

Knowledge, Attitude and Practice of Personal Safety Measures Adopted by Medical Practitioners During the COVID 19 Pandemic

Hemapriya.L Kukreja (✉ drpriya_911@hotmail.com)

JSS Medical College & Hospital, JSSAHER, Mysore

Maureen Prativa Tigga

JSS Medical College & Hospital, JSSAHER, Mysore

Neha Wali

JSS Medical College & Hospital, JSSAHER, Mysore

Prathap.T

JSS Medical College & Hospital, JSSAHER, Mysore

Anil Kumar M R

JSS Medical College & Hospital, JSSAHER, Mysore

Shreya Chandran

JSS Medical College & Hospital, JSSAHER, Mysore

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Abstract

Introduction: A novel coronavirus (now termed as SARS-CoV 2) was detected as causative agent of severe pneumonia in Wuhan, Hubei Province, China in December 2019. Declared by the WHO as a global pandemic in March 2020, it has created profound changes in global economy and healthcare systems. COVID-19 is transmitted through close contact and droplets with healthcare professionals at significant risk of acquiring the infection, thus requiring to protect themselves. Various measures help in protecting the professionals from contracting the infection. These include hand hygiene, N95 masks, goggles, gloves, gowns, face shields, coveralls and frequent sanitization. Healthcare professionals need to be educated in these various modalities with proper protocols and policies enacted by the health institutions. This study evaluates the knowledge, attitude and practice of various personal safety measures used by the healthcare professionals.

Materials and Methods: After institution ethical committee approval, we conducted an online survey with a preformatted questionnaire consisting of multiple choice questions which assessed the knowledge, attitude and practices adopted by the various healthcare professionals. The survey was done between 1st - 30th of June 2020 and a total of 536 responses were analyzed.

Results: 58.4% of the participants were females, 66% of the healthcare workers worked at a private hospital/ private medical college with 82.1% being located in urban areas. Of the 536 respondents, 90.1% practiced bathing immediately after returning home and 86.8% sanitized their accessories. 86.9% of the professionals used frequent sanitization with use of mask and gloves whereas only 12.3% used full personal protective equipment. 58% of females had used Hydroxychloroquine as prophylaxis whereas only 41% of males used it (statistically significant, $p = 0.005$). Healthcare workers in younger age group (23-40 years) were more likely to maintain distance with family members and government doctors were significantly more likely to do so ($p < 0.001$) as compared to private practitioners.

Conclusion: With the medical professionals being at high risk for contracting the infection, the need to provide the healthcare professionals with adequate personal protective equipment is of utmost importance. There is also a need to maintain the well-being of the healthcare professionals as they are the weakest link in the chain.

Introduction

In December 2019 , a set of patients in the city of Wuhan, Hubei Province, China presented with severe pneumonia of unknown origin. Epidemiologically these were linked to a seafood market in the city. On January 7, 2020 the causative organism was identified to be a novel coronavirus -now termed SARS-CoV-2¹. In March 2020 the World Health Organization (WHO) declared it a global pandemic.²

The coronavirus (COVID-19) outbreak has fundamentally changed the world and also changing the reality of healthcare workers. This pandemic is creating profound changes in global economy and healthcare systems.³

COVID-19 virus is transmitted between people through close contact and droplets.⁴ The people most at risk of infection are those who are in close contact with or who care for COVID-19 patients. Healthcare workers are at significant risk of acquiring the infection. They are required to protect themselves and prevent transmission in the healthcare setting.

Various measures should be inculcated in day to day life by health care professionals to protect themselves including social distancing, hand hygiene, N95 masks, goggles, gloves, gowns, face shields, cover all's, precautions for aerosol generating procedures and frequent sanitization.

Health care professionals should be educated on when to use which personal protective equipment (PPE), how to put on & take off, how to change them by themselves to prevent contamination and how to properly disinfect and discard this equipment. Health care institutions should have procedures and policies that describe the correct order of donning and doffing PPE in a safe manner.⁵

This study evaluates the knowledge, attitude and practice of the various personal safety measures used by medical practitioners to protect themselves from exposure to this pandemic.

