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# COVID-19 infection in health care workers - our experience at the Regional Institute of Medical Sciences, Imphal

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***Abstract:***

***Background:*** *COVID-19 is fast spreading not only across country borders but is seen to involve all ages and walks of life. The risk of acquiring the infection is considered to be high especially among the health care givers. The study is to look into the characteristic profile and clinical outcome in the infected Health care workers (HCWs).*

***Method:*** *An observational study was conducted in a cohort of HCWs actively involved in patient care at a tertiary hospital in Northeast India.*

***Results:*** *There were 115 cases of health care workers infected with COVID-19 in our institute over a span of 9 months from March 2020 to November 2020. Among them 59 were doctors, 32 were nurses, 9 were technicians and 15 were orderlies. The median age of our HCWs was 35 years. Most of the infection was from the work environment from the patients or through colleagues. The emergency wing was the most common place of known infection acquirement. The most frequent symptom was fever followed by body ache. The infection was mild to moderate in most cases with only 1 case requiring oxygen therapy and ICU care. There was no mortality.*

***Conclusion:*** *Health care workers are vulnerable group who have an unavoidable high risk to infection. To curb the infection in the absence of an effective treatment is prevention at its best.*

***Key words:*** *COVID-19 infection, health care workers, Hydroxychloroquine prophylaxis, Northeast India*

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## I. Introduction

The pneumonia like infection by the novel virus SARS-CoV-2 was first encountered in Wuhan, China and reported to WHO on 31st December 2019 .The infection is known as COVID-19 disease (which stands for corona virus disease 2019). It soon spread to all other parts of the world and WHO declared it a pandemic on 11March 2020. Mode of infection is through human to human transmission by respiratory secretions, droplet, direct contact with cases and contaminated fomites.[1] Most patients manifest only mild flu-like symptoms but few cases can progress to acute respiratory distress needing ventilator support, multi-organ failure and death.

Some of the concerning issues of SARS-CoV-2 are its highly contagious nature, being a novel virus many of its properties and effects were unknown and still unfolding, can have serious complications and mortality outcome, awaiting for the newly introduced COVID-19 vaccine to reach the masses while a specific treatment for the disease is still in search.

## II. Methods

An observational study was done from March 2020 to November 2020 in RIMS, Imphal. The study cohort were HCWs that included doctors, nurses, orderlies and technicians. Those with known exposure to COVID cases or those symptomatic with no recall of potential exposure were subjected to testing by rapid antigen test (RAT) followed by RT-PCR when indicated, by taking a nasopharyngeal swab.

Those diagnosed with the infection were further followed up with repeat testing on day 7. If still positive then test was repeated after every 3 days till negative. Treatment given differed based on the severity of the disease. Most cases in this cohort received only supportive treatment along with Hydroxychloroquine (HCQ) 400mg BD on day 1 then 200mg BD for 4 days. This was later replaced by Azithromycin 500mg OD for 5 days

and Ivermectin 12mg BD for 5 days. Systemic corticosteroids, oxygen by face mask and parenteral antibiotic were added during clinical deterioration and fall in oxygen saturation with chest x-ray finding suggestive of acute respiratory distress syndrome (ARDS).

## III. Results

A total of 115 HCWs tested positive. The infected cases were grouped based on the occupation as shown in Table 1. Doctors were 59, nurses were 32, orderlies were 15 and 9 were technicians. Departmental distribution of infection was seen highest in Medicine (20.85%), next was Anaesthesiology (17.39%) followed by Casualty (10.43%).The most common place of known infection however was the emergency wing with 23.7% while infection acquired from COVID ward was only 10.43% of the total infection.

