

ORIGINAL ARTICLE

Mortality from COV-19 Infections Among Health Care Workers Compared to the General PopulationAFSHAN SADIQ¹, FAISAL RAHMAN², UROOJ MANZOOR³, SAIFULLAH⁴, SHEHLA FARHIN⁵, MUHAMMAD SHOAB KHAN⁶¹Post graduate trainee, General Medicine, Benazir Bhutu Hospital Rawalpindi²Assistant Professor of Medicine, University College of Medicine & Dentistry Lahore and Senior Consultant Physician Social Security Teaching Hospital Ferozepur Road Lahore³Physiotherapist, Sabir Physiotherapy Clinic and Rehabilitation Center, Faisalabad⁴Senior Registrar of Pulmonology, Jinnah Postgraduate Medical Center, Karachi⁵Assistant Professor, Community Medicine, Islamabad Medical college Islamabad⁶Consultant Surgeon, General Surgery Department, DHQ Hospital BatkhelaCorresponding author: Afshan Sadiq, Email: afshan.ali.hamdani@gmail.com**ABSTRACT****Objective:** The primary goal of this study is to evaluate the rates of death from coronavirus infection among healthcare personnel against those in the general population.**Study Design:** Comparative study**Place and Duration:** This study was conducted at Benazir Bhutu Hospital Rawalpindi during the period from July, 2022 to September, 2022.**Methods:** 135 coronavirus-infected individuals of both genders were studied. Patients were aged 20–65 years. All patients gave written consent for baseline data on age, sex, body mass index, socioeconomic status, and domicile. Patients were symptomatic and asymptomatic. Among 135 cases, 65 were health workers in group I and 70 were general population in group II. Mortality among both groups were compared. ICU hospitalization, ventilation, and death were compared between groups. SPSS 22.0 analyzed all data.**Results:** There were 35 males in group I with mean age 26.13±10.72 years and in group II 40 were males with mean age 45.6±5.27 years. We found that number of died patients were higher in group II 9 (12.9%) as compared to group I 3 (4.6%). Older age, heart disease, diabetes mellitus and lack of personal protective equipment (PPE) were the most common reasons of died coronavirus patients.**Conclusion:** The results of this study indicate that older age, heart disease, and diabetes are independently associated with a higher risk of death and a greater severity of pandemic disease among the general public than they are among health care professionals.**Keywords:** General Population, Ventilation, Mortality, Coronavirus, Health workers,**INTRODUCTION**

As of late December 2019, a novel coronavirus disease known as COVID-19 was first detected in China. For example, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the causative agent of COVID-19 [1]. Those infected with SARS-CoV-2 can spread the disease to others by exhaling infectious respiratory droplets that contain the virus and can remain infectious for up to 3 hours [2].

Physical separation of 1 metre, optimal usage of face masks, respirators, and eye protection have all been shown to be effective in preventing the spread of the virus from one person to the next [3]. However, the World Health Organization (WHO) revealed on February 13th, 2021 [4] that despite the implementation of such rules, there were 107,838,255 confirmed cases of COVID-19 and 2,373,398 fatalities. Epidemiological records in Mexico showed 1,992,794 cases of COVID-19 as of February 15th, 2021 [5], with 174,207 fatalities.

Health care personnel have a higher chance of contracting the disease than the general public (HCWs). The severe acute respiratory syndrome (SARS) left an unpleasant legacy for the medical community as a result of comparable outbreaks in the past. In 2002, the World Health Organization (WHO) reported 8098 cases of SARS and 774 (9.6%) fatalities, with HCW accounting for 1707 (21%) cases. Furthermore, 41% of the 238 suspected SARS cases in Singapore were found to be in healthcare personnel [6]. Therefore, occupational contact with HCWs is among the most critical problems with the current pandemic of the COVID-19, and it must be tackled extensively and forcefully. Not only is it critical to protect HCWs so that they may continue providing care to patients, but also to prevent the spread of the virus. At least 260 nurses have lost their lives due to the epidemic, and reports estimate that at least 90,000 healthcare professionals have been infected with COVID-19 as of June 5, 2020 [7].

Those who work in the medical field are particularly susceptible to infection (HCWs). Serious acute respiratory syndrome (SARS) outbreaks in the past have impacted healthcare

providers severely. A total of 8098 cases and 774 fatalities (9.6%) were reported by WHO during the SARS outbreak in 2002, with 1707 (21%) of those cases occurring among HCWs. On top of that, 41% of the 238 suspected SARS cases in Singapore were blamed on healthcare professionals [8]. One of the most pressing issues with the current COVID-19 epidemic is the spread of the virus through HCWs' occupational contact. Keeping HCWs safe is essential for stopping the spread of the virus and making sure patients continue to get treatment. At least 90,000 healthcare workers have been infected with COVID-19, with over 260 nurses losing their lives as a direct result of the pandemic [9].

