

Perception of Junior Doctors and Nurses towards the COVID-19 Disease in a Tertiary Care Centre in North India- A Questionnaire Based Study

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Resident or junior doctors and nursing staff make up the backbone of any public health care facility more so in cases of centers affiliated to teaching hospitals. Resident physicians have the most prolonged contact with patients as they represent the first communication interface between the attending physician and the patient. Similarly, the nursing staff has a critical role in patient care. Therefore, to minimize the morbidity and mortality due to Covid-19, it is important to be fully informed and compliant with measures to contain Covid-19.

Objectives: To assess the perception of the junior doctors and nurses regarding the various aspects of Covid-19 disease.

Methods: A preformed structured questionnaire with closed end questions was sent to the study subjects using the electronic media. In this study, questionnaire was sent to the convenient sample

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of 250 persons (100 junior doctors or residents and 150 nurses) working in the clinical departments of the hospital, from July 20 to 27th, 2020. This questionnaire was prepared after literature reviews based on information collected from CDC Atlanta, and Ministry of Health and Family Welfare (MOHFW), New Delhi and consisted of three sections: the demographic data, the knowledge and practices sections. The data were collected through anonymous, self-rated questionnaire that was distributed to all participants over the internet (WhatsApp and email).

Results- The questionnaire was sent to 250 persons (100 junior doctors and 150 nurses) working in the clinical departments of the hospital, out of which, 139 responded comprising 58 (41.73%) junior doctors and 81 (58.27%) nurses. Overall, 79.14% (n= 110) had sufficient knowledge regarding the disease and majority (94.96%) was practicing safe measures. In univariate logistic regression analysis of various variables with knowledge, the qualification was only variable which was found to be more significantly associated as far as knowledge and practices were concerned (junior doctors as compared to nursing staff).

Conclusion- Adequate knowledge apart from defining day to day behavior of health care workers, also prepares them for coping strategies in cases of crisis in critical situation like the our world is experiencing now.

Keywords: Covid-19; knowledge; junior doctors; nurses; perception.

1. INTRODUCTION

The world right now is facing an unprecedented health care crisis in the form of spread of a highly contagious virus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), responsible for coronavirus disease 2019 (COVID-19). India has become the second worst affected country with around 240 million people affected and two and half lakhs deaths till first week of May 2021 [1]. The disease is transmitted from person-to-person by close contact via the respiratory secretions in coughs or sneezes or by touching virus-contaminated surfaces or object [2]. Apart from tragic loss of life with exponential deaths, the pandemic has destroyed the global economy and overwhelmed the health-care system of even most developed nations of the world. India, with a population of over 130 crores and inadequate health care infrastructure is, fighting a battle with doctors, nurses and other health care workers as soldiers in this war. Resident physicians have the most prolonged contact with patients as they represent the first communication interface between the attending physician and the patient. Their work involves initial and ongoing assessment of patient's medical status, developing treatment plan, recording progress notes, order tests and also arrange for discharge and after care including patient education and counseling. Since the spread of the pandemic to our hospitals, the attention of resident doctors is also required for mastering the art of donning personal protective equipment (PPE) and implementing and understanding triage policies.

The residency consists of gradual or graded assumption of responsibility for patient care while under supervision of seniors, in an adequate learning environment. In many hospitals, residents' schedules and workflow have changed since the coronavirus outbreak started, diverting supplies and workforce from other departments like surgery and orthopedics to such frontlines units as emergency departments and intensive care units (normally managed only by internal medicine and anesthesiology residents); resulting in an unfamiliar working environment for many residents, increasing the risk to their health. Thus in this, unprecedented times amidst anxiety and insecurity, the residents continuously have to redefine their roles to provide the services on the front lines. The poor infection control practices and lack of adequate knowledge may have profound effect on the physical and mental health of the residents as infections continues to rise and the patient load increases. Globally, nurses' makeup 59 per cent of the healthcare workforce, as per the figures available with the World Health Organisation (WHO). They are playing a critical role in fight against COVID-19, pulling long shifts and putting themselves at risk of infections to care for patients. Despite intense training, it is not uncommon for nurses to not be fully aware of their exposure while caring for patients, especially when they feel stressed or exhausted.

2. MATERIALS AND METHODS

In this study, questionnaire was sent to the convenient sample of 250 persons (100 junior doctors or residents and 150 nurses) working in

the clinical departments of the hospital, from July 20 to 27th, 2020. This questionnaire was prepared after literature reviews based on information collected from CDC Atlanta, and Ministry of Health and Family Welfare (MOHFW), New Delhi and consisted of three sections: the demographic data, the knowledge and practices sections. The data were collected through anonymous, self-rated questionnaire that was distributed to all participants over the internet (WhatsApp and email). The first section was for background data which included age, gender, place of work, and qualification. The knowledge section had questions dealing with virus characteristics, modes of transmission, disease symptoms, high risk situations and prevention strategies. For the first question, out of seven listed symptoms, those who identified four or more symptoms associated with disease were given the score of one and those identifying 3 or less than 3 were given score of zero. For rest of questions, each correct answer was given one mark where as wrong answer was given zero. To check for safe practices, four questions were asked, 3 marks were given to those who answered always, 2 to those who answered sometimes and one to those who answered never, Thus, out of maximum possible score of 12, those scoring 8 or more were regarded to be following good practices which helped in preventing the spread of the disease.