**Table 1:** Distribution of infection according to occupation and department

| Occupation | Department | Number of infection. n=115 (percentage ) |
|---|---|---|
| **Doctors** | **Medicine** | 17(14.78%) |
| | **Paediatric** | 1 (0.86%) |
| | **Anaesthesiology** | 9 (7.82%) |
| | **Gynaecology** | 8 (6.95%) |
| | **PMR** | 4 (3.47%) |
| | **Emergency** | 3 (2.60%) |
| | **Surgery** | 3 (2.60%) |
| | **Orthopaedic** | 2 (1.73%) |
| | **ENT** | 2 (1.73%) |
| | **Urology** | 1 (0.86%) |
| | **Ophthalmology** | 1 (0.86%) |
| | **Psychiatry** | 1 (0.86%) |
| | **Radiation oncology** | 1 (0.86%) |
| | **Para-clinical** | 6 (5.21%) |
| **Nurses** | **Medicine** | 6 (5.21%) |
| | **Paediatric** | 4 (3.47%) |
| | **Anaesthesiology** | 8 (6.95%) |
| | **Emergency** | 7 (6.08%) |
| | **Surgery** | 2 (1.73%) |
| | **PMR** | 2 (1.73%) |
| | **Orthopaedic** | 1 (0.86%) |
| | **Ophthalmology** | 1 (0.86%) |
| | **Microbiology** | 1 (0.86%) |
| **Technicians** | **ECG- Emergency** | 1 (0.86%) |
| | **Radiology** | 3 (2.60%) |
| | **VRDL lab - Microbiology** | 2 (1.73%) |
| | **ESWL- Urology** | 1 (0.86%) |
| | **OT- Anaesthesiology** | 1 (0.86%) |
| | **Dialysis - Nephrology** | 1 (0.86%) |
| **Orderlies** | **Pulmonary medicine** | 1 (0.86%) |
| | **Medicine** | 1 (0.86%) |
| | **Anaesthesiology** | 2 (1.73%) |
| | **Orthopaedic** | 2 (1.73%) |
| | **PMR** | 2 (1.73%) |
| | **Surgery** | 2 (1.73%) |
| | **Emergency** | 1 (0.86%) |
| | **OBG** | 1 (0.86%) |
| | **Pathology** | 1 (0.86%) |
| | **Microbiology** | 1 (0.86%) |
| | **Ophthalmology** | 1 (0.86%) |

Most of the infection acquired was from patients who had presented to the emergency room with other complaints when the attending doctors were not donning PPE. These patients later turned out to be COVID-19 infected on testing them in the emergency or intermediate ward.

The infected HCW cohort were predominantly asymptomatic while fever (29.87%), body ache (20.77%), cough (16.88%) and loss of smell (12.98%) were among the most common symptoms observed as shown in Table 2. In our study those infected had quick recovery and tested negative within a week in 35.93 % and only 1 HCW tested negative late at 21 days from the diagnosis. No one went on to develop multi-organ failure. An ECG technician aged 45 years was the lone HCW who required oxygen therapy and ICU care but needed no mechanical ventilation and recovered with no sequela. There was no mortality seen.

**Table 2:** Characteristics and clinical profile of COVID infected HCWs

| Age in years Median ( range ) | 35.03years ( 23 to 60 years ) | Percentage |
|---|---|---|
| Gender | Male = 51, Female = 64 | Male = 44.34% Female = 55.65% |
| Fever | 23 | 29.87% |
| Cough | 13 | 16.88% |
| Shortness of breath | 3 | 3.89% |
| Sore throat | 8 | 10.38% |
| Running nose | 2 | 2.59% |
| Body ache | 16 | 20.77% |
| Headache | 1 | 1.29% |
| Nausea and vomiting | 1 | 1.29% |
| Diarrhoea | 2 | 2.59% |
| Loss of smell | 10 | 12.98% |
| Asymptomatic | 38 | 33% |
| O2 requirement | 1 | 1.29% |
| ICU care | 1 | 1.29% |
| PPE use at exposure | 12 | 10.43% |
| Hospitalised | 64 | 55.65% |
| Day to negative testing | 9.89 | |

## IV. Discussion

The year 2020 will be remembered for COVID-19 pandemic and its effect that brought major changes in our lives. What started as a cluster outbreak of pneumonia from a local seafood market in Wuhan, Hubei province China soon spread to almost all parts of the world.[2] In our country, the first case was detected on 27th January through a returnee from Wuhan to Kerala. However it was not until 23rd of March that a UK returnee was detected as the first case in the state of Manipur, Northeastern India. At about this time, nation-wide total lockdown was imposed with subsequent relaxation of only essential services. Meanwhile the frontline health care workers continued their duty of patient care, making them exposed and vulnerable to the risk of acquiring the infection. After the detection of COVID-19 infection in an orderly in pulmonary medicine department, RIMS was closed to curb with its spread. There were major changes in and around the campus. There was a shutdown of out-patient department services, elective surgeries and academic activities like bedside classes for medical students. Most teaching schedules were revised and conducted on digital platform as a preventive measure. Consultation in the form tele and e-consultation were seen. In the meantime emergency services continued unhindered but with a lot of changes introduced. A separate wing near psychiatry ward operated as flu clinic for the suspected COVID patients and the general patients presenting to the emergency wing were subjected to triage, every patient and their attendant were screened by RAT tests and those requiring admission in non COVID wards were permitted to shift in from an intermediate observatory ward only after negative COVID tests confirmation by TrueNat or RT-PCR for SARS-CoV-2.