HCWs were much more likely to be infected after the initial spike in COVID-19 cases. It is unknown, however, to what extent HCWs' higher exposure levels really enhanced their risk of mortality, or what specific demographic features, severity markers, or symptoms were most predictive of death. However, most earlier studies utilised non-HCWs as controls, which introduced biases owing to variations in participants' occupations, levels of education, and access to care. A countrywide research assessing COVID-19 symptoms and mortality among HCWs is also missing, especially one that takes into consideration the second and third COVID-19 epidemics. [8]

Since healthcare workers (HCWs) are vulnerable to contracting respiratory virus infections from providing normal care to virus-infected patients, it is imperative that they wear PPE in order to lessen the likelihood of nosocomial transmission of viruses. As a result of increasing demand, the supply chain for personal protective equipment (PPE) has experienced disruptions in countries all over the world. This has led to shortages of essential items including masks, face shields, disposable scrubs, and gowns. Research on methods to prolong the lifecycle of PPE by material reuse and disinfection is a growing area of study [7-10].

The primary goal of this research is to evaluate whether or not those in the medical field do worse than the general population when it comes to dying from a coronavirus infection.

MATERIAL AND METHODS

This comparative/retrospective study was conducted at Benazir Bhutu Hospital Rawalpindi during the period from July, 2022 to September, 2022 and comprised of 135 patients of coronavirus disease. All participants gave their informed, written consent before providing demographic information such as age, sex, BMI, income level, and country of residence. Patients who did not give written consent or who were less than 18 years old were not included in this research.

The patients' ages varied widely, from 20 to 65. Patients with symptoms and those without were included. On the basis of their symptoms, people who came into close, unprotected contact with a person who tested positive for COVID-19 were sent for testing. The WHO's prescribed procedure for RT-PCR tests was strictly adhered to. In order to train our data abstractors, we first specified all of the data and variables before beginning the study. Health care providers include doctors, nurses, techs, and anybody else who works directly with patients. We defined hypoxemia as an arterial oxygen saturation of 94% or below and tachypnea as a respiratory rate of >24 breaths per minute. Over 38 degrees Celsius was considered fever, while lymphocytopenia was defined as a lymphocyte count of less than 1000/ml. Of the 135 total cases, 65 were healthcare professionals in group I, while the remaining 70 were members of the general public. Patients with the coronavirus were hospitalized and monitored for improvement. The rates of death was compared between the two groups. To conduct a comprehensive analysis, we employed SPSS 22.0.

RESULTS

There were 35 males in group I with mean age 26.13±10.72 years and in group II 40 were males with mean age 45.6±5.27 years. Majority of the patients in both group were smokers 37 in group I and 35 in group II. (table 1)

Table 1: Initial enrollment case characteristics

| Variables | Health workers (65) | General Population (70) |
|-------------------------------|---------------------|-------------------------|
| Gender | | |
| Male | 35 (53.8%) | 40 (57.1%) |
| Female | 30 (46.2%) | 30 (42.9%) |
| Mean age (years) | 26.13±10.72 | 45.6±5.27 |
| Mean BMI (kg/m ²) | 22.8±4.19 | 25.7±3.25 |
| Smokers | | |
| Yes | 37 (56.9%) | 35 (50%) |
| No | 27 (43.1%) | 35 (50%) |

Forty percent (26 people) in group I had symptoms, and almost 45.7% (32 people) in group II had as well. (figure 1)

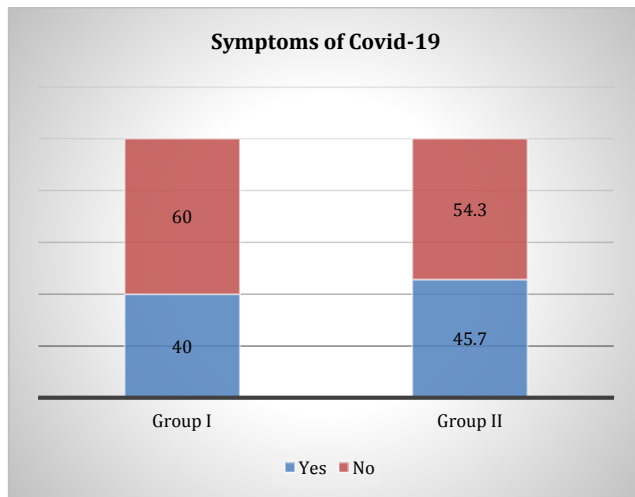


Figure-1: Correlation of symptoms between the two groups

We found that number of died patients were higher in group II 9 (12.9%) as compared to group I 3 (4.6%).(table 2)

Table 2: Analysis of death rates in both groups

| Variables | Health workers (65) | General Population (70) |
|-----------|---------------------|-------------------------|
| Mortality | | |
| Yes | 3 (4.6%) | 9 (12.9%) |
| No | 62 (95.4%) | 61 (87.1%) |

