KNOWLEDGE AND ATTITUDES TOWARDS CORONAVIRUS AND COVID-19 AMONG MEDICAL GRADUATES AND PROFESSIONALS: AN ONLINE CROSS-SECTIONAL SURVEY IN INDIA

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ABSTRACT: Background: Globally, the coronavirus disease-2019 (COVID-19) is today the biggest public health problem and has already affected over 2.8 billion people. This online study was carried out from April 2nd to May 1st 2020 was carried out to determine the knowledge, attitude and practices (KAP) of medical professionals towards COVID-19 during the early days of lockdown in India. Methods: An online cross sectional, descriptive study was undertaken through WhatsApp Messenger among the medical graduates and professionals. The KAP toward COVID-19 was assessed by using a pre-validated questionnaire. The results were stratified based on academic/professional status as medical graduate, post graduate and faculty/professional. The data was expressed as frequency and percentage analyzed using the chi square/Fisher's exact test using IBM version 22. Ap value of <0.05 was considered significant. Results: A total of 388 responses from the medical professionals were received. Most volunteers were females 54.9%, single/unmarried 79.6% and younger than 30 years of age 54.1%. In the study, 57.2% were MBBS graduates, 18.6% were pursuing post-graduation and 24.2% were either practicing private doctors or teaching faculty in medical college hospitals. The results indicated that 99.5% were aware of the prevailing Covid-19 situation. Regarding knowledge on biology of the virus and its pathogenesis, majority of the volunteers answered the questions correctly. Majority of the professionals opined that they had a risk of getting infected. Most volunteers also agreed that quarantine, hand washing and wearing face mask were to be adopted. Conclusions: The results of this study conducted during the early stage of the lockdown indicate that the medical professionals who had filled the questionnaire had very good knowledge on coronavirus and Covid-19.

KEYWORD: Knowledge, attitude, Practice, Coronavirus disease 2019, Medical professionals

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INTRODUCTION:

Since the emergence of the coronavirus Disease 2019 (COVID-19) caused by the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-2) the world has been going through a heightened sense of uncertainty and apprehension[1-4]. This ailment first reported on December 31st, 2019 as a cluster of pneumonia characterized by fever, cough and fatigue associated with the people at the Huanan Seafood Wholesale Market in Wuhan, Hubei province of China. Within thirty days, it rapidly spread to at-least 21 countries including India and United States of America[1-4]. On March 11th, 2020, the World Health Organization (WHO) announced that COVID-19 should be categorized as a global pandemic[5]. As on going to print, there are more than 2.8 billion confirmed cases worldwide, with USA having largest positive (6.58 million) and India is in second place with 4.65 million cases[6-7].

During this pandemic, health care workers are the front-liners who are responsible for delivering good quality management and treatment. Health-care professionals(HCPs) risk their lives at work; however they should also protect their health while they are treating patients. The Healthcare Infection Control Practices Advisory Committee (HICPAC) by the Centers of Disease Control (CDC) recommends the use of standard and droplet route isolation with proper hand hygiene practices to prevent COVID-19 transmission. Medical graduates and junior residents usually do not have long term clinical experiences and therefore they may potentially be at a greater risk in comparison to other health care workers if infection control practices are not followed adequately. Hence, this study was undertaken to evaluate the knowledge and attitudes concerning the transmission routes of COVID-19 pandemic protection measures adopted by health professionals from Mangalore, Karnataka, India.

METHODOLOGY:

Study design:

This cross-sectional study was conducted from April 2nd to May 2nd 2020, during the lockdown in India after approval from the Institutional Ethics Committee (MIEC/V6.1/032). Since it was not feasible to do a community-based sampling survey during this period, we decided to collect using online self-administered questionnaire distributed to medical professionals of Mangalore and nearby areas, India. The inclusion criteria included medical professionals (medical graduates, postgraduate residents and faculty/practicing doctors) whom the investigators knew, while the exclusion criteria included other healthcare professionals, general public, undergraduate medical students). The response of the questionnaire was collected following the consent of the volunteers which was included in the beginning.

Questionnaire

The online questionnaire was composed of four different parts. The first part included demographic data of the participants (sex, age, education level, and work experience). The second was knowledge part, which included questions on virology, transmission and pathogenesis, and safety practices to be followed while treating COVID-19 patients. The third part included the belief and attitude towards risk of getting infected and transmitting COVID-19 among the volunteers. The final part was on opinion about various methods of prevention and treatment of COVID-19.

