# Impact of COVID-19 on Physical and Mental Health with Special Reference to Healthcare Personnel

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*Abstract* -- **Healthcare personnel (HCP) are trained people that work in medical associations and may be directly or indirectly related to patients. The purpose of this study is to assess the impact of COVID 19 on the physical and mental health of working healthcare personnel. The data were collected from the working healthcare personnel in selected hospitals of the Saharanpur District, UP. A structured questionnaire based on the variables stamina, medical and non-medical assistance, balanced day, diet, working hours of physical health and profession, everyday routine, work pressure, anxiety, and stress of mental health was developed based on the Likert variables of physical and mental health. For data analyses and hypothesis testing, the one-sample *t*-test is used using SPSS Version 26. The sample was gathered using a non-probability convenience sampling technique. The findings indicate the negative impact of COVID-19 on the physical and mental health of healthcare personnel. The findings also indicate that health care personnel would be likely to experience physical and mental health complications due to giving care to COVID-19 patients. The study was limited to employees of the selected hospital in the Saharanpur District of Uttar Pradesh. Future research can be carried out across the country with a large number of samples considering more variables.**

*Keywords: Healthcare personnel, Physical health, Mental health, Covid-19*

## I. INTRODUCTION

HEALTHCARE personnel (HCP) are professional individuals who work in healthcare organizations/sectors and may be exposed to patients directly or indirectly. Health workers belong to a group at high risk of contracting COVID-19 infection. China reported that 3387 health workers were infected, but 22 health workers (0.6%) died from the disease. Similarly, Italy (20%), Spain (14%) and France (more than 50 deaths among health workers) reported high rates of health care workers. Given the high burden, the demand and focus on protecting healthcare professionals around the world through the provision of personal protective equipment (PPE), training, combating fatigue, and addressing psychosocial impacts. Literature on the health effects of healthcare professionals caring for patients continues to grow, and there are no reviews to guide practitioners or leaders on the effectiveness of various interventions [1- 3].

*Physical Health:* Modern medical innovation has extended lifespan and changed the way physical health is defined. In today's definition, everything from illness-free to fitness levels can be taken into account. There are many factors in physical health, but here is a shortlist of important areas to deal with.

Physical activity includes physical fitness, flexibility, and endurance. Diet and nutrition include nutrient intake, fluid intake, and healthy digestion. Alcohol and drugs include refraining from or reducing the use of these substances. Medical self-care includes treatment of minor illnesses and injuries and seeking emergency medical care as needed. Rest and sleep include regular relaxation and quality sleep.

*Mental Health:* The term "mental health" relates to one's cognitive, behavioral and emotional well-being. It all comes down to how people think, feel, and act. The word "mental health" is occasionally used to refer to the absence of mental disease. Mental health can have an impact on daily life, relationships and physical health. This link, however, also works in the opposite direction.

People's life factors, interpersonal relationships, and physical factors can all contribute to mental health problems. Mental health care can sustain lifelong enthusiasm. This involves balancing life's activities, responsibilities, and efforts for mental resilience. All conditions such as stress, depression, and anxiety can affect mental health and disrupt a person's daily life. Although the term mental health is commonly used, many conditions that doctors classify as mental illness have physical roots.

## II. LITERATURE REVIEW

In just a few months, the COVID-19 pandemic caused by the coronavirus radically changed lives of masses around the world, including college students. In this regard, comprehensive global survey [4] provides meaningful insights into student satisfaction and perceptions of various aspects of life during a pandemic, including views on the immediate distant future. During pandemic, it was found that undergraduate and university public relations provided crucial support to university students. On the other hand, due to lack of computer skills and recognition of

relatively high workloads, students were unable to recognize greater outcomes while adapting to the "new normal". In other words, education in a remote location.

During Lockdown, students got bored, anxious, and frustrated, expressing concerns about their professional future and research topics. They also changed some of their hygienic behavior, such as wearing masks and washing hands regularly, and their daily habits, such as leaving home and shaking hands.

Cao *et al.* [5] point out that role of hospitals and universities seems positive, but governments and banks have not lived up to student expectations during pandemic. Products and financial issues were related to their emotional life and situations. Instigated logistics regression was used to illuminate factors that affect students' satisfaction who play role of the university in pandemic. Research costs and studies in Europe showed big satisfaction between the role and scale of the university during the crisis COVID-19.

