychological stress. The degree of psychological stress experienced by nurses and their knowledge of COVID-19 are significantly correlated.

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## CONFLICT OF INTEREST

None.

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