



Perception, Attitude and Recommendations for Healthcare Professionals towards COVID-19 Infection: A Descriptive Cross-sectional Survey Based Study from India

Ubada Aqeel¹, Mohammad Daud Ali², Zeenat Iqbal^{3*}, Mohd. Aamir Mirza^{3*} and Mohammed Aslam⁴

¹Department of Healthcare and Pharmaceutical Management, School of Management & Business Studies, Jamia Hamdard, New Delhi-110062, India.

²Department of Pharmacy, Mohammed Al-Mana College for Medical Sciences, Abdulrazaq Bin Hammam Street, As Safa, Dammam, Saudi Arabia.

³Department of Pharmaceutics, School of Pharmaceutical Education and Research (SPER), Jamia Hamdard, New Delhi-110062, India.

⁴Faculty of Pharmacy, Al Hawash Private University, Homs, Syria.

Authors' contributions

This work was carried out in collaboration among all authors. Authors UA and MDA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors MAM and ZI managed the analyses of the study. Author MA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

We have carried out a survey among Healthcare professionals in the perceptions and attitude towards COVID-19 and also attempted to reach a few conclusions in the form of recommendations. A questionnaire based online survey was conducted between 1st April 2020 and 30th May 2020. 97.20% ($p < 0.05$) participants suggested that protective mask for the patients or attendants should be made compulsory while coming to the Hospitals. 79.33% ($p < 0.05$) think that post COVID-19 the area outside the doctor's chamber should not be crowded and some measures should be taken in order to reduce the number. In the same line, 83.58% ($p < 0.05$) participants favour, limiting the number of attendants with the patients and making a prior appointment compulsory, 51.97% ($p < 0.05$) wish to switch to virtual counselling. Considering the variation in strains of the virus, different geographical conditions, demography, economic status and healthcare facilities, a uniform policy shouldn't be implemented all across the globe or even for a country.

Keywords: Digital counseling; alternative medicine; preliminary examination; physiotherapist; occupational therapist.

1. INTRODUCTION

COVID-19 is the official name given by WHO for the current pandemic and the ICTV (International Committee on Taxonomy of Viruses) named it as SARS-CoV-2 (SARS- Severe Acute Response Syndrome) [1,2]. Similar kind of outbreak had also happened with different pathogens named SARS-CoV in 2003 and Middle East Respiratory Syndrome Coronavirus-MERS-CoV in 2015 [3,4]. But the virulence and spread of the current syndrome is more severe, that is why the WHO has declared the COVID-19 outbreak a global pandemic on 11th March 2020 [5]. As on 2nd June 2020 the total number of cases of coronavirus disease (COVID-19) is 6,403,609 with a death toll 378,120 globally [6]. Historically, low and middle-income countries have borne the burden of infectious disease outbreaks, but the current pandemic has exposed the lack of preparedness in well-connected, economically-stable, developed countries also [7]. Exponentially growing pandemic has greatly affected the lives of people across the world by its rapid spread, high mortality, disruption of the social fabric, the toll on health care systems, and devastating economic impact [8]. It has affected even the strategies for maintaining health care system. Across the globe (including India), many hospital administrations have massively re-structured their everyday activities so as to concentrate their efforts on the management of COVID-19 patients. Most of the hospitals have been either converted into specific Covid-19 hospitals or have established Covid-19 wards. In most of the wards and hospitals, the doctors involved are from internal medicine, pulmonary medicine, intensive care specialists, experts from

community medicine, etc. and Professionals from other departments of healthcare are also being pooled for the management of people with COVID-19 infection. All the health care professionals (HCPs) have increased workload and there is a shortage of personal protective equipment also in few of the developing economies. This unprecedented level of physical isolation is not supported by our basic human instincts and motivations. The uncertainty of its ebbing, potential risk of getting infected (themselves and the families), and the global economic crisis are further making the situation abject. At some places where the pandemic is gaining gigantic shape, less experienced staff are also being implemented. So, we are witnessing that not only at the professional level but even at the personal level also, the COVID-19 has radically affected the psychology of HCP. The first official report of a health professional who succumbed to the virus is Dr Li Wenliang an ophthalmologist [9].

The WHO has identified education as one of the most important components of prevention programs [10]. Collating the opinions or feedback of a particular faction of the society and funnelling into a conclusion becomes an important part of the education and training system. In the same context, survey based studies have been conducted among HCPs as well as non-HCPs to assess their perception and attitude towards COVID-19 and its impact. Furthermore, some recommendations for during and post-COVID-19 periods have also been drawn. In the given manuscript we have shared data about HCPs only. The studies specific to non-HCPs is subsequent to this.