The questionnaire was structured in English, and the content was validated by microbiology and public health experts. Subsequently, the questionnaire was formatted into Google forms, internet-based software commonly used for data collection via personalized survey. This was preferred for its convenience, efficiency and high popularity especially in the current scenario where all
educational institutions of the country were closed by the government as a part of the lockdown. After formatting the questionnaire into Google forms, a link was generated for the same and randomly distributed online among medical professionals.

**Statistical analysis:**

Data from the online survey was entered into Microsoft Excel and then imported into Statistical Package for Social Sciences (SPSS) version 25. Output measures were portrayed as simple frequency (n) and percentage (%), level of outcome measures expressed as mean and standard deviation (SD). The data was stratified based on academic/professional qualifications of the volunteers as MBBS graduates, post graduates and practicing doctors or faculty staff to detect the significant difference between the different mean level of Knowledge, Attitude, Practice and satisfaction parameters, and subjected to chi square/Fisher’s exact test. A p value of 0.05 or less was considered statistically significant.

**RESULTS:**

A total of 388 responses were received from the medical professionals. Among them, the most volunteers were females 54.9% (213/388), single/unmarried 79.6% (309/388) and younger than 30 years of age [54.1% (210/388)]. In the study, 57.2% (222/388) were MBBS graduates, while 18.6% (72/388) were pursuing post-graduation. The remaining 24.2% (94/388) were either practicing private doctors or teaching faculty in medical college hospitals. Most of the volunteers [37.6% (146/388)] had less than two years of experience in the profession. Overwhelming 99.5% (384/388) were aware of the COVID-19 situation prevailing in the world and in India and almost 54% (207/388) of them expressed that they had complete information on the clinical and treatment aspect of COVID-19 (Table 1). Majority of the participants 70.6% (274/388) expressed that the corona pandemic will prevail for less than a year. The most important aspect was that only a small fraction of the medical doctors were involved in the 7.2% (28/388) in treating/diagnosis/caring of COVID-19 patients (Table 1).

**Table 1: The demographic details of the volunteers who participated in the study**

| Question                                                                 | Choice                     | Frequency (%) |
|--------------------------------------------------------------------------|----------------------------|---------------|
| Gender                                                                   | Female                     | 213 (54.9)    |
|                                                                          | Male                       | 175 (45.1)    |
|                                                                          | Total                      | 388 (100)     |
| Marital status                                                           | Single/unmarried           | 309 (79.6)    |
|                                                                          | Married                    | 79 (20.4)     |
|                                                                          | Total                      | 388 (100)     |
| Age Code                                                                 | 26 to 30 years             | 210 (54.1)    |
|                                                                          | 31 to 40 years             | 146 (37.6)    |
|                                                                          | Above 40 years             | 32 (8.25)     |
|                                                                          | Total                      | 388 (100)     |
| UG/PG/Staff                                                              | MBBS graduates             | 222 (57.2)    |
|                                                                          | Post graduate              | 72 (18.6)     |
|                                                                          | Practicing doctors + Faculty staff | 94 (24.2) |
|                                                                          | Total                      | 388 (100)     |
| Number of years in Medical profession                                   | Less than 2 years          | 146 (37.6)    |
|                                                                          | 2 – 5 years                | 126 (32.5)    |
|                                                                          | 6-10 years                 | 67 (17.3)     |
|                                                                          | 11 – 20 years              | 38 (9.8)      |
|                                                                          | More than 20 years         | 11 (2.8)      |
|                                                                          | Total                      | 388 (100)     |
| Are you aware of the COVID-19 situation in the world and in India?        | Yes                        | 384 (99.5)    |
|                                                                          | No                         | 2 (0.5)       |
|                                                                          | Total                      | 386 (100)     |
| Currently do you feel that you have the complete information on clinical and treatment aspects of COVID-19? | Yes | 207 (53.6) |
|                                                                          | No                         | 179 (46.4)    |
|                                                                          | Total                      | 386 (100)     |
Concerning knowledge on biology of the virus and its pathogenesis, it was observed that for majority of the questions (4 out of 5) the volunteers answered the questions correctly by all groups of volunteers. A difference was seen only with the question on full form of COVID-19, where only 79.1% (307/388) volunteers answered the correct answer of “coronavirus Disease 2019”. Analysis showed that 78.4% (174/222) of the MBBS graduates, 90.3% (65/72) of the postgraduates and 72.3% (68/94) of the professionals answered it correct with p value of 0.017 (Table 2).