A healthcare worker is someone who provides care and services to the sick and injured, either directly as a doctor, or nurse, or indirectly as an assistant, helper, laboratory technician, or even a medical waste handler. Globally, there are around 59 million healthcare employees. Recognizing health care professionals as 'the most significant resource for health', the World Health Organization designated the years 2006 to 2015 as "the decade of human resources for health". The healthcare profession is one of the most dangerous places to work. Employees in this business are continually exposed to a wide range of health and safety concerns while at work [6].

Shreffler *et al.* [7] highlight difficulties of implementing initiatives to promote Healthcare Workers' wellness, such as financial constraints, worker involvement, and so on. HCWs were already suffering from burnout, stress, and the emotional toll of caring for sick patients before COVID-19. The long-term consequences of the worldwide pandemic are uncertain. To continue to offer continuous, high-quality care, healthcare workers, they must be empowered and encouraged to care for themselves.

## III. RESEARCH OBJECTIVE

1. To assess the impact of COVID-19 on the physical health of healthcare personnel.
2. To assess the effect of COVID-19 on the mental health of healthcare personnel.

*Hypothesis for the Study*
*Research Objective 1:* To assess the impact of COVID-19 on the physical health of healthcare personnel.
H0: There is no significant impact of COVID-19 on the physical health of healthcare personnel.
H1: There is a significant impact of COVID-19 on the physical health of healthcare personnel.

Sub Hypothesis (Null Hypothesis):
- H1a: There is no significant impact of stamina on physical health during COVID-19.
- H1b: There is no significant impact of medical and non-medical facilities/assistance on physical health during COVID-19.
- H1c: There is no significant impact of a balanced day on physical health during COVID-19.
- H1d: There is no significant impact of diet on physical health during COVID-19.
- H1e: There is no significant impact of working hours on physical health during COVID-19.

*Research Objective 2***:** To assess the effect of COVID-19 on the mental health of healthcare personnel.
H0: There is no significant impact of COVID-19 on the mental health of healthcare personnel.
H1: There is a significant impact of COVID-19 on the mental health of healthcare personnel.
Sub Hypothesis (Null Hypothesis):
- H2a:There is no significant impact of the healthcare worker's profession on mental health during COVID-19.
- H2b:There is no significant impact of everyday routine on mental health during COVID-19.
- H2c:There is no significant impact of work pressure on mental health during COVID-19.
- H2d:There is no significant impact of anxiety on mental health during COVID-19.
- H2e:There is no significant impact of stress on mental health during COVID-19.

## IV. MATERIALS, TOOLS AND METHODS

Working healthcare personnel was identified in Saharanpur District of UP. The survey questionnaire was distributed to the region both hard copy as well as with the help of google forms. 214 responses were found to be relevant to the study, other survey forms were incompletely filled or not properly filled *i.e.,* 58 forms were rejected. Responses of participants have been taken on 5-point Likert Scale the smallest value of the scale is 1 (1 = 'Disagree') and the highest value of the scale is 5 (5 = 'Agree'). The study is purely based on primary data but secondary data was also analyzed. The secondary data were obtained from various books, journals, and websites (PubMed). The non-probability convenience sampling method is used for data collection from participants.

To unify the direction of evaluation, totals for each dimension of healthcare personnel were reversed with considered variables. The descriptive research design and inferential research design were used to reply to the study objective and hypothesis. The one-sample *t*-test for the main hypothesis and sub hypothesis using SPSS (Statistical Package for Social Science) is used to assess the impact of COVID-19 on physical and mental health of healthcare personnel.

*The Variables*

The demographic profile of the participants is categorized into 4 (categories) named gender, age group, designation, and job experience of healthcare personnel.

To assess impact of COVID-19 on physical health of healthcare personnel, five 5 variables considered are: stamina, medical and non-medical assistance, balanced day, proper diet and working hours.

To assess the effect of COVID-19 on the mental health of healthcare personnelthe, five variables considered are: choice of profession, everyday routine, work pressure, anxiety and stress of family.

## V. DATA ANALYSIS AND RESULTS

The data collected through questionnaires were classified according to the demographic feature of the participants of the health care personnel. The sample profile of participants is shown in Table 1.

