

Assessment of Mask-Wearing and Hand Hygiene Practices among Healthcare Workers: A Study in a Tertiary Care Teaching Hospital during the COVID-19 Pandemic

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Abstract: ***Introduction:** COVID-19 was declared a pandemic on 11th March 2020[1]. Health Care Workers (HCWs) are at high risk of infection at work place [2]. Infection control measures including face mask and hand hygiene can significantly reduce the infection among HCWs [3]. **Methodology:** All the health care workers in a tertiary care teaching hospital were interviewed regarding the mask wearing and hand hygiene practices. **Results:** A total of 310 HCWs were included where in majority of them were Nurses (40%) followed by Doctors (36%). Majority (94.1%) of them used mask out of which 70% of them wore N95 mask and as many as 8% of them used cloth mask. The reuse rate of mask was 77% technicians followed by staff nurse (61%). Majority of the staff nurses (94%) of them adjusted their masks at work followed by doctors (88%). Majority of the HCWs (91%) practiced hand hygiene and around 42% of them felt that their hand hygiene practice was compromised during emergencies.*

Keywords: Infection control Practice, Health Care Personnel, COVID 19

1. Introduction

The coronavirus outbreak came to light on December 31, 2019 when China informed the World Health Organization of a cluster of cases of pneumonia of an unknown cause in Wuhan City in Hubei Province. Subsequently the disease spread to more Provinces in China, and to the rest of the world [4]. The WHO declared it as pandemic on 11th March 2020[1]. The pandemic spread across the world and has hit India too causing severe blow. The disease spreads mainly by close contact and droplet infection through coughing, sneezing and talking [5, 6].

The fact that all the levels of HCWs are at risk of infection in the epidemic chain has been a critical issue because HCWs help in controlling the outbreak. As per WHO estimates, before COVID-19 vaccination, 14% of COVID-19 cases seen were among HCWs [2]. There have been more than 700 deaths among health care personnel alone in the year 2020 [7]. Therefore, all possible actions had to be taken to control the spread of the infection to HCWs, first by identifying the risk factors for infection and then by taking appropriate measures to reduce these risks. Countries worldwide have used various infection control measures such as wearing mask, social distancing, hand washing, shutting public transportation and public places, and finally testing and tracing affected communities [3]. However there continue to be many cases among HCWs which could be because of paucity of availability of PPEs or the attitude of the HCWs. This study was designed to assess the infection control practices for COVID-19 among different cadres of

HCWs in a tertiary care hospital during the end of second wave of the pandemic in India.

2. Methodology

The study was conducted at a tertiary care teaching hospital in south Bangalore. All the health care personnel including doctors, nurses, technicians and other paramedical staff available during the study period were included in the study. A pretested validated proforma was used to collect data regarding baseline demographic profile, qualification, years of experience, place of work, practice and training regarding use of face mask, and hand hygiene. After obtaining IEC clearance, the data was collected by a personal interview method at the place of work. The data obtained was tabulated and analysed using descriptive statistics to present the demographic details of the participants and frequencies of personnel following safety practices.

3. Results and Discussion

A total of 310 HCWs were included in the study with a mean age of 31.12 ± 8.93 years and majority of them were Nurses (40%) followed by Doctors (36%). Males contributed 41% of the total study population with 59% being females. The highest qualification was MD/MS (22%) and 15% of the study population were from nonmedical background.

Table 1: Demographic profile of study subjects

| | Male | Female | Total |
|----------------------|------------|------------|-------------|
| Mean age | -- | -- | 31.12± 8.93 |
| Cadre | | | |
| Doctors | 53 | 54 | 107 (36%) |
| Staff nurse | 31 | 93 | 124 (40%) |
| Technicians | 13 | 13 | 26 (8%) |
| Pharmacists | 3 | 2 | 5 (1%) |
| Administrative staff | 26 | 22 | 48 (15%) |
| Total | 126 | 184 | 310 |

Majority (94.1%) of them said that they used mask all the time in the hospital out of which 70% of them wore N95 mask and as many as 8% of them used cloth mask. Majority, 66.1% of them said that they underwent training regarding proper usage of PPE.

Table 2: Use of mask by study subjects

| Particulars | N (310) | Percentage |
|---------------------|---------|------------|
| Wearing Mask | | |
| Yes | 291 | 94 |
| No | 19 | 6 |
| Type of mask | | |
| Cloth | 21 | 7 |
| Triple layer | 61 | 20 |
| N95 | 204 | 65 |
| Others | 5 | 2 |
| Nothing | 19 | 6 |

Majority of the doctors (74%) and Nurses (83%) wore N95 mask in the hospital during the pandemic. However it was noticed that the administrative staff attending to the cases at the front office did not follow the protocol and 23% of them did not wear mask and 17% of them wore cloth mask.