Materials And Methods

Our study is an online survey using a preformatted questionnaire. The institutional ethical committee approval was obtained. We collected data using a questionnaire sent through e-mail or Google form and recorded all responses. The survey consisted of multiple choice questions where we assessed the knowledge, attitude and practices adopted by medical practitioners for their personal safety during the COVID 19 pandemic. All medical practitioners who agreed to participate in the study from the first to the thirtieth of June 2020 were enrolled in the study. We obtained 576 responses. The questionnaire was given as a pilot on 10 subjects to make sure that it was easy to understand and not time consuming. Based on the feedback obtained, it required no changes. The average time to complete the survey during the pilot was five minutes. The piloted subjects and the subjects who did not complete the questionnaire were excluded and the final number included for analysis after exclusion was 536.

Statistical Analysis: The data was compiled and analyzed using MS Excel and SPSS software version 25 at 5% level of significance. The tools of statistics such as – Descriptive statistics, chi-square test, some parametric/non-parametric tests were used for data analysis.

Results

The demographic characteristics of our respondents are tabulated below.

[Please see the supplementary files section to view Table 1.]

Fifty two percent of our respondents reported to have had encountered suspected COVID 19 patients. However, only 12.9% were quarantined following such exposure. Five percent

of the practitioners were forced to move out of their homes following suspected exposure, in order to minimize risk to their family members.

The personal safety measures taken by the various practitioners are tabulated below.

TABLE 2: PRECAUTIONARY MEASURES TAKEN BY THE MEDICAL PROFESSIONALS:

| Precautionary measure taken before consulting any patient | Frequency | Percent |
|---|-----------|---------|
| Sanitizing and full PPE | 66 | 12.3 |
| Sanitizing, mask and glove | 466 | 86.9 |
| Placing a mask / sanitizer outside the door for use by hospital staff and visitor | 408 | 76.1 |
| Taken Hydroxychloroquine prophylaxis | 199 | 37.1 |
| Taken any online consultation / class because of COVID-19 | 164 | 30.6 |
| Bathe immediately reaching home | 483 | 90.1 |
| Sanitize the accessories immediately reaching home | 465 | 86.8 |
| Maintain distance with family members when at home | 251 | 46.8 |
| Advised / administered Hydroxychloroquine prophylaxis to family | 128 | 23.9 |

Out of the 536 subjects, 86.9% were using sanitization, mask and glove, while only 12.3% were using full PPE as a precautionary measure during their working hours. Almost half the subjects (50.4%) reported interference of PPE in the quality of work sometimes. Twenty seven percent of the subjects felt the interference of PPE with work frequently.

There was no significant difference between male and female practitioners regarding the various personal safety measures. Similarly, on comparing the various age groups, designation of practitioners, place of work and area of work; we found no significant difference in the use of personal safety measures.

However, on comparing the different specialties, we found that dentists were significantly more inclined to use full PPE in their practice as compared to others (P value <0.0001). Female practitioners were more likely to place sanitizers, masks at the entrance of their consulting rooms, as a measure for their own safety, although not statistically significant. Regarding the use of Hydroxychloroquine prophylaxis, 58% of females had used it as compared to 41% of males, which is statistically significant (P=0.005). Practitioners in the age group of 23-30 and 30-40 years were significantly more likely to have taken hydroxychloroquine than older practitioners. However, those in older age group had administered prophylaxis more often to their family members, as compared to younger doctors. Similarly, physicians and general surgeons reported to have taken hydroxychloroquine along with their families significantly more than other specialists. Those in the younger age group, between 23 - 40 years were more likely to maintain distance with their family members, especially physicians and pediatricians. Government doctors were significantly more likely to do so (p<0.001) as compared to private practitioners.

Discussion

The coronavirus disease 2019 (COVID19) has become an international health crisis, and the global health care system was ill equipped to handle a crisis of such magnitude. The safety of healthcare workers has become the top priority, in order to prevent collapse of healthcare systems and also to prevent transmission of infection from health workers to the community. Medical practitioners are at the highest risk of infection because of frequent close contact with patients who are known or suspected to be infected. A similar situation was seen during the previous SARS-CoV-1 epidemic, where 20% of the cases comprised of health care workers.^{6,7}

Worldwide, over one million people were confirmed to be infected with SARS-CoV-2 by April 2020. Assuming that healthcare workers were infected at the same rate as in the SARS-CoV-1 epidemic, it would foretell the collapse of health care system, especially in developing countries.

There has always been an acceptance that working in a healthcare setting carries a level of personal risk, however, it would seem unreasonable for a healthcare worker to carry out a healthcare activity if there was a high risk of death.⁸ Hence the need for personal protection of frontline warriors is of utmost importance to provide unconditional healthcare services.

