Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(6); 2398-2402

Original Research Article

Prevalence and Clinical Manifestations of COVID-19 Infection in Healthcare Workers in a Dedicated Tertiary Care Hospital during Pandemic

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Received: 20-03-2023 / Revised: 21-04-2023 / Accepted: 25-05-2023 Corresponding author: Dr. Ajay Singh Kalyanwat Conflict of interest: Nil

Background: Human infection caused by a novel corona virus 2 (SARS-CoV-2) virus appeared in Wuhan, China, in December 20191 and became a global pandemic. It can be considered as a new work related disease in case of healthcare workers (HCWs). The aim of this study was to estimate the incidence and prevalence of Covid-19 infection and its clinical signs & symptoms among the HCWs at Govt. of China.

Methods: The information including demographic features as age, gender, sign and symptoms, any pre-existing medical illness, area of duty (ICU/OPD/IPD) to find out whether in direct in contact with the Covid positive patient or not and the category of HCW (doctor /nurse /paramedics/ pharmacist /security personnel / sanitation workers & others) was recorded.

Results: There was no statistical difference (p value 0.05) of Covid-19 incidence between cases and controls among the healthcare workers who were working in non Covid place, Covid IPD and Covid OPD (p values >0.05) but there was significant difference (r = -0.05) among HCW who worked in Covid ICU and Emergency department. Among the symptoms present in the Covid 19 positive patients, fever was the most common, present in 80% of cases, followed by myalgia and malaise which were present in 72.5%. Loss of smell was found in 60% cases whereas loss of taste was present in 52.5% cases.

Conclusion: The use of PPE kit and other protective measures is needed to be implemented appropriately and positively.

Keywords: COVID-19, SARS COV- 2, Healthcare Worker (HCWs), PPE kit, N95 mask, Surgical mask.

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Introduction

Human infection caused by a novel SARS COV- 2 virus appeared in Wuhan, China in December 2019[1] and became a global pandemic. It can be considered as a new work related disease in case of healthcare workers (HCWs). Patients infected with Covid-19 can easily transmit it to the medical staff who provides treatment to them through contact or airborne droplets, especially when coughing and sneezing. HCWs have substantial risk of exposure to this new biological agent as they are in direct contact with the patients who are suspected or confirmed to be infected with Covid-19. So the early diagnosis and isolation of the Covid positive HCW is necessary to prevent its spread. Protection of HCWs from Covid-19 is a challenge and requires a global strategy.

Aims and Objective

To estimate the incidence and prevalence of Covid 19 infection and its clinical signs & symptoms among the healthcare workers at Govt. RDBP Jaipuria hospital attached with RUHS College of Medical Sciences.

Material & Methods

This retrospective observational study was conducted in Govt. RDBP Jaipuria hospital attached with RUHS College of Medical Sciences, from July 2020 to December 2020.

All categories of staff working in the hospital comprise the study population. The cases were the HCWs who tested positive for Covid-19 infection and the controls were HCWs who tested negative. At any time whenever an HCW came positive, a pre-structured data interaction proforma was used to elicit details of HCWs. The information including demographic features as age, gender, sign & symptoms, any pre-existing medical illness, area of duty (ICU/OPD/IPD) to find out whether in direct in contact with Covid positive patient or not and the category of HCWs (doctor /nurse /paramedics/ pharmacist /security personnel / sanitation workers & others) was recorded.

Result

The data collected from all the HCWs were compiled and analysed in Excel 2019. There was no statistical difference in age group between cases and controls (p value >0.05). There was no statistical difference in gender between cases and controls (p value >0.05).

Data shows that there was no statistical difference of Covid-19 incidence between cases and controls among the HCWs who were working in non Covid place, Covid IPD and Covid OPD (p value >0.05) but there was significant difference (p value <0.05) of Covid-19 incidence among HCWs who worked in Covid ICU and Emergency department. The incidence of Covid-19 infection was more in doctors (62.5%) followed by nursing staff (17.5%). Among the HCWs who tested positive for Covid 19 (RTPCR test), Hypertension was the most common comorbidity that was present in 17.5% cases followed by Diabetes Mellitus and Asthma (5% each). In the Covid-19 positive (cases), 27.5% were wearing PPE kit and 52.5% were wearing N95 mask, only 12.5% were wearing surgical mask and the rest were not using any protection. Whereas in the control group, 67.5% were wearing PPE kit, 87.5% wearing N95 mask with significant difference (p value <0.05) in usage of PPE kit and N95 mask between cases and control groups.

