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Healthcare professionals' knowledge, attitudes, and practices on coronavirus disease in Western Uttar Pradesh

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Abstract:

BACKGROUND AND OBJECTIVES: The ongoing coronavirus disease pandemic caused by a novel genetically-mutated strain of coronavirus has posed a tremendous challenge to healthcare professionals, worldwide. This study aimed to explore the healthcare professionals' knowledge, attitudes, and practices (KAP) related to coronavirus disease in Western Uttar Pradesh and provide data to improve awareness about this disease and remove the knowledge gap, if any, by disseminating the updated information to the corona warriors.

MATERIALS AND METHODS: A cross-sectional survey was conducted in the form of a structured 28-item online questionnaire using SurveyMonkey software. The qualitative data were coded numerically, and the KAP score was calculated. Pearson Chi-square test was used to study the association, among variables.

RESULTS: Of 509 respondents, 296 (58.19%) were males and 213 (41.81%) were females. The median age bracket of the sample was 20–40 years. By profession, 255 (50.10%) were doctors, 167 (32.74%) were medical students, 80 (15.78%) were other healthcare workers, and a minority 7 (1.38%) were the nursing staff. Educational status covered a range from secondary (2.01%) to senior secondary (17.51%) to bachelors and equivalent (29.18%) to masters and equivalent (51.31%). The average KAP scores were 54%, and the score was highest among doctors as compared to other healthcare professionals ($P < 0.001$).

CONCLUSIONS: In light of these study findings, we conclude that healthcare professionals are aware of coronavirus disease. However, the overall KAP score regarding its clinical course, preventive strategies, and judicious use of personal protective equipment was less than expected. There is a need to address all misconceptions and empower the corona warriors with the right information through effective mass media communication and reinforcement through seminars and workshops in the medical institutes and hospitals. The healthcare professionals are a cornerstone to prevent the nosocomial and community spread of this pandemic.

Keywords:

Corona warriors, coronavirus disease, COVID-19, healthcare professionals, knowledge, attitudes, and practices, pandemic

Introduction

Coronavirus disease (COVID-19) is a newly emerged, recent infectious disease caused by a genetically-mutated novel coronavirus strain named as severe acute respiratory syndrome

coronavirus-2 (SARS-CoV2).^[1] The first case of this deadly virus was reported in Wuhan, China in December 2019, which was followed by the ongoing spread across the globe over a very short period. The outbreak was considered as a public health emergency of international concern on January 30, 2020, and declared as a pandemic by the World

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Health Organization (WHO) on March 11, 2020.^[2] As of April 6, 2020, more than 1,290,000 cases of COVID-19 have been reported in over 200 countries and territories, resulting in over 70,700 deaths with more than 271,000 recoveries. The global case-fatality rate (according to the WHO) is as high as 4.4%.

India is highly susceptible to the novel coronavirus infection due to its high density of population and the infectious nature of this genetically-mutated strain of the virus. The first imported case in India was reported on January 30, 2020. As of April 6, 2020, the Ministry of Health and Family Welfare has confirmed 4281 cases, 319 recoveries, and 111 deaths in the country.^[3] However, it is suggested by the experts that the number of infections might be higher as India has the lowest testing rates compared to the other countries.

The Indian government has taken stringent measures to curtail the spread of infection as per the WHO guidelines.^[4] These include shutting off the educational institutions, cancellation of international and domestic flights, sealing borders in hot spots to restrict inter-state movements, and nationwide lockdown for 21 days.^[5] The core strategies for containing the virus include hospitalizing the infected patients, quarantining close contacts, sanitizing of the hospital buildings, and provision of personal protective equipment (PPE) to the corona warriors. The media is providing education to the public about maintaining hygiene, repeated hand washing, cough etiquettes, social distancing, and self-isolation for people who suspect they are infected.