The number of HCWs detected with COVID-19 infection in our study was only 115 in a span of 9 months from March to November 2020 in comparison to a report of 40 cases by Y.G Dadholkar et al in 2 months span from Navi Mumbai.[3] Lessons learnt from the initial cluster infection along with implementation of the preventive measures early have to an extent prevented and staggered the spread of infection among the HCWs.

As per the guidelines issued by the National Task force for COVID-19, HCQ prophylaxis recommended in asymptomatic HCWs is 400mg BD on day 1 followed by 400mg weekly for 7 weeks.[4] Though it was dropped from several international trials that were testing its efficacy as a therapeutic option, since the Solidarity study found that it did not reduce mortality in hospitalised COVID-19 patients, it could still have a role in prophylaxis and may have also contributed to a decrease in the rate of infection among our HCW cohort

who were on active frontline duty. There was an interesting finding as seen among the residents and faculty of Medicine department from a retrospective questionnaire of those who got the infection. There was only 1 positive case among those who had taken HCQ prophylaxis. The resident inspite of taking the prophylaxis had acquired the COVID-19 infection. The rest of those who got infected had not taken the prophylaxis at all or had not followed up with the weekly dosing beyond the first single dose. We however do not draw a conclusion with our small number of cases but consider it note worthy and not refute the HCQ effect too early. Studies of its potential prophylactic role in a larger number of HCWs are required .There were no major side effects of HCQ observed in our study. It is to be noted that it is used quite frequently and with safety in Northeastern India as our region has a large number of SLE patients.

Compared to reports of infected health care workers by Stacy Hartman et al[5] with a median age of 42 years, our study cohort was younger at 35 years ranging from 23 years to 60 years. The most common symptom encountered was fever, body aches and cough similar to some of the early reports from China.[6,7] Loss of smell was also seen in 12.98 % of those infected.

One third of the infected cohort were asymptomatic. This large number of asymptomatic infection is worrisome as this concerns the HCW who have the potential of spreading it to a large number of contacts at workplace, home and/or community without being aware of himself being infected.

The clinical course of the infection was uneventful in most of our HCWs except for a case that required ICU care and oxygen therapy. There were no deaths due to COVID-19 among our study cohort.

It must be reiterated that not only HCWs but also the people at large have to understand, accept and adopt the new normal of the pandemic. Being casual and careless can lead to loss of lives. The social etiquette of avoiding crowds and gathering, maintaining physical distance, frequent hand washing/sanitisation of hands and use of face masks must be adhered to as the new normal. Another important aspect that needs emphasis is morale support and mental health to help cope with stress, isolation, depression and the stigma attached with the disease. Drawing lessons from earlier events of stress leading to suicidal tendency amongst the HCWs[8], such must be prevented.

Officials and political leaders involved in the policy making of the country must realise the much needed procurement of COVID essentials like dependable testing kits, good quality PPE, medicines, face masks and shields. They must also consider that HCWs are a valuable and irreplaceable asset, step in to support and safeguard their rights. Harassment and atrocities meted out against HCWs especially during the initial spread of infection were seen in various parts of India which led to passing of an ordinance. However a more permanent legal solution must be provided so that such demoralising action and upsurge of violence against HCWs are discouraged even in the future.

Limitations of the study: Data is from a single teaching medical college so it may not be representative of other community based health care centres. The testing for case detection was done only for those who were symptomatic or who have had known exposure so possibility of missing out asymptomatic infection is high.

## V. Conclusion

The risk of the SARS-CoV-2 infection among health care workers is high and unavoidable. Hence preventive measures with adequate supply of high quality PPE and reliable testing kits must be made available to those who are risking their lives in the call of duty. In the unfortunate event of infection despite precautionary measures, full assurance of proper wholesome (both physical and psychological) care with befitting isolation provision to contain infection at the earliest and prevent further spread to patients, household members and community. HCQ may have a prophylactic effect in COVID-19 infection as seen by low rate of infection among those who had taken the prophylaxis.

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