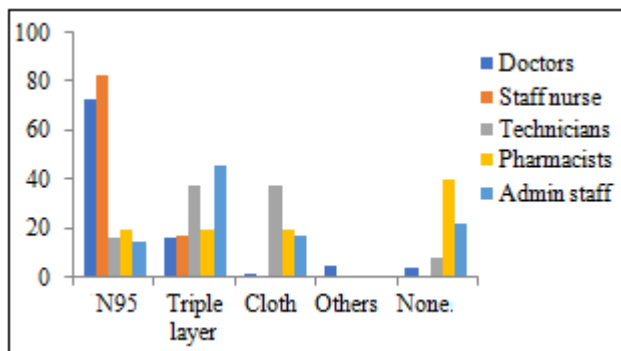


Figure 1: Use of mask by different levels of HCWs

The reuse rate of mask even after 6 days was seen more among non-doctor population with highest being among technicians (77%) followed by staff nurse (61%). Majority of the staff nurses (94%) of them adjusted their masks at work followed by doctors (88%). Washing hands following touching mask was noticed among most of them with only 10% of doctors and 11% of nurses following the practice.

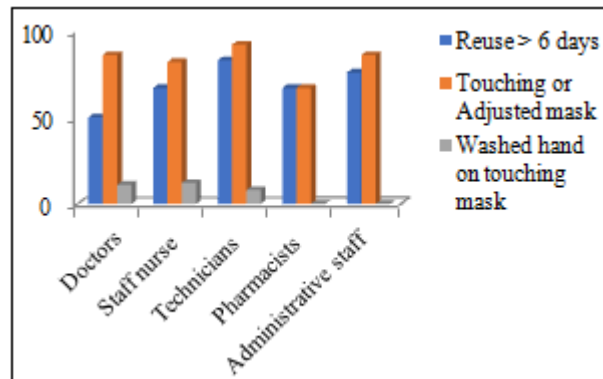


Figure 2: Behaviour related to mask use among HCWs

Majority of the HCWs (91%) practiced hand hygiene at the work place and around 74% of them blamed themselves if they developed infections due to poor hand hygiene. However around 42% of them felt that their hand hygiene practice was compromised during emergencies.

4. Discussion

In the times when no definitive treatment is available, Personal protective measures go a long way in prevention of viral infections [2, 8]. The present study has revealed the Covid-19 prevention practices among the health care staff in a tertiary care hospital. Though we noticed that majority of the staff did practice prevention in terms of wearing appropriate mask, it was noticed that the support staff like the administrative staff did not practice prevention adequately. World Health Organization has released Interim guidance on Infection prevention and control during health care when coronavirus disease (COVID-19) is suspected or confirmed [9]. However many institutions and health care settings have failed in providing adequate training and monitoring of such practices. In the present study we noticed majority of them were trained and were practicing adequately.

There is most consistent evidence of association between mask wearing and infection control and this is greater with N95 mask as compared to triple layer mask[10]. The mask wearing behaviour among our study population was compared with other studies. The current study showed good adherence to mask usage at 94% as compared to 88.49% among Indians in a study by AyushAgarwal[11] and 78.8% in a study done by Sarfraz S, RazaMR et al in Pakistan.[12]

In a study done by Shibaji Gupta et al, 68.5% touched the outer surface of the mask while needed and 61% of them washed hand after removing it as compared to 82% and 9% respectively in our study[13]. This frequent touching of the mask could be due to the irritation, discomfort and pain on nose due to the mask as observed by P. K. Purushothaman et al in a study on effects of prolonged use of face mask [14]. A significant proportion (17%) of the HCWs used cloth mask as compared to 4.8% in a Pakistan study [12] which has been proven to have very limited efficacy in preventing viral transmission in a systematic review done by Suresh K. Sharma et al[15]. Though there was a guideline released by Ministry of Health and Family Welfare

regarding use of triple layer mask by front desk[11] in our study we noticed that only 46% of them followed the same.

Hand washing has been significantly associated with reduced risk of transmission of SARS[10, 16]. The current study showed that 91% of the HCWs practiced hand hygiene as compared to 81.1% in New Delhistudy[17]and 75% in a study by Senhu Wang[18].A meta-analysis in pre-Covid era has shown 52% compliance in hand hygiene[19]. Being busy is considered as one of the hindrances for hand hygiene practice[20] which was seen in our study too where around 42% of them said that hand hygiene was compromised during emergencies and other priorities.

5. Conclusion

Infection control practices during Covid-19 pandemic among HCWs in the current study in a tertiary care teaching hospital are fairly good. Poor compliance with regard to appropriate mask wearing was noted among administrative staff and poor hand hygiene during emergencies among doctors and nurses. Repeated trainings regarding appropriate use of PPEs and hand hygiene will go a long way in prevention of infection among HCWs.

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