Coronavirus disease has a median incubation period of 5 days. The chief complaints reported in the patients include fever, cough, malaise, headache, nausea, vomiting, diarrhea, and severe cases present with difficulty in breathing.^[6] The primary modes of transmission include droplet infection, when the infected patient coughs or sneezes, and touches an infected surface or object. The virus can survive on surfaces for up to several hours according to the nature of surfaces.^[7]

To tackle the spread of this infectious disease, the government declared the Government Institute of Medical Sciences (GIMS), Greater Noida, Uttar Pradesh (UP), as a 225-bedded COVID-19-dedicated hospital. One hundred and nine COVID-19-positive patients were admitted in the isolation ward, GIMS, and many patients have recovered successfully and discharged till date. The healthcare professionals are keeping themselves abreast of the latest guidelines and information by attending the webinars of AIIMS, Delhi, and SGPGI, Lucknow. A team of 30 healthcare professionals is working round the clock to take care of the admitted patients and curtail the spread of this pandemic.

COVID-19 outbreak has forced the human race to practice “social distancing” in the era of social media.^[8,9] There is an unprecedented crisis of public understanding due to the instantaneous echoing of rumors, fake information, and dubious medical claims available on the internet. A lot of misconceptions and myths (regarding the transmission, diagnosis, prevention, use of PPE especially masks, treatment, course, and complications) exist not only in the minds of the laypeople on lockdown but also among the healthcare providers.

Healthcare workers are at a greater risk of infection with the coronavirus. The correct knowledge is the key component to curb the spread of the disease among the front-line warriors and to the community. To the best of our knowledge, there are very few studies published on awareness of coronavirus disease among healthcare professionals even though knowledge, attitudes, and practices (KAP) is a cornerstone in the prevention of virus spread and outbreak.^[1,7]

Keeping all this in view, we designed a study to assess the healthcare professionals’ KAP regarding the epidemiology, transmission, clinical manifestations, prevention, and management of coronavirus disease. In addition, the researchers envisioned to create the right awareness and remove the knowledge gap, if any, by disseminating the updated information and latest guidelines to the corona warriors.

The rationale for the study

The fight against coronavirus disease is a national priority with direct regional and global implications. This survey report provides valuable insights into current awareness, attitude, and key practices among healthcare professionals. The results may serve as a key guiding tool in identifying lacunae in their knowledge and fine-tune the awareness webinars to provide the right education.

Research questions

- What is the in-depth knowledge, of the healthcare professionals about the epidemiology, transmission, clinical manifestation, prevention, and management of the novel coronavirus infection?
- What are their attitudes and beliefs regarding the use of personal prophylaxis measures such as masks and respirators?
- What current self-practices are being employed by them to protect themselves and also, to curtail the community spread of the ongoing pandemic?

Materials and Methods

This study was conducted in GIMS, Greater Noida, UP, after obtaining permission from the institutional ethics committee and informed consent of the respondents.

Study design

The study employed a cross-sectional research design. The survey was online between April 4, 2020, and April 8, 2020.

Sampling

We used chain-referral sampling method. A total of 509 participants responded.

Study tool

A 28-item questionnaire was categorized into six sections. Section A comprised of demographic characteristics of the participants – gender, age, highest academic qualification, and profession; Section B about the epidemiology of COVID-19. Section C on clinical features and the course of infection; Section D on laboratory diagnosis section; Section E on various precautions for infection control with special emphasis on the use of masks and respirators; and Section F on ICMR-recommended prophylaxis and treatment.

Validity and reliability of the study tool

A total of 28 questions were given to a panel of 10 experts consisting of the doctors at GIMS, Greater Noida, who provided valuable feedback on the readability and appropriateness of the survey items. Four questions out of 28 indicated as unclear and confusing were modified suitably. Cronbach's alpha score was 0.83 which meant high internal consistency of the items used. The panel members were not included in the final sample to reduce the extraneous influence on the research findings.

Data collection method

The submission of the response was made online through SurveyMonkey and was in English. The link to the survey was sent to the doctors of Western UP through e-mail, weblink, and social media, and they were requested to forward the survey link to their colleagues. While the link was online, daily reminders were sent to them to speed up the response rate.

