

A CROSS SECTIONAL STUDY OF SYMPTOMATOLOGY AND EPIDEMIOLOGIC CHARACTERISTICS OF COVID-19 AMONG HEALTH CARE WORKERS IN A TERTIARY CARE HOSPITAL

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Abstract

Introduction: The demeanor of SARS CoV-2 in different parts of the world heedless of the technologic, scientific and medical advancements of the nations has been an affair of great discussion. The diversity of symptoms of the disease ranging from no or mild symptoms to severe pneumonia and other complications, makes it a topic of extensive research.

Materials and Methods: This was a prospective observational study conducted in a 1000 bedded tertiary care hospital in which 350 beds were dedicated to COVID-19 patients. The COVID and non-COVID areas of the hospital were separate. The study was conducted from January 2021 to December 2021. During this period the total number of Health care workers (HCWs) working in the hospital was 2130. A total of 1092 COVID-19 patients were treated in the hospital during this period. HCWs presenting to flu OPD with symptoms consistent with COVID-19 were evaluated and tested by SARS-CoV-RTPCR or the rapid antigen test. Those who tested positive with either test was included in the study. Contact tracing of these positive HCWs were done and asymptomatic COVID-19 positive contacts (HCWs) were also included in this study.

Results: A total of 921 HCWs were tested for COVID-19 (SARS-CoV- RTPCR or rapid antigen test as they showed symptoms or were contacts of positive patients/ HCWs. Out of these, 100 HCWs were positive, thus showing a positivity rate of 10%. Co-morbidities were seen in 16(16%) of HCWs of which hypertension was most common and was seen in 3(3%), HCWs. Other co morbidities found were diabetes which was found in 5 (5%) HCWs followed by asthma in 1 (1%) cases and cardiac conditions and hypothyroidism found in 1 (1%) cases of HCWs respectively.

Conclusion: HCWs, especially nurses, face a high risk of COVID-19 infection while providing care for suspected or confirmed COVID-19 patients. It is important to characterize the epidemiological and clinical profile of HCWs regarding COVID-19 for formulation of prevention and management strategies.

Key Words: SARS CoV-2, COVID-19, severe pneumonia.

INTRODUCTION

In December 2019, several cases of pneumonia with unknown cause were reported in Wuhan, China. Later on in January 2020, a new corona virus was identified as cause for these pneumonia cases.² It rapidly spread worldwide and the World Health Organization gave the name COVID-19 for the disease and SARS-COV-2 to the causative virus. It was declared global pandemic by WHO on 11th March 2020.³ As on 5th June 2020, Globally 6416828 cases and 382,867 deaths were reported due to corona virus.⁴ India had 110960 active cases and 6348 death due to corona virus. In Rajasthan, 9862 cases and 213 deaths were attributed to COVID- 19 till 5th June 2020.

The demeanor of SARS CoV-2 in different parts of the world heedless of the technologic, scientific and medical advancements of the nations has been an affair of great discussion. The diversity of symptoms of the disease ranging from no or mild symptoms to severe pneumonia and other complications, makes it a topic of extensive research.⁵ With umpteen research works on the characteristics of the COVID19 from across the world, it is critical to study the epidemiological and clinical pattern in the State.⁴ A state level inspection of the case scenario is imperative in planning resources and escalating preparedness. In this context, our study aims to look into the symptomatology and epidemiological characteristics of COVID-19 patients of jaipur.

MATERIALS AND METHODS

Study design:A prospective observational study

Study location:Department of Community Medicine. National Institute of Medical Sciences and Research, Jaipur.

This was a prospective observational study conducted in a 1000 bedded tertiary care hospital in which 350 beds were dedicated to COVID-19 patients. The COVID and non-COVID areas of the hospital were separate. The study was conducted from January 2021 to December 2021.

During this period the total number of HCWs working in the hospital was 2130. A total of 1092 COVID-19 patients were treated in the hospital during this period. HCWs presenting to flu OPD

with symptoms consistent with COVID-19 were evaluated and tested by SARS-CoV- RTPCR or the rapid antigen test. Those who tested positive with either test was included in the study. Contact tracing of these positive HCWs were done and asymptomatic COVID-19 positive contacts (HCWs) were also included in this study.

The definition of confirmed human infection with SARS-CoV-2 was in accordance with the WHO interim guidance.

Demographics and clinical data of the infected HCWs were obtained through had detailed telephonic interview using a structured questionnaire. Following additional information was also recorded: Profession or category of HCW (doctor, nurse, multipurpose worker (MPW) and ancillary staff), work experience, exposure history, symptoms, comorbidities, details of the nature of duty in the COVID designated area, whether they had received training in infection control practices related to COVID-19. Any clusters of infection in the hospital were also traced and analyzed.

The infection was considered community acquired if the HCW reported contact with a confirmed COVID-19 case in the community setting. To find the community source information was collected regarding travel history, social gatherings attended, going out in crowded places for shopping and household contacts. The infection was considered hospital acquired if the HCW reported exposure to a confirmed or suspected COVID-19 case (patient/HCW) in the hospital setting without any contact with a symptomatic or confirmed COVID-19 cases in the community setting or been exposed as per infection prevention and control department records. Those HCWs with no exposure to symptomatic or suspected/confirmed cases in the hospital or in the community setting were recorded as having an unknown or unidentified source.

Statistical analysis: Data was entered in excel sheet and analyzed using SPSS version 25. Categorical variables have been expressed as frequencies and percentages.

RESULTS

A total of 921 HCWs were tested for COVID-19 (SARS-CoV- RTPCR or rapid antigen test as they showed symptoms or were contacts of positive patients/ HCWs. Out of these, 100 HCWs were positive, thus showing a positivity rate of 10%.