2. MATERIALS AND METHODS

2.1 Study Population and Questionnaire

A cross-sectional questionnaire-based online survey was conducted between April 2020 and May 2020 among Health Care providers (HCPs) in Delhi, India. A questionnaire was developed to determine perception, attitude and Recommendations among Healthcare professionals towards COVID-19 infection. The questionnaire for the survey was developed based on an ample search of the literature. Afterward, the first draft of the survey questionnaire was reviewed by four academic experts voluntarily who reviewed the survey questionnaire for any suggestions or amendments. The second draft of the questionnaire was considered the final version of the survey, used for the making of online survey link on Google Forms[®]. Before sending the survey link to the healthcare providers a pilot study was conducted for validation of survey response, after which survey responses of Google Forms[®] were used for data collection.

The current study was designed to identify the Healthcare professional's Perception, Attitude and Recommendations towards COVID-19 infection.

2.2 Sampling and Data Collection

A systematic random sampling technique was carried out on all of 702 HCPs, with $k=2$ and we choose 353 convenient participants, but only 329 HCPs agreed and returned the complete response to the questionnaire. So the turn out of the participation was 93.20% (329/353). The pool of HCPs was comprised of Registered Pharmacist, Physician, Physiotherapist/Occupational Therapist, Nurses, and other healthcare professionals. They evaluate as eligible to participate in the study. The lead researcher shared Google Forms[®] Link to all the convenient HCPs through Social media and E-mail rather than face to face contact due to pandemic lockdown situation. After sharing the link for the survey, the participants were reminded regarding the end date of the survey close. After closing of the survey, the data were pulled from the survey link in the form excel sheet Microsoft V.2013 used for data analysis.

2.3 Data Analysis

Descriptive statistics were utilized to analyse the data. Analysis of all statistical parameter including Wilsons 95% CI were performed using

SPSS statistical software for Windows version 26 (SPSS, IBM Inc., Chicago, USA). A chi-square (χ^2) was used to calculation for p-value and measure the association between and amongst variables that included Demographic characteristics, levels of Knowledge, practice and perception of respondents. Wilsons 95% CI was also used for calculation of respondent's responses. $P \leq 0.05$ was considered as statistically significant.

3. RESULTS

The demographic details of the participants have been given in Table 1. 74.77% participants were male and 25.22% female. Irrespective of gender, the population was spread across from 25 to >65 years of age. Similarly the range of education level was also widest possible (from diploma to doctorate). Table 2 describes the views of HCPs towards dealing with COVID-19 and its patients. Total 320 (97.20%, $p < 0.01$) participants are of the opinion that the use of protective mask by patients/attendants be made compulsory for the patients while coming for consultation/counselling in the Hospital/Medical Care Centre. 261 (79.33%, $p < 0.01$) HCPs think that post Covid-19 the milieu outside the doctor's chamber should not be crowded and some measures should be put in place to reduce the number. As mentioned in Fig. 1, when asked about the measures to be taken to reduce gathering of people in hospitals, 83.58% participants favour, limiting number of attendants with the patients, making prior appointment compulsory and adoption of strict time schedule as the way out to restrict number of people in the hospitals. While only 5.77% participant favour each, limiting number of attendants with the patients and making prior appointments compulsory separately.

Over the questions of Virtual consultation/counselling we obtained a trend. 171 (51.97, $p < 0.01$) HCPs wish to switch over it post pandemic but majority of them think that neither patient nor the country is ready to adopt it. 194 (58.96%, $p < 0.01$) have the opinion that patients are not well informed and not educated enough to get consultation over Virtual/Digital Platform. Similarly, 182 (55.31%, $p < 0.01$) think that the country is not digitally equipped to switch to Virtual consultation.

287 (87.23%, $p < 0.01$) of the participants have the opinion that the economic downfall will continue even after the pandemic is over.