Statistical analysis

The data were checked thoroughly for comprehensiveness to ensure accurate analysis. It was exported to Statistical Package of the Social Sciences version 20.0 (IBM- International Business Machine) and analyzed for descriptive statistics using frequencies and proportions. Qualitative data were processed by categorizing responses for an item according to intended objectives, and data were coded numerically. Pearson's Chi-square test was used to study the association, among variables.

Results

Descriptive statistics

A total of 509 out of 600 responded to the survey. The response rate was 84.8% and deemed adequate for data analysis.^[10]

Figure 1 shows that a majority (85%) opinionated that maintaining a safe social distance is the most crucial step in breaking the chain of transmission of coronavirus outbreak. However, 14% believed that hand hygiene practices would curb the nosocomial and community spread of this pandemic.

Table 1 depicts sociodemographic characteristics. Of 509 respondents, 296 (58.19%) were males and 213 (41.81%) were females. The median age bracket of the sample was 20–40 years.

The data in Table 2 depict the knowledge of the respondents about epidemiology, clinical presentation, course, and prophylaxis of COVID-19.

Table 3 focuses on the attitudes and perceptions of the healthcare professionals about COVID-19.

Table 4 shows the self-reported behavior and practices of healthcare professionals during the epidemic.

The average KAP scores were 54%, and the score was highest among doctors as compared to other healthcare professionals ($P < 0.001$).

Discussion

The results of this survey provide a thorough insight into the knowledge, attitudes, and self-reported practices about COVID-19 pandemic among a sample of healthcare professionals of Western UP.

In our study, a majority (78.77%) of the respondents were aware of the stages of transmission in a pandemic. Further, there was a high awareness (72.24%) that the outbreak of coronavirus disease has been caused by a newly emergent mutated strain of beta SARS-CoV2

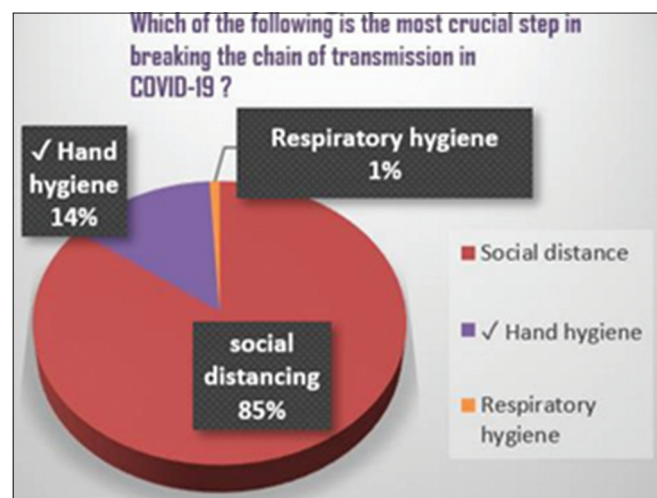


Figure 1: Which is the most crucial step in breaking the chain of transmission in COVID-19?

and also 79.44% knew the fact that more RO suggests that the disease is more contagious. However, <50% of correct response was obtained in the questions about the genetic sequencing of the novel coronavirus and the median incubation period for COVID-19. This may be

due to the lack of interest regarding the epidemiology of the deadly virus.

Table 1: Sociodemographic profile of the respondents (n=509)

	Frequency (%)
Gender	
Male	296 (58.19)
Female	213 (41.81)
Age bracket (years)	
<20	65 (12.68)
20-40	281 (55.21)
40-60	116 (22.90)
>60	47 (9.20)
Highest qualification	
Secondary	11 (2.01)
Senior secondary	89 (17.51)
Bachelor and equivalent	148 (29.18)
Masters or equivalent or higher	261 (51.31)
Profession	
Doctor	255 (50.10)
Medical student	167 (32.74)
Nursing staff	7 (1.38)
Other healthcare workers	80 (15.78)

As regards clinical features, only a minority (32.8%) knew that fever is the most dominant feature seen in coronavirus disease, while a majority had a misconception that the respiratory symptoms were dominant. This may be because of the emphasis laid by the social media and internet on symptoms such as dry cough and severe pneumonia. 66.39% knew that old age, diabetes, and immunosuppressive states are poor prognostic markers in the patients. 60.73% were aware of the criteria for hospital admission in a COVID-19-positive case.