Table 2: Knowledge of Coronavirus and COVID-19 among the volunteers who participated in the study

| Knowledge on biology of the virus and its pathogenesis | CoV-2 attaches itself is Angiotensin | Enzyme 2(ACE2) receptor |
|--------------------------------------------------------|-------------------------------------|------------------------|
|                                                       | Correct answer: Converting Enzyme 2(ACE2) receptor | Intrinsinc factor receptor |
|                                                       | Correct answer: Converting Enzyme 2(ACE2) receptor | Acetyl choline (ACh) receptor |
|                                                       | Correct answer: Converting Enzyme 2(ACE2) receptor | Metallo-beta-lactamase receptor |
|                                                       | Correct answer: Converting Enzyme 2(ACE2) receptor | Total |
|                                                       | Correct answer: Converting Enzyme 2(ACE2) receptor | P = 0.73 |

| Question                                                                 | Answer choice | All (388) | Graduates (222) | PG (72) | Staff (94) |
|-------------------------------------------------------------------------|---------------|-----------|-----------------|---------|------------|
| Which of the following is not the subtype of Coronavirus?                | Alpha         | 5(1.3)    | 3(1.4)          | 0(0)    | 2(2.1)     |
| Correct answer: Beta                                                    | Beta          | 14(3.6)   | 9(4.1)          | 1(1.4)  | 4(4.3)     |
| Correct answer: Gamma                                                   | Gamma         | 45(11.6)  | 22(9.9)         | 10(13.9)| 13(13.8)   |
| Correct answer: Theta                                                   | Theta         | 324(83.5)| 188(84.7)       | 61(84.7)| 75(79.8)   |
| Total                                                                   |               | 388(100)  | P = 0.66        |         |            |
| Which among the following is not a subtype of Coronavirus?              | SARS-CoV      | 11(2.8)   | 7(3.2)          | 3(4.2)  | 1(1.1)     |
| Correct answer: SARS-CoV-2                                              | SARS-CoV-2    | 4(1)      | 0(0)            | 2(2.8)  | 2(2.1)     |
| Correct answer: HERS-CoV                                                | HERS-CoV      | 336(86.6)| 195(87.8)       | 62(86.1)| 79(84)     |
| Correct answer: MERS-CoV                                                | MERS-CoV      | 37(9.5)   | 20(9)           | 5(6.9)  | 12(12.8)   |
| Total                                                                   |               | 388(100)  | P = 0.185       |         |            |
| SARS-CoV is a Correct answer: Single stranded DNA virus                |               |           |                 |         |            |
|                                                                 | SARS-CoV      | 27(7)     | 16(7.2)         | 6(8.3)  | 5(5.3)     |
|                                                                 | SARS-CoV-2    | 61(15.7)  | 30(13.5)        | 11(15.3)| 20(21.3)   |
|                                                                 | HERS-CoV      | 300(77.3)| 176(79.3)       | 55(76.4)| 69(73.4)   |
|                                                                 | MERS-CoV      | 388(100)  | P = 0.49        |         |            |
| The receptor to which the SARS-CoV virus attaches itself is Angiotensin | Angiotensin   | 253(65.2)| 142(64)         | 48(66.7)| 63(67)     |