Variables	Cases	Control	P value
Age (years)	34.6±3.2	35.8±2.5	>0.05
Gender			
Male	34	31	>0.05
Female	6	9	>0.05
Place of Work			
Covid OPD	11	8	>0.05
Covid IPD	11	10	>0.05
Covid ICU	7	3	< 0.05

Table 1: Analysis of Baseline Characteristics between Cases and Controls

Emergency	4	11	< 0.05
Non-Covid duty	7	8	>0.05
Type of HCW			
Doctor	25	26	>0.05
Nurse	7	10	>0.05
Lab technician	2	-	< 0.05
Pharmacist	1	-	>0.05
Security Guard	1	-	>0.05
Sanitation worker	1	1	>0.05
Ambulance Driver	1	-	>0.05
X-Ray Technician	1	1	>0.05
Office Worker	1	2	>0.05
Pre-existing medical conditions			
Hypertension	7	6	>0.05
Diabetes	2	1	>0.05
Obesity	1	-	>0.05
CAD	1	-	>0.05
Asthma	2	2	>0.05
Use of PPE kit	11	27	< 0.05
Use of N95 Mask	21	35	< 0.05
Use of Surgical Mask	5	3	>0.05

Among the symptoms present in the Covid- 19 positive patients, fever was the most common, present in 80% of cases, followed by myalgia and malaise which were present in 72.5% of Covid 19 positive HCWs. Sore throat was found in 67.5% of cases. Loss of smell was found in 60% cases whereas loss of taste was present in 52.5% cases. Other clinical symptoms which were found in Covid-19 positive patients were cough (55%), dyspnoea (17.5%) and abdominal pain (22.5%)

Sign & Symptom	Case	Percent
Fever	32	80
Myalgia	29	72.5
Sore Throat	27	67.5
Loss of Smell	24	60
Loss of Taste	21	52.5
Malaise	29	72.5
Cough	22	55
Dyspnoea	7	17.5
Abdominal Pain	9	22.5

Discussion

Human infections caused by a novel coronavirus 2 (SARS-CoV-2) first appeared in Wuhan, China, in December 2019[1]. Since then, it turned into a pandemic and the HCWs were at greater risk to get infected because of their nature of work of giving treatment to the Covid-19 positive patients in outdoor, indoor and ICU premises.[2]

We observed that Covid-19 infection was more common in HCWs who worked in ICU and IPD department. Although they were using PPE kit and other protective measures, still the infection rate was higher which may be due to prolonged exposure to Covid 19 positive patients and taking off mask in between or during breaks with the colleagues. We also observed that Covid-19 infections were more common in doctors, especially resident doctors as compared to nursing and paramedical staff whereas Dev N, Meena RC et al.[3] found that nursing staff and sanitation workers were higher in number for positive tests.

The pre-existing chronic conditions like HTN, Obesity, Diabetes Mellitus etc. had no effect on incidence rate of Covid-19 infection in the HCWs at our institution. The proper use of PPE kit was found significantly protective against the Covid-19 infection. Similar findings were also shown by NishanthDev et al.[3] Chen Y et al [4] also found in their study that seropostivity rate was higher in healthcare workers who were not wearing PPE kit including N95 Mask, face shield and goggles. Ran L et al [5] also showed the similar findings regarding usage of PPE kit and other protection measures like hand washing. The clinical presentation was very wide in Covid-19 infection ranging from asymptomatic to fatal condition. In this study, the most common clinical feature which was found in Covid-19 positive patients was fever (80%). Alimohamadi Y et al.[6] also found in their systemic review and meta-analysis that fever was most common clinical symptoms in Covid-19 infection. The study by Huang C [7] also shows that fever was the most common symptoms in Covid-19 infection.

In our study, cough was present in 55% of Covid positive patients whereas the study by Chen T et al [8] showed that cough was second most common symptom which was found in 70% of Covid-19 positive patients. Loss of smell and loss of taste in Covid-19 positive patients were found in 60% and 52.5% respectively in our study. Mullol J et al. [9] in their review found that there is high variability in loss of smell and taste in affected patients ranging from 5 to 98%, depending on the methodology, country, and study. Similar findings were shown by Santos REA et al. [10] in a systemic review.

Conclusion

In conclusion, the HCWs are at higher risk to develop Covid-19 infection.So the use of PPE kit and other protective measures is needed to be implemented appropriately and positively. The HCWs need to be vigilant regarding early clinical symptoms of Covid 19 so that isolation and treatment can be started early.

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