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Research Paper

Health care workers' deaths from COVID-19 in India: What can we learn?

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ABSTRACT

COVID–19 is the worst global pandemic of recent times. Health care workers (HCWs) are at increased risk of contracting this infection. However, many of these cases could have been prevented if adequate safety precautions had been taken by the individual himself/herself and the hospital. In this paper, we briefly look at what is known about COVID-19 infections and deaths among HCWs in India and will then provide guidance on what HCWs themselves and hospitals can do to reduce the risk of infections and deaths among HCWs.

Keywords: *COVID-19; Deaths; Health care workers; Hospitals; India; Infections*

COVID-19 or SARS-CoV-2, a virus of the family Coronaviridae, set off infections in humans in December 2019 in China and has since burst into a global pandemic engulfing 213 countries. [1] The scale and impact of this COVID-19 pandemic has been like no other in history, making it the greatest ongoing public health crisis the world has seen in recent times. Globally, to date this has infected 3,660,000 people, with loss of 257,000 lives. [1]

To curb the spread of COVID – 19 in India, the Government announced a country-wide lockdown on 24th March 2020 and this runs until the 17th of May 2020. Despite such extreme public health lock down measures, since its first case on 30th January 2020, India has had 56, 342 confirmed cases of COVID-19 and 1,886 deaths. [2] Importantly and worryingly, cases and deaths in India are on the rise. [2]

In their fight against COVID-19, health care workers (HCWs) get exposed to the virus, some get infected and some sadly die. A large number of the infections that occur among healthcare workers are from preventable factors. Being safe from the virus involves much more than wearing a mask and gown. Several administrative, academic and engineering measures are often overlooked.

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In this paper, we will briefly look at what is known about COVID-19 infections and deaths among HCWs in India and then suggest guidance on what they themselves and hospitals can do to reduce the risk of infections and deaths. Although the cause and circumstance of death of the HCW will not be always evident from a media report, it is noteworthy that is no better alternative in the present situation. Here, we analyse the limited information available from the Indian print media and draw conclusions after correlating with previous evidence.

Are HCWs at increased risk of contracting COVID-19?

Healthcare workers get exposed to multiple patients over a period of time, compared to the general public who might come into contact with only one person as the source. Previous studies based on the 1918 Influenza pandemic have suggested that repeated exposure to infectious patients, possibly through greater infective dose of the virus, resulted in higher viral burden with "cytokine storm" and death. [3] Evidence from SARS outbreak of 2003 also supports this hypothesis. [4] In Ebola: healthcare workers were 100 times more likely to get infected than general population. [5]. An infected HCW can spread the virus to patients and colleagues, and this can result in closure of hospitals. Doctors and nurses have already been infected in India, and hospitals have closed down. [6]

Limited testing facilities, congested working conditions and shortage of personal protective equipment make the Indian HCW particularly vulnerable. If this continues, it could cripple the already strained healthcare system of the country. Safety of the HCW and the hospital system should therefore be a matter of top priority for the nation.

COVID-deaths of HCWs in India

Given here are some of the deaths of doctors and nurses in India, reported in the print media over the past few weeks. There have also been several cases of HCWs being infected with COVID-19 and then passing it on to their contacts in and outside the hospital. Note that, as in the general population, many cases among HCWs go undetected and un-reported.

1. On the 7th April 2020 a private general practitioner died in Indore. He was 60. [7]
2. On 11th April, a doctor from Kolkatta passed away due to COVID – related complications and his wife and son were also tested positive. [8]
3. On the 19th and 29th of April two nurses died at MGM Medical College Indore, MP. One of these nurses had pre-existing heart condition. One of them was 55 and was a supervisor at the hospital's office. Several other nurses were also infected. [9, 10]
4. On 23rd April, a doctor in Mumbai died of COVID-19. He had no comorbidity and died of multiple organ failure. [11]
5. On 26th and 27th April, two doctors passed away in Kolkatta, One was an orthopaedic surgeon. [12]
6. On May 1st, a doctor caring for COVID-19 patients committed suicide, although it is suspected that she suffered from depression. [13]
7. There have also been large outbreaks of COVID-19 among nurses in cities such as Mumbai and Delhi. [14, 15]
8. On 22nd April 2020 it was estimated that around 96 doctors and 156 nurses had tested positive for COVID-19 across India. Also, 826 HCWs had to be quarantined and 20 hospitals had to be partially or fully closed. [16]
9. On 8th of May 2020, it was reported that COVID-19 had so far infected around 548 doctors, nurses and paramedics alone (excluding other hospital workers) across India in Centre-run and State government-run hospitals alone. [17]
10. There are no published data on the deaths of healthcare workers in India. Although mainstream media have published a few reports, the stigma of the disease and

relative scarcity of testing will likely result in under-reporting and underestimation of deaths.