Knowledge on transmission and pathogenesis

| Question                                                                 | Answer choice | All (388) | Graduates (222) | PG (72) | Staff (94) |
|-------------------------------------------------------------------------|---------------|-----------|-----------------|---------|------------|
| Q1: Mode of transmission of SARS-CoV-2 in community is mainly by        | Contact       | 57(14.7)  | 40(18)          | 5(6.9)  | 12(12.8)   |
| Correct answer: Droplet                                                | Droplet       | 301(77.6)| 171(77)         | 60(83.3)| 70(74.5)   |
| Correct answer: Airborne                                               | Airborne      | 29(7.5)   | 11(5)           | 7(9.7)  | 11(11.7)   |
| Correct answer: Blood borne                                            | Blood borne   | 1(0.3)    | 0(0)            | 0(0)    | 1(1.1)     |
| Total                                                                   |               | 388(100)  | P = 0.043       |         |            |
| Q2: The high risk groups for COVID-19(individuals with co-morbid        | Hypertension  | 7(1.8)    | 7(3.2)          | 0(0)    | 0(0)       |
| conditions) are all except Correct answer: Migraine                   | Bronchial Asthma | 15(3.9)  | 13(5.9)         | 1(1.4)  | 1(1.1)     |
| Correct answer: Migraine                                              | Migraine      | 356(91.8)| 195(87.8)       | 69(95.8)| 92(97.9)   |
| Correct answer: Diabetes Mellitus                                      | Diabetes Mellitus | 10(2.6)  | 7(3.2)          | 2(2.8)  | 1(1.1)     |
| Total                                                                   |               | 388(100)  | P = 0.050       |         |            |
| Q3: Results from around the world indicate that the most affected age  |               |           |                 |         |            |
| group of 15 - 30 years                                                  |               |           |                 |         |            |
| Correct answer: 31 - 45 years                                          |               |           |                 |         |            |
| Correct answer: 31 - 45 years                                          |               |           |                 |         |            |
With regard to question on the mode of transmission of SARS-CoV-2 in community, 77.6% of the volunteers answered droplet correctly and majority [83.3% (60/72)] were post graduates (p < 0.043) (Table 2). With regard to the questions on which people with ailments are not at high risk, majority of the volunteers [91.8% (356/388)] answered people with migraine are least at risk when compared to hypertension, bronchial asthma and diabetes mellitus (Table 2). It was also observed that 73.5% (285/388) of the volunteers agreed that people above the age of 60 were at higher risk (Table 2).

With regard to the domain on knowledge on safety practices, most volunteers [85.3% (331/388)] knew that 1% sodium hypochlorite was the surface disinfectant recommended during SARS-CoV-2 pandemic. Detailed analysis showed that when compared to the MBBS graduates and the professionals, majority of the post graduates 91.7% (66/77) answered it right and was significant (p< 0.032) (Table 2). However, for the question on personal protective equipment, it was observed that 60.3% (234/388) knew that heavy duty gloves were not used while treating COVID-19 patients. Detailed analysis showed that majority of the post graduates [83.3% (60/72)] and professionals [78.7% (74/94)] were aware of this fact while only 45% (100/222) MBBS graduates were aware (p<0.0001) (Table 2).

For questions assessing the beliefs and degree of fear towards COVID-19, the observations were striking. Majority of the professionals opined that they had a high (38.3%) to very high (22.3%) risk of getting infected with coronavirus during the pandemic and was significant (p=0.001) when compared to MBBS graduates and post graduates (Table 3). However, on asking, if they were infected by coronavirus, how seriously would they think it would affect their health, very few volunteers (7.2%; 45/388) expressed that the chances that they will be extremely/very seriously affected, while majority (51.3%; 199/388) felt they will only be somewhat affected. With respect to addressing apprehensions during care of patients, it was observed that the professionals expressed high to very high fear for majority of the questions. Of importance was the observation that significant percentage (70.2%) of professionals expressed that to work in situations where personal protective equipment and masks were absent/ inadequate was filled with fear. Also, majority of the participants feared the possibility of being physically abused during their line of duty (p=0.0001).
Table 3: Beliefs and attitudes towards Coronavirus of the volunteers who participated in the study

| Choice | All | Graduates | PG | Staff |
|--------|-----|-----------|----|-------|
| Please indicate your level of risk of getting infected with Coronavirus during the pandemic | | | | |
| Very high | 45(11.6) | 9(4.1) | 15(20.8) | 21(22.3) |
| High | 71(18.3) | 18(8.1) | 17(23.6) | 36(38.3) |
| Medium | 122(31.4) | 72(32.4) | 21(29.2) | 29(30.9) |
| Low | 88(22.7) | 74(33.3) | 9(12.5) | 5(5.3) |
| Very low | 52(13.4) | 41(18.5) | 9(12.5) | 2(2.1) |
| Don’t know | 10(2.6) | 8(3.6) | 1(1.4) | 1(1.1) |
| Total | 388(100) | P = 0.0001 HS | | |

If you were infected by Coronavirus and developed Covid-19, how seriously do you think it would affect your health?

| Choice | Graduates | PG | Staff |
|--------|-----------|----|-------|
| Extremely/Very seriously | 28(7.2) | 9(4.1) | 8(11.1) | 11(11.7) |
| Seriously | 105(27.1) | 67(30.2) | 15(20.8) | 23(24.5) |
| Somewhat | 199(51.3) | 112(50.5) | 39(54.2) | 48(51.1) |
| Not at all | 11(2.8) | 8(3.6) | 1(1.4) | 2(2.1) |
| Don’t know | 45(11.6) | 26(11.7) | 9(12.5) | 10(10.6) |
| Total | 388(100) | P = 0.22 NS | | |