Table 1. Demographics characteristics of Healthcare professionals (N=329,100%)

Characteristics	Total n=329,100%	Registered pharmacist n, (%) 197, (59.9)	Physician n, (%) 35, 10.63	Nurse N,% 6, 1.82	Physiotherapist/occupational therapist n, (%) 6, 1.82	Other healthcare professional n, (%) 85, 25.83
Gender						
Male	246(74.77)	157 (63.82)	22(8.94)	0(0)	2(0.60)	65(19.75)
Female	83(25.22)	40 (48.192)	13(15.66)	6(7.22)	4(4.81)	20(24)
Age (Mean ± S.D) Years (31.50±1.40)						
25-35	227(68.99)	128(56.38)	26(9.30)	6(2.64)	4(1.76)	63(27.75)
36-45	79(24.12)	54(68.35)	6(7.59)	0(0)	2(2.53)	17(21.51)
46-55	18(5.47)	12(66.66)	2(11.11)	0(0)	0(0)	4(22.22)
56-65	4(1.21)	2(50)	1(25)	0(0)	0(0)	1(25)
>65	1(0.30)	1(100)	0(0)	0(0)	0(0)	0(0)
Education Level						
Diploma	18(5.47)	16(88.88)	0(0)	1(6.25)	0(0)	1(6.25)
Graduate	96(29.17)	51(53.129)	16(16.66)	2(2.08)	3(3.125)	24(25)
Post Graduate	151(45.89)	84(55.62)	17(17.70)	3(1.98)	3(1.96)	44(29.13)
Doctorate	64(19.45)	46(0.98)	2(3.125)	0(0)	0(0)	16(25)
Year of experience (Mean ± S.D) (8.25±0.68)						
≤ 5	170(51.67)	96(56.47)	20(11.76)	3(1.76)	5(2.94)	46(27.05)
6-10	67(20.36)	36(53.73)	7(10.44)	3(4.47)	0(0)	21(31.34)
11-15	58(17.62)	42(72.41)	3,(5.17)	0(0)	1(1.72)	12(20.68)
16 ≥	34(10.33)	23(67.64)	5(14.70)	0(0)	0(0)	6(17.64)

Table-2 Health-care providers' attitude towards COVID-19 infection (n=329)

Statements	Yes (n, %)	No (n, %)	Can't say (n, %)	P-value (n, %)
Should use of protective mask by patients/attendants be made compulsory while coming for consultation/counselling in the Hospital/ Medical Care Centre?	320 (97.20)	3 (0.91)	6 (1.82)	<0.05*
Do you think post COVID 19 measures should be taken to reduce number of patients outside doctor's chamber?	261 (79.33)	33 (10.03)	35 (10.63)	<0.05*
Do you think in India we are Digitally equipped to screen and consult patients over Digital/Virtual Platform?	109 (33.13)	182 (55.31)	38 (11.55)	<0.05*
Do you think patients here are well informed and educated enough to get consultation over Virtual/Digital Platform?	99 (30.09)	194 (58.96)	36 (10.94)	<0.05*
Will you switch to Virtual consultation/counselling over physical consultation/counselling post COVID 19?	171 (51.97)	98 (29.78)	60 (18.23)	<0.05*
In case of Chronic patients would you to tend to increase the successive consultation time period post COVID 19?	219 (66.56)	46 (13.98)	64 (19.4)	<0.05*
Do you think you will be economically affected by COVID 19 even after it's over?	287 (87.23)	17 (5.167)	25 (7.59)	<0.05*

*P- Value ≤ 0.05 consider as significant

Table 3 includes the broad perspective of the HCPs towards the pandemic and it's after effect. Uncertainty about the future of the pandemic also prevails among HCP and there is a mix bag of response. Around 63.81% believe that it will take ≥ 6 months to overcome it. Among different systems of medicine available, the allopathic has been the vanguard in fighting the disease but unfortunately hasn't been successful so far. The search for vaccine and drug(s) are still under process. There is an amount of confusion among professionals about the continuation of believe in the system, 118 (35.86%, $p < 0.05$) participants can't say and 100 (30.39%, $p < 0.05$) have the opinion that the patients may switch to alternative system of medicine in early stage of illness/disease after the COVID-19 is over. But still 104 (31.61%, $p < 0.05$) believe that reliance over Allopathic (although using self-medication) will continue. There is a trend in data regarding the post pandemic patient's footfall and their dealing thereof in the hospitals. 185 (56.23%, $p < 0.05$) have believes that number of patients is expected to increase in hospitals/private clinics post-pandemic. So, there should be a dedicated Centre for COVID patients in every hospitals, 263 (79.93%, $p < 0.05$) HCPs suggest this and would like to continue using Personal Protective Equipment (PPE) even after COVID 19 is over, as said by 168 (51.06%, < 0.05) HCPs.