Lessons learnt: What precautions can HCWs take?

Be on guard and do not underestimate: Being caught unawares is by far the biggest mistake that has happened to healthcare workers in India and all over the world. If late in realising that their patient has COVID-19, by then several others have become infected. The extent of local spread has been consistently underestimated, resulting in a vicious cycle of healthcare workers getting infected and passing on to colleagues and patients.

Do not go to work if taking care of sick relatives: Those healthcare workers taking care of sick relatives at home must be careful not to bring the virus to the workplace. If a family member is sick with fever, coming to work could be risky to colleagues.

Self-quarantine (self-isolation) and reverse quarantine are important aspects of prevention. Self quarantine refers to keeping a potential virus carrier from infecting the healthy community around. Reverse quarantine refers to protecting the vulnerable from others who might give them the disease.

Elderly doctors should take extra care: Covid-19 related mortality increases over age 65, and also among those with associated conditions such as diseases of the heart, lung, kidney and liver, cancer, obesity and diabetes. Healthcare workers who are over 65 or otherwise vulnerable may therefore be assigned to nonclinical areas of work, where the risk of contracting the virus is lower. Many doctors and nurses have died after coming back from retirement to serve on the frontline.

Keep the volume down: Doctors who see extraordinarily large volume of patients are exposed to greater viral loads. Introducing engineering controls to promote social distancing, wearing of masks by all patients and bystanders, and improving natural ventilation in busy outpatient clinics are related topics. Infection control precautions are not easy to implement in such settings.

Lying patients. Patients are known to conceal their high-risk travel or contact history, and this has been implicated in the deaths of doctors. Hence, there is no substitute to taking standard precautions with all patients, however impractical it might seem.

Stress reduction: Recognising work-related stress and seeking help early is important. Longer working hours and fatigue contribute to increased risk of infection. Violent deaths related to COVID-19 have also been reported.

All healthcare workers are vulnerable. The risk applies not only to nurses and doctors, but also to pharmacists, technicians, physiotherapists, receptionists, paramedics, attenders, ambulance drivers and other staff. All healthcare workers therefore require training and protection according to their level of exposure to the virus.

Lessons learnt: What precautions can hospitals take?

1. Implementation of infection control precautions even after a delayed diagnosis has effectively prevented further spread of infection in such cases. This shows that following standard precautions at all times is an effective preventive tool.

2. Increased testing facilities, denial and underreporting of the pandemic contribute to ignorance among healthcare workers. Unfortunately, without widespread testing, it is impossible to contain the spread of the virus in a region.
3. Periodic surveillance of healthcare workers by testing is necessary to detect infected people early and to isolate them. As infection does not always result in symptoms, waiting for fever or cough to appear before testing is the wrong strategy in the healthcare worker setting. It must be noted that surveillance testing is different from diagnostic testing. Surveillance testing of healthcare workers during a pandemic is done to protect the hospital and the community—by identifying and isolating infected individuals early.
4. Adequate provision of Personal Protective Equipment (PPE): Shortage of PPE has been blamed for high rates of deaths among HCWs in the Western world. This requires customised solutions according to each nation's circumstance and policy. Inappropriate and excessive use of PPE could also lead to wastage of resources, eventually causing shortage. Hence, appropriate and judicious use of PPE must be promoted, according to scientific guidelines rather than by perceived risk or excessive fear of infection.
5. Housekeeping, laundry and biomedical waste disposal departments play a major role in disinfection and prevention. They must be involved in infection control meetings and guidelines for disinfection must be formulated.
6. Efficient triage of patients before they reach the hospital reception is an important step in reducing the spread of virus at the facility. Patients who are visiting can be counselled in advance of hand washing, sanitising, mask use and be provided a route map. The flow of patients and staff through the hospital must be planned to minimise spread of infection. This can be achieved through administrative and engineering controls. Also called TCB or Traffic Control Bundling, such measures have effectively prevented healthcare worker infections at hospitals.

CONCLUSION

Despite the best and the most stringent public health prevention and treatment measures, COVID-19 still results in deaths among HCWs as they are at particularly high risk of contracting the infection and of fatal consequences. At least some of these are preventable. As HCWs are an important tool in the healthcare system's armamentarium in its fight against COVID-19, they are a precious resource deserving more attention and specialist prevention measures. To do this, HCWs themselves and the wider healthcare system (hospitals) ought to take joint responsibility in taking precautions. We hope our paper helps this important cause.

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Conflict of Interest
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