



A COMPARATIVE STUDY OF THE RISK OF SARS-CoV-2 INFECTION AMONG DOCTORS WORKING IN VARIOUS SETTINGS IN HOSPITALS OF JHARKHAND

Community Medicine

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ABSTRACT

Coronavirus disease 2019 (COVID-19), a disease caused by SARS-CoV-2, a single-stranded RNA virus, may cause life-threatening severe acute respiratory syndrome. The disease is hypothesized to be highly contagious and may be transmitted by aerosol, fomite or by feco-oral route. Healthcare professionals are at a much higher risk of SARS-CoV-2 infection as compared to normal population. This study puts in an effort to assess the risk of infection among doctors working in various settings in a tertiary hospital in Jharkhand.

KEYWORDS

INTRODUCTION:

Coronavirus disease 2019 (COVID-19) is defined as illness caused by a novel coronavirus now called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV).¹ Coronavirus are enveloped viruses with a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry.² Infected carriers are able to shed viruses into the environment. They are transmitted from one host to another host, depending on the coronavirus species, by either an aerosol, fomite, or fecal-oral route.³ Coronaviruses mainly target epithelial cells.⁴ In general, infected people spread viral particles whenever they talk, breathe, cough, or sneeze. Such viral particles are known to be encapsulated in globs of mucus, saliva, and water, and the fate/behavior of globs in the environment depends on the size of the globs. Bigger globs fall faster than they evaporate so that they splash down nearby in the form of droplets. Smaller globs evaporate faster in the form of aerosols, and linger in the air, and drift farther away than the droplets do. Healthcare workers are unwittingly exposed to infectious agents through person-to-person contact via respiratory droplets or aerosols and direct handling of contagious secretions (e.g., sputum, serum, blood, feces, etc.) of COVID-19 patients.⁵ The SARS-CoV-2 virus has been found to remain viable in aerosols for 3 h, while it, in the form of droplets, is more stable on plastic and stainless steel, copper, cardboard, and glass with durations detected up to 72, 4, 24, and 84 h, respectively.⁶ The incubation period for coronavirus disease 2019 (COVID-19) is believed to extend to 14 days, with a median time of 4-5 days from exposure to symptomatic onset.⁷ Most patients are asymptomatic and symptoms include fever, dry cough and tiredness. Less frequent presentations may include bodyache and pain, sore throat, headache, conjunctivitis, diarrhea, loss of taste or smell, rash on skin or discoloration of fingers and toes.

AIMS AND OBJECTIVES:

To compare the risk of COVID-19 infection among doctors working in dedicated COVID-19 facilities and non-COVID-19 IPD set-up.

MATERIALS AND METHODS:

A cross-sectional study involving 270 junior residents from different clinical departments working in Rajendra Institute of Medical Sciences, Ranchi.

INCLUSION CRITERIA:

Junior residents from Department of Medicine, Surgery, Obstetrics and Gynaecology, Paediatrics, Anaesthesia, Orthopedics, ENT and Ophthalmology working in Rajendra Institute of Medical Sciences, Ranchi during a period of May 2020 to July 2020 were included in the study.

EXCLUSION CRITERIA:

Junior residents from non-clinical and para-clinical departments were

excluded from the study.

RESULTS:

One hundred and ten junior residents working in dedicated COVID-19 facility, with proper training of hand hygiene, donning and dawning of PPE kits etc were studied. Only one doctor (<1%) was found to be rtpcr positive for COVID-19 infection after an incubation period of 7 days. Notably, 30 surgical procedures were performed during the period of study, but none of the operating surgeons contracted the disease.

One hundred and sixty junior residents from various clinical departments with minimal formal training on hand hygiene and PPE equipments were also studied. Results from the above sample size is tabulated below:

Department	Number of junior residents	COVID 19 positive residents
Medicine	35	7(20%)
Surgery/Orthopaedics	50	9(18%)
Obs and Gynae	30	6(20%)
Paediatrics	18	4(22%)
ENT	8	3(37.5%)
Ophthalmology	8	0(0%)
Anaesthesia	11	0(0%)
Total	160	29(18.1%)

DISCUSSION:

Healthcare workers are at a higher risk of being infected with SARS-CoV-2 due to higher chance of coming in contact with an infected patient or fomites. In our study, it was observed that doctors with proper training of hand hygiene and PPE usage, who were working in dedicated COVID-19 facility had less than 1% chance of being infected with SARS-CoV-2.

While the doctors working in regular IPD settings, who were using only N95 masks and gloves and following infrequent hand sanitation were at a much higher risk of infection. Junior residents from the department of ENT were the highest risk groups, most probably due to oropharyngeal and nasopharyngeal procedures. Junior residents from the department of Medicine, Surgery, Obstetrics and Gynaecology and Paediatrics were also at a high risk of getting infected with SARS-CoV-2. Least risk of infection was seen among the junior residents from the Department of Ophthalmology and Department of Anaesthesiology.

CONCLUSION:

SARS-CoV-2 is transmitted from one host to another host by aerosol, fomite, or feco-oral route. Due to COVID 19 pandemic, increasing

number of COVID 19 cases in Jharkhand have increased the risk of SARS-CoV-2 infection among doctors and other health workers. Measures that need to be implemented to decrease this risk may include-

1. Proper training of all healthcare personnel regarding frequent hand sanitization and use of N95 masks.
2. Proper training of all healthcare personnel regarding donning and dawning of PPE suits and use of other equipments.
3. Extreme precaution needs to be exercised while dealing with procedures involving oropharyngeal and nasopharyngeal cavities.

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