4. DISCUSSION

There were some issues in the data homogeneity like male nurses didn't participate, there were no female nurses above the age of 35 years, no Physiotherapist/Occupational therapist above 45 years, and no female nurses above the experience of 10 years. These and others can be observed in Table 1. The unprecedented crisis and less availability of HCPs were the reasons for it as the healthcare system is under stress. According to the National Health Profile-2019, there are 7,13,986 government hospital beds available in India. This amounts to 0.55 beds per 1000 population [11]. Furthermore, any hospital is a closed work environment in which the staff members are often exposed to stress and pressure. Within the clinical group, nurses are generally more at risk than doctors [12]. Although nurses might be more vulnerable to psychological distress than other healthcare workers, they are more likely to adhere to infection control procedures [13].

Undoubtedly the digitalized services could potentially reduce patient contact and thus risks for infection, national or international experts can give advice from a distance and can even support to less-experienced doctors [14]. The digital technologies include the internet of things

(IoT) with next-generation telecommunication networks (e.g., 5G) [15]; big-data analytics [16]; artificial intelligence (AI) that uses deep learning [17]; and blockchain technology [18]. Additionally, the phone-based software that detects and records patients' data (e.g., daily temperature and symptoms) may prevent unnecessary hospital consultations for patients with mild flu-like symptoms. These data could also be developed into AI algorithms for the detection of COVID-19. They are highly inter-related. The proliferation of the IoT (e.g., devices and instruments) in hospitals and clinics facilitates the establishment of a highly interconnected digital ecosystem, enabling real-time data collection at large scale, which could then be used by AI and deep learning systems to understand healthcare trends, model risk associations and predict outcomes. Less encouraging response about the acceptability

and availability of virtual counseling in our study was surprising because India has the second-largest internet user base. India has been ranked as the second largest online market worldwide in 2019, next to China. The number of internet users was estimated to increase in both urban as well as rural areas, indicating a dynamic growth in access to internet [19]. In the recommendation of Virtual consultation, we should keep in mind that in a particular situation two persons can respond differently. Some individuals have higher fear psychosis. Other than a consultation for different ailments, Psychologists are also of the opinion that there is a need for telephone or remote counselling services equipped with state of the art technical support during COVID-19 [20]. Having access to psychological interventions and the development of staff support protocols were noted to be protective [21-23].

Table 3. Health-care providers' perceptions and recommendation towards COVID-19 infection (N=329)

Statements	Total 329% (95% CI) (n)	P- Value (χ^2 test)
How long will it take for our country to overcome the effects of COVID 19?		
3 months	16.10(12.53-20.47)53	0.125
6 months	25.22(20.84-30.19)83	
One year	19.75(15.82-24.4)65	
More than one year	18.84(14.98-23.42)62	
Can't Say	20.06(16.09-24.72)66	
What would be the impact on patients foot fall in the Hospitals/Private Clinic post COVID 19?		
Increase	56.23(50.83-61.49)185	<0.01*
Decrease	33.13(28.26-38.39)109	
Remains Same	10.63(7.75-14.44)35	
Should preliminary examination for COVID 19 be made compulsory for all the patients coming to the Hospitals/ Medical Care Centers?		
Yes	79.93(82.19-89.62)284	<0.01*
No	10.03(7.23-13.75)33	
Can't Say	3.64(2.1-6.27)12	
Do you think every Hospital/ Medical Care Centre should establish a dedicated clinic for COVID 19?		
Yes	79.93(75.28-83.91)263	<0.01*
No	15.19(11.72-19.48)50	
Can't Say	4.86(3.01-7.75)16	
Will you continue using Personal Protective Equipment (PPE) even after COVID 19 is over?		
Yes	51.06(45.68-56.42)168	<0.01*
No	29.78(25.1-34.94)98	
Can't Say	19.14(15.26-23.75)63	
Do you think after COVID 19 patients in early stage of illness/disease will switch to?		
Self-Medication with Allopathic Medicines	31.61(26.82-36.82)104	<0.01*
Alternative System of Medicines (Unani, Ayurveda, Homeopathic etc.)	30.39(25.68-35.57)100	
Religious Priest for Consultation	2.12(1.04-4.33)7	
Can't Say	35.86(30.88-41.19)118	