Table 4: Opinion on steps for personal hygiene and infection prevention and prophylaxis measures for Coronavirus among the volunteers who participated in the study.

| Question | Choice | Graduates | PG | Staff |
|----------|--------|-----------|----|-------|
| Op 11: Do you think quarantine is the best way to prevent Coronavirus? | Strongly yes | 20(57) | 142(36.9) | 121(55) |
| | Yes | 82(21.4) | 14(3.6) | 27(12.2) |
| | No | 8(2.1) | 14(3.6) | 11(5.1) |
| Total | 386(100) | P = 0.591 NS | 27(7.4) | 27(12.2) |
| Op 13: Do you think hand washing is the best way to prevent Coronavirus? | Strongly yes | 244(62.9) | 129(58.1) | 50(69.4) |
| | Yes | 105(27.1) | 38(17) | 12(13) |
| | No | 60(15.8) | 20(8.9) | 8(9) |
| Total | 386(100) | P = 0.07 NS | 27(7.4) | 27(12.2) |
| Op 15: Do you think wearing a face mask is the best way to prevent Coronavirus? | Strongly yes | 24(6.2) | 12(13) | 5(6) |
| | Yes | 3(3.3) | 9(12) | 1(1) |
| | No | 3(3.3) | 9(12) | 1(1) |
| Total | 386(100) | P = 0.07 NS | 27(7.4) | 27(12.2) |

With regard to questions addressing opinion on prevention and prophylaxis measures, the results are expressed in Table 4. Preventive measures like quarantine, hand washing and wearing face mask were agreed by 93.8%, 94.8% and 73.5% of the volunteers, respectively. The opinions on preventive medication, practicing doctors agreed that gargling of mouth with salt water or iodine water and the use of vaccine when available is the best way to prevent coronavirus infection (p<0.0002 to 0.0001). Similarly, most of the participants did not approve the use of antibiotics, antiviral and hydroxychloroquine for treatment purposes.
both symptomatic and asymptomatic individuals. Awareness regarding the natural history of contagion is very necessary among all the health care workers; so as to safeguard themselves. Therefore knowledge, belief, attitude and opinion of the disease are assessed in our study. Our study had around 55% of female doctors’ responses similar to a study conducted in Mumbai, India [8]. Majority of the professionals treating these patients in designated hospitals are recently graduated or post graduate residents; our study constituted around 75% of such volunteers and 70% of them have less than 5 years’ experience in the profession.

Knowledge on etiopathogenesis and safety practices was significantly high among the respondents. SARS-CoV-2 is an enveloped single stranded RNA virus belonging to beta group Coronaviridae family. Coronavirus is known to infect the respiratory and gastrointestinal systems of humans, birds, bats, rodents and other wild animals. Earlier, two other strains of coronavirus were identified in similar outbreaks, viz. Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-1) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in 2002-03 and 2012, respectively. The novel SARS-CoV-2 believed to be a bat virus [9-11], which adapted to get transmitted to humans and later human to human transmission [12,13]. The primary mode of transmission is through droplet transmission especially when the person is in close contact (less than 1 meter) with the patients [14], finally reaching the lower respiratory tract. Among health care providers (HCP), the aerosol producing procedures like intubation of patients pose a higher risk of transmission. After the entry of the virus, the envelope-anchored spike protein of the virus gets attached to the angiotensin-converting enzyme 2 (ACE-2) receptor in humans causing disease [15]. A wide spectrum of clinical features of COVID-19 has been reported such as dry cough, low grade

DISCUSSION:

Health-care professionals are the highest risk of getting infected with COVID-19 while managing
fevers, body aches, diarrhea and dyspnea. Male patients with underlying morbidities like hypertension, diabetes, COPD, cardiovascular disease, cerebrovascular disease and an immune compromised status, are more prone for severe form of the disease with high case fatality [16-18]. Age >65 years is also a predictor for increased mortality among patients with COVID pneumonia with an odds ratio of 3.76 [19].