TABLE 1 -- SAMPLE PROFILE OF PARTICIPANTS

| Gender | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Male | 69 | 32.2 | 32.2 | 32.2 |
| | Female | 145 | 67.8 | 67.8 | 100.0 |
| | Total | 214 | 100.0 | 100.0 | |
| Age Group | | | | | |
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Up To 30 Years | 134 | 62.6 | 62.6 | 62.6 |
| | 31 To 40 Years | 48 | 22.4 | 22.4 | 85.0 |
| | Above 41 Years | 32 | 15.0 | 15.0 | 100.0 |
| | Total | 214 | 100.0 | 100.0 | |
| Designation | | | | | |
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Doctors | 15 | 7.0 | 7.0 | 7.0 |
| | Nursing Staff | 139 | 65.0 | 65.0 | 72.0 |
| | Other Health Care Workers | 60 | 28.0 | 28.0 | 100.0 |
| | Total | 214 | 100.0 | 100.0 | |
| Job Experience | | | | | |
| Valid | Up to 5 Years | 76 | 35.5 | 35.5 | 35.5 |
| | 6 To 10 Years | 48 | 22.4 | 22.4 | 57.9 |
| | 11 To 20 Years | 50 | 23.4 | 23.4 | 81.3 |
| | 21 To 30 Years | 15 | 7.0 | 7.0 | 88.3 |
| | Above 30 Years | 25 | 11.7 | 11.7 | 100.0 |
| | Total | 214 | 100.0 | 100.0 | |

TABLE 2 -- DESCRIPTIVE STATISTICS FOR DEMOGRAPHIC VARIABLES

| Statistics | | | | | |
|---|---|---|---|---|---|
| | | Gender | Age Group | Designation | Job Experience |
| N | Valid | 214 | 214 | 214 | 214 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 1.68 | 1.52 | 2.21 | 2.37 |
| Std. Error of Mean | | 0.032 | 0.051 | 0.038 | 0.092 |
| Median | | 1.68[a] | 1.44[a] | 2.23[a] | 2.14[a] |

| Mode | | 2 | 1 | 2 | 1 |
|---|---|---|---|---|---|
| Std. Deviation | | 0.469 | 0.742 | 0.555 | 1.339 |
| Variance | | 0.219 | 0.551 | 0.308 | 1.793 |
| Skewness | | -0.765 | 1.031 | 0.046 | 0.662 |
| Std. Error of Skewness | | 0.166 | 0.166 | 0.166 | 0.166 |
| Kurtosis | | -1.428 | -0.424 | -0.197 | -0.669 |
| Std. Error of Kurtosis | | 0.331 | 0.331 | 0.331 | 00.331 |
| Range | | 1 | 2 | 2 | 4 |
| Minimum | | 1 | 1 | 1 | 1 |
| Maximum | | 2 | 3 | 3 | 5 |
| Sum | | 359 | 326 | 473 | 507 |
| Percentiles | 25 | 1.18[b] | .[b,c] | 1.60[b] | 1.25[b] |
| | 50 | 1.68 | 1.44 | 2.23 | 2.14 |
| | 75 | . | 2.06 | 2.76 | 3.35 |
| *a*. Calculated from grouped data. | | | | | |
| *b*. Percentiles are calculated from grouped data. | | | | | |
| *c*. The lower bound of the first interval or the upper bound of the last interval is not known. Some percentiles are undefined. | | | | | |

TABLE 3 – ONE-SAMPLE *T*-TEST RESULTS

For Research Objective 1: To assess the impact of COVID-19 on the physical health of healthcare personnel.

| One-Sample Statistics | | | | |
|---|---|---|---|---|
| | *N* | Mean | Std. Deviation | Std. Error Mean |
| v1 | 214 | 3.37 | .657 | .045 |
| v2 | 214 | 3.50 | .501 | .034 |
| v3 | 214 | 3.47 | .578 | .040 |
| v4 | 214 | 3.28 | .518 | .035 |
| v5 | 214 | 3.34 | .539 | .037 |

| One-Sample Test | | | | | | |
|---|---|---|---|---|---|---|
| | Test Value = 3 | | | | | |
| | *t* | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| My stamina is getting affected due to COVID-19 | 8.224 | 213 | 0.000 | 0.369 | 0.28 | 0.46 |
| I have been provided with all medical and non-medical assistance by the hospital. | 14.732 | 213 | 0.000 | 0.505 | 0.44 | 0.57 |
| I do not get a balanced day off/ leave from the hospital to keep myself healthy and fresh. | 11.818 | 213 | 0.000 | 0.467 | 0.39 | 0.55 |
| I am not able to take care of my diet to make my immunity better. | 7.916 | 213 | 0.000 | 0.280 | 0.21 | 0.35 |
| The duration of my work per day is difficult to complete and I struggle to manage that. | 9.139 | 213 | 0.000 | 0.336 | 0.26 | 0.41 |

For Research Objective 2: To assess the effect of COVID-19 on the mental health of healthcare personnel.