Older age, heart disease, diabetes mellitus and lack of personal protective equipment (PPE) were the most common reasons of died coronavirus patients in both groups.(figure 2)

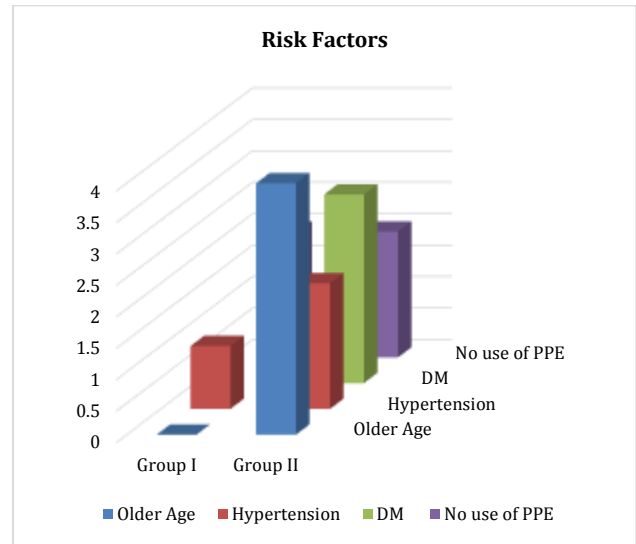


Figure-2: Risk factors of mortality in both groups

DISCUSSION

Early in the pandemic, a significant percentage of HCP tested positive for SARS-CoV-2 due to restricted testing of HCP who presented with symptoms and clearing out other respiratory disease prior to COVID-19 testing, in accordance with initial the Centers for Disease Control and Preventive COVID-19 testing standards. An internal memorandum from the VHA Secretary for Health Operations and Management was issued in April 2020 in response to an increase in COVID-19 cases in these healthcare setting from across country, requiring baseline SARS-CoV-2 testing for all Veterans residing inside and working in Veterans health long-term communal living centres (CLC) and spinal cord injuries and disorder (SCI/D) centres. [12]

As has been previously observed, male HCP were at a greater risk of dying from COVID-19 infection than female HCP. [13] While we did discover that males were more likely to get COVID-19, other research have revealed conflicting results when looking at the virus's prevalence in the general population between the sexes. [14] In current study, there were 35 males in group I with mean age 26.13±10.72 years and in group II 40 were males with mean age 45.6±5.27 years. Findings were consistent with those of prior research.[15] Forty percent (26 people) in group I had symptoms, and almost 45.7% (32 people) in group II had as well. The three most prevalent diseases to occur together were high blood pressure, diabetes, and cardiovascular disease. The outbreak of the pandemic coincided with an increase in psychological distress among employees in the Wuhan area, as reported by Lai et al. (2020). (i.e., those allocated to COVID-19 patients). Therefore, the same rule applies: the closer you are to the risk of infection, the more likely you are to experience severe psychological distress. Identical results have been found in previous investigations of new disease outbreaks. For instance, Wong et al. (2007) discovered that university students, especially

those studying medicine and those living in the region where SARS spread the greatest, had elevated anxiety throughout the epidemic. Additionally, Wheaton et al. (2012) discovered that students' anxiety levels rose in reaction to the H1N1 pandemic. From the common cold to the H1N1 pandemic, several viruses triggered a rise in nervousness (Coughlin, 2012). [15-17]

We found that number of died patients were higher in general population 9 (12.9%) as compared to HCW's 3 (4.6%). Some of the first signs of COVID-19, as documented by Wiersinga et al.[18], include difficulty breathing, a high temperature, a cough, an upset stomach, or diarrhoea. People may be aware of respiratory symptoms from COVID-19, but may be oblivious of gastrointestinal problems. Because of this, this research has the potential to shed light on how to best educate the public and how best to forecast the severity of an event. As opposed to the general population, healthcare workers had a flatter COVID-19 fatality trend after the first surge. This might be ascribed to their early and high immunisation rate, improved PPE, availability to healthcare facilities, and early identification and treatment.

Many of the first Covid-19 patients were healthcare workers who had contracted the virus in a healthcare setting. On the other hand, healthcare workers seldom experience mortality, and when they do, it typically involves patients who are old. Knowledge of the illness has increased, leading to a decline in the incidence of infection among HCWs [19]. According to a recent research [20], HCW who wore PPE were less likely to become infected than those who did not, highlighting the importance of universal PPE availability and usage among HCW. We discovered that many affected HCWs were quite young, and that infection rates were low among those who had used proper PPE.

CONCLUSION

The results of this study indicate that older age, heart disease, and diabetes are independently associated with a higher risk of death and a greater severity of pandemic disease among the general public than they are among health care professionals.

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