Transmission is prevented by social distancing, frequent hand hygiene, and wearing face mask in public. As the safety of HCP is an important priority to keep the healthcare services functioning, while entering into the patient area or while performing procedure in patients, wearing clean gowns, face mask/ N95, goggles face/shield and clean gloves are recommended [20]. Contact transmission of the virus from the environmental surface is very well documented. The virus can survive on environmental surface for prolonged period; hence frequent surface decontamination using 1% sodium hypochlorite is recommended [21]. Around 15% of the volunteers were unable to correctly answer 1% hypochlorite solution as the recommended disinfectant. Heavy duty gloves are recommended for housekeeping staff while cleaning the patient area.

Health-care professionals are at the highest risk of getting infected, especially while treating COVID patients. As there is increase in cases, the HCPs are physically and psychologically stressed out with extended duty hours and mental trauma. Moreover, recent events of physical abuse by the patient attendees have added to the existing insecurity.

During any pandemic, public health measures play a key role in prevention of its spread. As per Cochrane review, quarantine of those who are exposed to confirmed cases was effective in preventing infections and death verses no such measures. Other measures like school closure, travel restrictions and physical distancing when combined with quarantine had a greater impact on reducing transmission of COVID-19 [22]. Around 94% of volunteers have answered quarantine as the best way to prevent the spread in the community.

At individual level as a standard precaution, proper and frequent hand hygiene practice prevents the spread of infection; with soap and water when hands are visibly soiled or with alcohol based hand rub [23]. Another measure to prevent infection at individual level is wearing of mask. As per CDC and Indian Council of Medical Research guidelines, mask is recommended to be worn in public. But there is a need to increase awareness in public, on need of proper wearing of mask with mouth and nose snugly covered. If not, it will lead to a false sense of security [24]. Positively, 95% and 74% of volunteers have opined that regular hand washing and wearing of mask in public can prevent spread of COVID-19, respectively.

Even though, there are no specific evidence on benefit of gargling mouth and throat with salt water or iodine solution, around 27% and 21% volunteers, respectively have agreed these measures can prevent infection. Around 70% responded that a vaccine, when available will be a break-through intervention to curb this pandemic. However, as vaccine development is a lengthy and expensive process, the vaccine developed needs to be effective in preventing infection as well as safe for human use [25]. Mass production of the successful vaccine is also challenging as it needs to reach millions of people before they are infected and equally should be affordable across different economic backgrounds.

Chinese officials have approved the use of 3 herbal molecules for use in COVID-19, Lianhuaqingwen capsules and Jinhuaqinggan granules for mild conditions, and Xuebijing (injectable) for severe conditions. The evidence regarding their efficacy is not robust and is based on in vitro and anecdotal clinical data [26]. No Indian trial has provided any evidence for or against the use of Indian herbal medicine in COVID. More clinical trials are
required to answer this question of efficacy of such herbal medicine. In similar lines only 4% responses favored herbal medicine.

Till date, no specific drug is used to treat COVID. Use of hydroxychloroquine (HCQ) has a conflicting data regarding its efficacy in prevention and treatment of COVID-19. HCQ has multiple mechanisms by which it can act on the virus. It prevents viral entry, inhibits post translational modifications of M proteins leading to alterations to viral assembly and budding. It also has immunomodulatory effects and has been shown to have in vitro synergistic effect with azithromycin. HCQ showed to increase virological clearance in 36 COVID patients compared to control group in a French study. Another supportive study from China reported earlier remission of fever and cough in patients with COVID pneumonia who were given additional HCQ over the standard treatment \[27\]. On the contrary, another open labeled randomized controlled trial of 150 patients from China did not show any difference in improvement in clinical symptoms and virological conversion in the HCQ arm \[28\]. Although no antibacterial drug has been recommended, physicians prefer using it empirically as cover for secondary bacterial infection in critically ill COVID-19 patients. A study from China reported 58% of their patients being on antibiotics. The surviving sepsis guidelines suggest the use of empirical antibacterials for secondary bacterial infection in mechanical ventilated patients \[29\].

CONCLUSION:

The health care professionals have adequate knowledge on etio-pathology, transmission and prevention of COVID -19, even at graduate level which constituted more than half of the volunteers. Senior professionals were more concern about getting infected, especially when there is inadequate supply of PPE and later, transmitting to their family members. Fear of physical abuse by the patient attendees is another concern among the respondents. This study emphasizes the need of adequate supply of PPE, judiciously timed duty and reassurance on security as the utmost necessary for continuity in the health care services in coming days, as India has not yet reached its plateau phase of the pandemic.

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