Three-fourth (70.97%) knew the correct laboratory test for diagnosis and 64.17% identified lymphopenia as the most common laboratory finding. 64.56% agreed that 1% sodium hypochlorite solution must be used for cleaning respiratory secretions in a COVID-19-positive patient. 85.29% of the participants correctly mentioned that the laboratory test for confirmatory diagnosis is SARS-CoV-2 RNA reverse transcriptase polymerase chain reaction (PCR) and 64.17% knew that the most common laboratory finding in a COVID-19-infected case is lymphopenia.

Table 2: Knowledge of epidemiology, clinical features, course, and personal prophylaxis of coronavirus disease 2019

Questions regarding knowledge of COVID-19	Correct responses, frequency (%)	P
1. SARS-CoV2 is caused by the newly emerged coronavirus in 2019	368 (72.24)	0.001 (HS)
2. The genetic sequencing of the novel COVID-19 virus suggests it belongs to the beta group	251 (49.29)	0.001 (HS)
3. The correct sequence of stages of transmission is "Imported-local transmission-community transmission-epidemic"	401 (78.77)	0.002 (S)
4. The median incubation period for coronavirus disease is 5 days	107 (20.96)	0.001 (HS)
5. More R0 (R naught) means the disease is more contagious	404 (79.44)	0.045 (S)
6. The most dominant clinical feature is a fever	167 (32.8)	0.84 (NS)
7. Old age, diabetes, and immunosuppressive states are poor prognostic markers in COVID-19 patients	338 (66.39)	0.001 (HS)
8. N, R, or P written over the mask means not oil proof/oil resistant/oil proof	161 (31.73)	0.007 (S)
9. Donning area is where a healthcare worker wears Personal protection equipment	368 (72.41)	0.07 (NS)

SARS-CoV2=Severe acute respiratory syndrome coronavirus-2, NS=Not significant, HS=Highly significance, COVID-19=Coronavirus disease 2019

Table 3: Attitudes and perceptions of healthcare professionals regarding coronavirus disease-2019

Characteristics	Correct responses, frequency (%)	P
1. The symptomatic contacts are most contagious	248 (48.74)	0.003 (S)
2. Hand-washing is the most crucial step in breaking the chain of transmission in coronavirus disease	71 (13.98)	0.029 (S)
3. The healthcare professionals must use surgical/cloth masks routinely while working in the hospital	467 (91.88)	0.029 (S)
4. The surgical mask should be discarded after every use	366 (71.88)	0.001 (HS)
5. A person taking care of a sick person should wear a mask as per the WHO recommendations	417 (81.93)	0.001 (HS)
6. While donning of PPE, footwear cover is worn first followed by hand wash	281 (55.24)	0.001 (HS)
7. Sodium hypochlorite 1% is used to clean a material contaminated with respiratory infections	278 (64.56)	0.439 (NS)

NS=Not significant, HS=Highly significance, S=Significance, PPE=Personal protective equipment, WHO=World Health Organization

Table 4: Self-reported behavior and practices of the healthcare professionals during coronavirus pandemic