Earlier in the pandemic, infection of healthcare workers was as high as 29%, and this dramatically decreased thereafter due to PPE measures put in place to appropriately protect healthcare workers.⁹ Current personal protective equipment (PPE) and infection control guidelines from the World Health Organization (WHO) are based on the assumption that the primary mechanism of transmission is direct and indirect droplet spread.¹⁰

In the current crisis, health-care workers not only have to work harder and longer hours, they often do so in a context where the knowledge and understanding of the novel pathogen is still suboptimal. More than 50% of the subjects in the current study reported interference of PPE in their quality of work. The use of PPE also interferes with vision, difficulty in operating or carrying out procedures. It not only hampers movement and interferes with skills, also, the regular donning and doffing of full PPE add to physical fatigue and psychological stress.¹¹

Aerosol generating procedures may lead to an increase in transmission rates among practitioners. However, the evidence is limited. Infections of health workers following the performance of aerosol generating procedures have been reported, but the exact timing and cause of transmission is unknown.¹² The risk is observed not only during the procedure, but during all periods of contact with the infected patient. Therefore, precautions, and proper PPE usage should be followed not only during procedural periods alone but increase this protection to all times of risk.¹³

While awaiting a vaccine, hygiene measures, social distancing and personal protective equipment are the only primary prophylaxis measures against SARS-CoV-2, but they have not been sufficient to protect our healthcare professionals. Some evidence of the in vitro efficacy of hydroxychloroquine against this virus is known, along with some clinical data that would support the study of this drug in the

chemoprophylaxis of infection. However, there are still no data from controlled clinical trials in this regard.

In the aftermath of the current pandemic, the exact mode of transmission may still remain controversial as was the case with SARS-CoV-1 and influenza. Urgent further research is required to investigate SARS-CoV-2 transmission, risk factors and strategies to assure the safety of healthcare workers. In the interim, healthcare workers may choose to take a precautionary approach until robust evidence is available.

Conclusion

The medical work force is at high risk of exposure as well as increased viral load and although there is a need to balance limited supplies with staff and patient safety, this should not leave the healthcare professionals treating patients with inadequate PPE.

Along with extrinsic organizational, infrastructural and procedural conditions, the intrinsic state and well-being of the health-care worker must also be addressed in order for him or her not to be the weakest link.

Personal protection of frontline workers to provide unconditional healthcare services is of utmost importance in the current era as loss of even 1 doctor equals loss of services of almost 1000 patients.

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Competing Interests

The authors declare no competing interests.

Figures

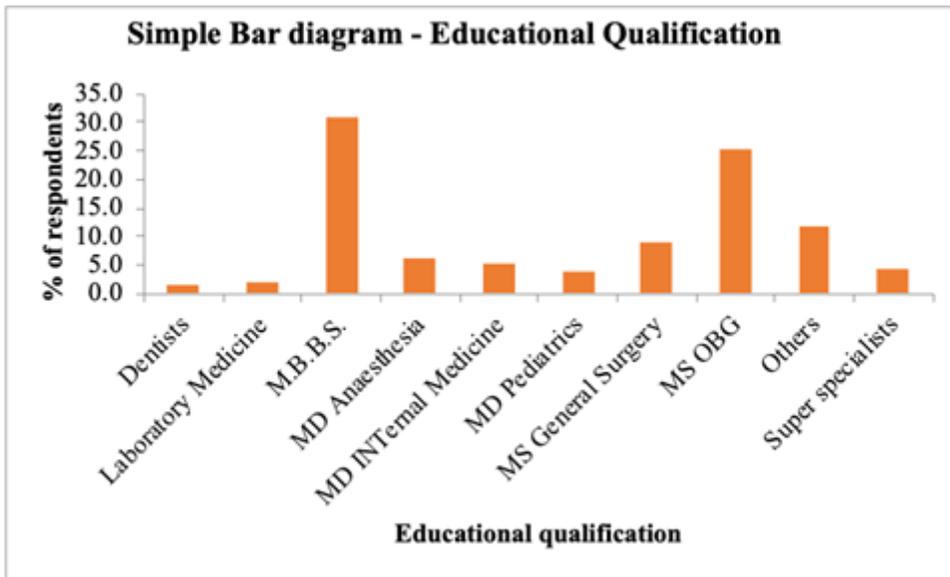


Figure 1

Classification of Respondents based on their Educational Qualification

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table1.docx](#)