*P- Value ≤ 0.05 consider as significant

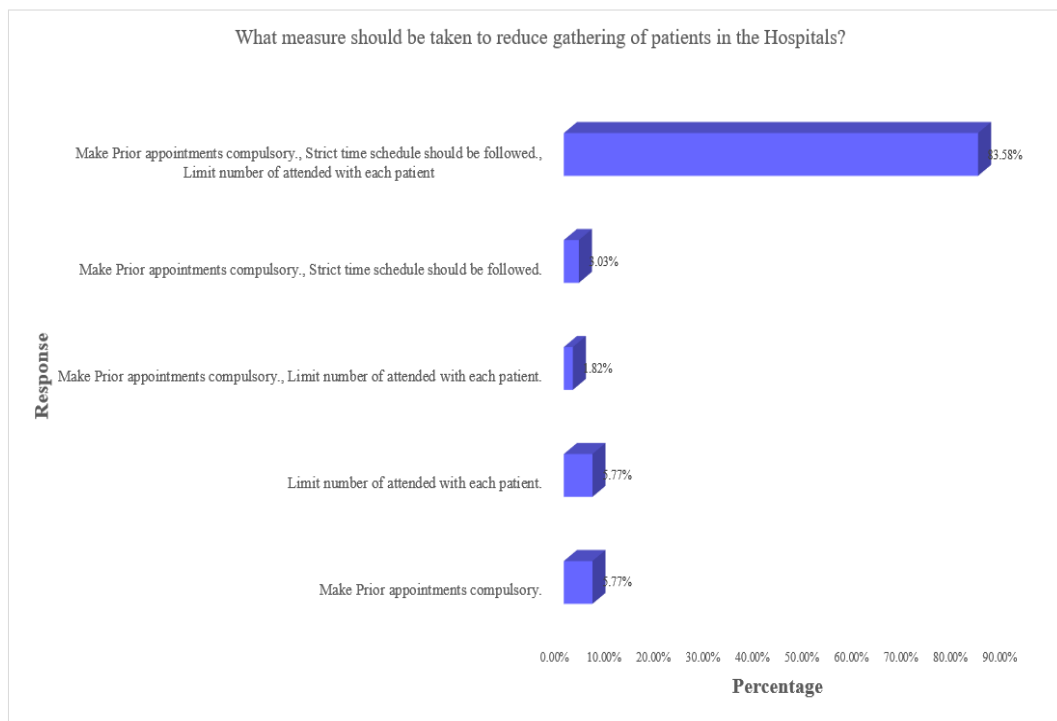


Fig. 1. Recommendation on how to reduce gathering in hospital

In our study 97.20% of the HCPs were of the opinion that the use of masks for patients and attendants be made compulsory in the hospitals. They expect it from the patients/attendants and behave the same themselves also. Rajoura et al. reported that 82.6% of physicians and 85% of Indian nurses use masks in their workplace at the time of the epidemic H1N1 influenza [24]. Our observation about the reduction of the number of patients outside the doctor’s chamber has also been ratified by another report. It is required to prevent cross-infection in the vulnerable group of patients [25].

The emergence of belief in the alternative systems of medicine in our survey is based on long-term successful use. Traditional Chinese Medicine (TCM) has played a crucial role in the prevention and treatment of several epidemic diseases. During the SARS epidemic in 2003, its intervention had also achieved a remarkable therapeutic effect. In the case of COVID-19, it has demonstrated that early intervention of TCM is an important way to improve the cure rate, shorten the course of the disease, delay disease progression, and reduce mortality rate. Furthermore, the overall hypothesis of working of TCM is based on not only to inhibit the virus, but

might block the infection, regulate the immune response, cut off the inflammatory storm, and promote the repair of the body [26]. Similarly, Ayurveda and Yoga also have the potential to address the pandemic challenges, mostly based on preventive measures rather than curative solutions [27]. Similarly, the Unani system has also claims for the prevention and management of the pandemic [28].

5. CONCLUSION

COVID-19 has been declared a global pandemic by WHO. We couldn’t learn from similar types of outbreaks (SARS-CoV and MERS-CoV), although they were localized. In a diversified country like India, a pan India policy is not sufficient enough to efficiently deal with the situation. That is why now the consultation with states is being increased by the central government and some controls are being delegated to them. There should be a separate assessment of requirements for each region and each group. In the given survey a specific group of front line warriors i.e., HCP has been picked up and attempted to draw a conclusion on a few relevant aspects of dealing with current and post-pandemic situations. Some of the conclusions

are, majority of the participants suggest to the use of a protective masks to the patients or attendants should be made compulsory while coming to the Hospitals, there shouldn't be gathering outside the doctor's chamber and we should switch to virtual consultation. 79.93% of health care professionals suggest a dedicated Centre for COVID patients in every hospital.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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