Characteristics	N (%)
HCWs positivity by test	
RT-PCR test	96 (96%)
Rapid antigen positive	4 (4%)
Asymptomatic/Symptomatic	
Symptomatic	88 (88%)

Asymptomatic	12 (12%)
Gender	
Male	45 (45%)
Female	55 (55%)
Age (years)	
21-30	62 (62%)
31-40	21 (21%)
41-50	13 (13%)
>50	4 (4%)
Category of HCW	
Staff nurses	42(42%)
Doctors	30 (30%)
Ancillary staff	18 (18%)
MPW	10 (10%)
Years of experience	
Less than 5 years	64 (64%)
More than 5 years	36 (36%)
Accommodation	
Hostel	28 (28%)
Residence	72 (72%)
Covid Duty	
Yes	60 (60%)
No	40 (40%)
HCWs involved in aerosol generating procedures	
No	82 (82%)
Yes	18 (18%)
Trained in infection control practices	
Yes	79 (79%)
No	21 (21%)
Co-Morbidities	
Diabetes	2 (2%)
Hypertension	3 (3%)
Cardiac	1 (1%)
Asthma	1 (1%)
Hypothyroidism	1 (1%)
Total	8 (8%)
Social distancing During meals	
Always	53 (53%)
Some times	33 (33%)

Never	14 (14%)
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Table 1: Clinico-epidemiological profile of COVID-19positive HCWs

Symptoms	Percentage
Fever	48.6
Myalgia	36.22
Cough	20.74
Malaise	18.89
Sore throat	17.03
Headache	15.79
Anosmia	4.64
Vomiting	4.64
Breathlessness	3.72
Loss of taste	3.41
Diarrhoea	3.41

Table 2: Percentage of HCWs presenting symptoms

Co-morbidities were seen in 16(16%) of HCWs of which hypertension was most common and was seen in 3(3%), HCWs. Other co morbidities found were diabetes which was found in 5 (5%) HCWs followed by asthma in 1 (1%) cases and cardiac conditions and hypothyroidism found in 1 (1%) cases of HCWs respectively.

DISCUSSION

There was predominance of females (55.11%) among infected HCWs. This could be due to the large number of female nurses working in our hospital. Similar observations were noted by Wang et al and Zheng et al. In their study they found 61.25% and 72.28% female preponderance respectively. While in a study by Fusco et al in Italy, only 15 (49%) of females were infected. In an Indian study by Banerjee et al 43% of infected HCWs were females.⁶

In our study younger age group (21-30 years) was infected the most (62.23%) when compared to other age groups. Being a teaching hospital there is a larger number of interns, resident doctors and nurses of younger age working in the hospital and also posted in COVID area.⁷

This also explains why majority of the HCWs (64%) had <5 years of experience. As per the hospital policy HCWs above the age group of 60 were considered as high-risk group and were not posted in COVID area, so only 4 (4 %) of HCWs were above the age of 50 years. While in a study by Chen et al the median age of infected HCWs was 32 years among the infected HCWs. Al Maskari et al in their study reported 88 (43.1%) HCWs in the age group 26-35 years while Gracia et al reported 42 years as a mean age of HCWs.⁸

Nurses were found to be the predominantly affected HCWs (42.41%) followed by doctors. This is probably due to persistent and longer exposure of nurses while working in COVID areas. Similar predominance of nursing staff was reported by Wang et al, while Zheng et al reported 52.06% nurses and 33.62% doctors among infected HCWs from Wuhan.¹⁰

Training on COVID-19 infection control practices and use of PPE was given by infection control department to all categories of HCWs before they were posted in the COVID areas. A total of 96 training sessions were conducted and 1800 HCWs were given training. Out of infected HCWs, 79(79%) had undergone training.

Out of the 46 (46%) HCWs, whose probable source of infection was from the hospital, 52 (52%) HCWs gave a history of exposure to infected HCWs. During COVID- 19 pandemic HCWs were undergoing lot of stress.

Interacting with colleagues was a way of stress relief for them. 52(52%) HCWs followed strict social distancing during meals. This was evident from the history given by them. Maximum risk of exposure is during mealtimes. Al Maskari et al also reported 35% of hospital acquired infections among HCWs as a result of contact with another infected colleague, particularly during 'break' times, as the HCWs were not compliant with social distancing and universal masking policies during having meals. In 47 (47%) HCWs, the probable source of infection was from COVID-19 positive patients. This was evident from the history given by them. Exposure from asymptomatic patient especially in non-COVID area, or during aerosol generating procedures, or break in the infection control protocols regarding PPE while handling COVID-19 patients could be the probable reasons for exposure. There were 5 clusters of infection (Emergency department, Cathlab, ICU and NICU) in the hospital.

In our study, community source was found in 25 (25%) HCWs, based on the history given by them. This was more common among the ancillary staff. HCWs gave a history of travelling, shopping in crowded places, attending social gatherings and contact with infected family members. The 15 HCWS who acquired infection from community gave a history of exposure to COVID positive family members.

CONCLUSION

Health care workers face a high risk of getting infected by the COVID-19 infection while providing care for suspected or confirmed COVID-19 patients. In our study nurses were the most affected group of HCWs. Due to younger age group and with minimal co morbidities most of the HCWs suffered from mild symptoms. Regular training of all categories of HCWs regarding infection control practices related to COVID-19 and their strict implementation should be an essential component of preventive strategy. Early recognition, identification, isolation, and

implementation of appropriate infection prevention and control measures are imperative for successful management of COVID-19 in HCWS.

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