Characteristics	Correct responses, frequency (%)	P
1. What are the criteria for hospital admission of a COVID-19 patient?	309 (60.73)	0.001 (HS)
2. The correct laboratory test for confirmatory diagnosis of COVID-19 patient	434 (85.29)	0.001 (HS)
3. The laboratory sample used for diagnosing a case of COVID-19 patient	361 (70.97)	0.001 (HS)
4. Lower respiratory tract samples can be collected in mechanically ventilated patients	320 (62.80)	0.439 (NS)
5. The commonest laboratory finding in a COVID-19 infected case is lymphopenia	327 (64.17)	0.045 (S)
6. N95, N99, and N100 respirators are being used in the hospitals as personal prophylaxis and to curb the spread of the epidemic	454 (89.21)	0.84 (NS)
7. The anesthetist must wear N95 and helmet masks during the aerosol-generating procedures like intubation	439 (86.29)	0.34 (NS)
8. Hydroxychloroquine has been recommended by the ICMR for prophylaxis from COVID-19 in healthcare professionals	458 (89.94)	0.005 (S)

NS=Not significant, HS=Highly significance, S=Significance, COVID-19=Coronavirus disease 2019, ICMR=Indian Council of Medical Research

There is a lot of confusion regarding the most crucial step in breaking the chain of transmission of coronavirus disease. Only 71 respondents correctly answered and accepted the technique of hand washing as the best and safe practice. This is, in contrast, to study^[11] among healthcare professionals where 87.54% routinely used alcohol-based hand rub and decontaminated hands even under severe work pressure. 85% opinionated that maintaining a safe social distance alone is sufficient to curtail the spread of the disease.

However, one-third of the patients responded correctly that N, P, and R written over the mask means N-not oil proof, R-oil-resistant, and P-oil proof. 91.88% believed that on-duty healthcare professionals must use surgical/cloth masks routinely as a personal prophylaxis measure. 52.44% were familiar with the WHO recommendations of wearing masks; however, surprisingly, 71.88% of the medicos did not know that the surgical mask should be discarded after every use. The majority (89.21%) strongly believed that N95, N99, and N100 respirators offer greater protection than surgical masks and the anesthetist must wear helmet masks or N95 masks during the aerosol-generating procedure such as intubation and bronchoscopy for personal prophylaxis. Data on the use of masks point to the success of key prevention messages across the country, so it reflects an imposed change rather than a voluntary one. Surprisingly, less than half knew that the area where a healthcare worker wears PPE is called donning area and one-third believed that the footwear cover is worn first followed by body gown and gloves as per the WHO guidelines. One-third of them believed that the footwear cover is worn first followed by body gown and gloves as per the WHO guidelines. As expected, most (89.94%) correctly stated that hydroxychloroquine has been recommended for prophylaxis in healthcare professionals by the ICMR.

The average KAP scores were 54% and the score was highest among doctors as compared to other healthcare professionals ($P < 0.001$). This increased awareness is

attributed to the webinars conducted by renowned tertiary health care centers – SGPGI, Lucknow, and AIIMS, Delhi, to disseminate the correct information to the healthcare professionals and also the use of social media websites by the WHO and other public health organizations.

Study limitations

Due to time constraints, a quick KAP survey was conducted at the time of the ongoing coronavirus pandemic. The survey was online for a few days, and hence, the sample size was restricted. The study may be extended to other areas of UP for generalization of data. Another limitation is the responses may be biased due to the social or language barrier. Although English is the language of the medical curriculum, it is a second language for most healthcare professionals. This might have affected the answers.

Conclusions

In light of these study findings, we conclude that the healthcare professionals are aware of coronavirus disease and the risks associated with it; however, KAP score regarding this deadly disease, its clinical course, preventive strategies, use of PPE was less than expected. Hence, there is a dire need to create awareness, address common misconceptions, and empower the corona warriors with the right information as per the advisories being issued by the Ministry of Health and Family Welfare about the pandemic through effective mass media communication and reinforcement through seminars and workshops in the medical institutes and hospitals. The benefits of safe practices such as hand hygiene, maintenance of a safe social distance, and use of masks go well beyond the containment of coronavirus disease, and the healthcare professionals should make a concerted attempt to capitalize on the momentum and develop these healthy practices permanently. After all, they are a cornerstone to prevent the nosocomial and community spread of this pandemic.

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Conflicts of interest

There are no conflicts of interest.

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