| One-Sample Statistics | | | | |
|---|---|---|---|---|
| | N | Mean | Std. Deviation | Std. Error Mean |
| v1 | 214 | 3.46 | 0.602 | 0.041 |
| v2 | 214 | 3.48 | 0.641 | 0.044 |
| v3 | 214 | 3.29 | 0.520 | .036 |
| v4 | 214 | 3.64 | 0.634 | .043 |
| v5 | 214 | 4.72 | 0.448 | .031 |

| One-Sample Test | | | | | | |
|---|---|---|---|---|---|---|
| | Test Value = 3 | | | | | |
| | | | | | 95% Confidence Interval of the Difference | |
| | | | | Mean Difference | | |
| | t | df | Sig. (2-tailed) | | Lower | Upper |
| I feel like, I have chosen the wrong profession. | 11.133 | 213 | 0.000 | 0.458 | 0.38 | 0.54 |
| My everyday life is affected due to COVID-19. | 10.886 | 213 | 0.000 | 0.477 | 0.39 | 0.56 |
| I feel pressurized by hospital authorities due to the panic of COVID-19. | 8.018 | 213 | 0.000 | 0.285 | 0.21 | 0.36 |
| I do not want to go to the job as it gives me anxiety during COVID-19. | 14.668 | 213 | 0.000 | 0.636 | 0.55 | 0.72 |
| I am stressed about my family as working in the hospital during COVID-19 may affect me as well as my family. | 56.315 | 213 | .000 | 1.724 | 1.66 | 1.78 |

## VI. RESULTS

| Statements | P-Value | Interpretation | Output |
|---|---|---|---|
| | | | Research Objective 1 |
| | | | The *t*-value is 50.920769. The value of p is < 0.00001. The result is significant at p < .05. |
| | | | (Alternate Hypothesis) is Accepted H1 There is a significant impact of COVID-19 on the physical health of healthcare personnel. |
| 1 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H1a: There is no significant impact of stamina on physical health during COVID-19. |
| 2 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H1b: There is no significant impact of medical and non-medical facilities/assistance on physical health during COVID-19. |
| 3 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H1c: There is no significant impact of a balanced day on physical health during COVID-19. |
| 4 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H1d: There is no significant impact of diet on physical health during COVID-19. |
| 5 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H1e: There is no significant impact of working hours on physical health during COVID-19. |
| | | | Research Objective 2 |
| | | | The *t*-value is 9.424135. The value of p is .000707. The result is significant at p < 0.05. |
| | | | (Alternate Hypothesis) is Accepted H1 There is a significant impact of COVID-19 on the Mental health of healthcare personnel |

| 1 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H2a: There is no significant impact of the healthcare worker's profession on mental health during COVID-19. |
|---|---|---|---|
| 2 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H2b: There is no significant impact of everyday routine on mental health during COVID-19. |
| 3 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H2c: There is no significant impact of work pressure on mental health during COVID-19. |
| 4 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H2d: There is no significant impact of anxiety on mental health during COVID-19. |
| 5 | 0.000 | Less than 0.05 | (Reject Null Hypothesis) H2e: There is no significant impact of stress on mental health during COVID-19. |

## VII. FINDINGS & CONCLUSION

This study aimed to investigate impact of COVID-19 outbreak on physical health and mental health of working healthcare personnel among residents of Saharanpur District of UP. Though many studies have examined the physiological effect of COVID-19, however, to our knowledge, this study assessed the impact of COVID-19 on the physical and mental health of working healthcare personnel. Results indicate that the sample selected for the study is female dominant *i.e.*, 67.8% were female whereas 32.2% are male. As Table 1 shows that the larger sample is of the age group up to 30 years *i.e.*, 134 (62.6%) out of 214 participants, the larger part of the sample are of nursing staff *i.e.*, 65% out of 214 participants, the larger part of the sample is having the job experience up to 5 years *i.e.*, 35.5% out of 214 participants.

Results of the One-Sample t-test at 95% of confidence level show negative significant impact of COVID-19 on physical health of healthcare personnel. Findings indicate that health care personnel would be likely to experience physical and mental health complications due to giving care to COVID-19 patients. COVID-19 affects stamina of participants that affect their physical health. Participants were provided with all medical and non-medical assistance by the hospital. But they don't get a day off/leave from the hospital to keep themselves healthy and fresh. They are not able to take care of their diet to make immunity better,which affects their physical health.

Work per day is difficult to complete and they are struggling to manage that. The study also gives a view of factors that affect the mental health of healthcare personnel. Quantitative data analyzed by One-Sample *t*-test at 95% of confidence that shows negative significant effect of COVID-19 on mental health. Most healthcare personnel think that they have chosen wrong profession as everyday life is affected due to COVID-19. They feel pressurized by hospital authorities due to COVID-19 panic.

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