3. RESULTS

The questionnaire was sent to 250 persons working in the clinical departments (100 junior doctors or residents and 150 nurses) and 139 responded. All completed questionnaires were cross-checked and edited on the same day and before data entry to ensure data consistency and completeness. Out of 139 responses, there were 91 females (65.47%) and 48 (34.53%) males. 111 (79.86%) belong to age-group of 20-30 years, 22 (15.83%) to 30-40 years and 6 (4.32%) to the age group of 40-50 years. The respondents included 58 (41.73%) doctors and 81 (58.27%) were nurses. Out of the 139, 81 were working in general ward alone, 18 in intensive care alone and rest 40 were doing the duty in both the places as per the roster. Regarding their source of information on covid - 19 pandemic, 63 (45.32%) study subjects identified the official sources like government websites and WHO as their main information source, 41 (29.50%) as news media, 31 (22.30%) social media like Whatsapp and facebook and 4 (2.88%) others as main source of

information. (Table 1) The score of 70% or more was used to define adequate knowledge with mean score of 8.16 ± 1.3 out of 11. Overall, 79.14% (n=110) had adequate knowledge, (Table 3) The majority of respondent were observing safe measures in the prevention of COVID-19. Out of 139 participants, 132 (94.96%) scored 8 or more than 8 with mean score of 11.37 ± 1.12 . (Table 2)

4. DISCUSSION

As there is no definite treatment available as yet, the approach to disease lies in controlling the source of infection; use of personal protective equipments to reduce the risk of transmission; and early diagnosis, isolation and proper management of affected patients. Resident or junior doctors and nursing staff make up the backbone of any public health care facility more so in cases of centers affiliated to teaching hospitals. Exposed doctors and nurses may experience a high incidence of infections, particularly for unprotected and repeated exposures as opposed to the general public who probably have exposure once. Thus, both nurses and resident doctors are most important links in the preventive strategies of any health care facilities. It is difficult to get accurate figure on the number of Health care providers affected by the disease worldwide [3]. The World Health Organization (WHO), which is coordinating the global response to the pandemic, says that its 194 member states are unable to continuously provide and update the comprehensive figures on health worker infections as they grapple with the unprecedented crisis. In a survey carried out in three developed countries most affected by the disease in the initial stage of pandemic, it was estimated that the infections in doctors' nurses and supporting staff may have accounted for 20.4% of total cases (23,728/116,386) in Spain (ISCII, <https://www.isciii.es>). 10.7% in Italy (18,553/173,730) (FNOMCeO, <https://portale.fnomceo.it/> and the 19% (9,282/49,370) United States [4] (probably because of inadequate knowledge of disease and short supply of personal protective equipment); with many health care workers succumbing to disease [5]. Therefore, to minimize the morbidity and mortality due to COVID-19, it is important for those involved directly in caring for the patients to be aware as well as compliant with measures to contain COVID-19 [6].

In our study out of 139 responses, there were 91 females (65.47%) and 48 (34.53%) males.

females' respondents comprised 58.9% in a study from Nepal [7], 56.2% in Nigerian study [8]. 49.4% from Egypt [9] and 74% from European nation, Greece [10], however, a vast majority of the participants were male (n = 87, n = 64%) in a study from African nation Uganda [11]. The majority of respondents, 111(79.86%) belong to age- group of 20-30 years; similarly in the neighboring country of Nepal, large percentage were in the age group of 16–29 years (67.1%) and from UAE [12], 32.1% (n=147) were aged 25-34 years. The mean age of participants was 34.95 ± 9.32 years and ranged from 20 to 60 years in Egyptian study[9].

Out of 139 who responded to the questionnaire, the 58 (41.73%) were junior doctors and 81 (58.27%) were nurses. In a study from neighboring country [13], 29.98% (n=120) physicians, 46.65% (n= 189) pharmacists and 25.36% (n= 105%) nurses were among the respondents out of total of 414. The 62% responses were received from medical doctors in study from Uganda [11] where as in Nigerian study [8], doctors constituted 23.7 % of respondents and nurses 40.9% followed by paramedics. In a study from UAE [12] the doctors accounted for 30.2% of the respondents (n=137, 30.2%) and in similar survey in Greece, the nurses accounted for (47.5%), followed by physicians (30.5%) and paramedics (19%).

In our study, majority of (45.32%) study subjects identified the official sources like government websites and WHO as their main source of information, followed by news media for 41 (29.50%) subjects; similar to two other nations, Saudi Arabia [14] and Vietnam [15] where government sources followed by social media played predominant role in the information sources. However, in a study from another developing country Egypt [9], the main source of information was listed as physicians (29%) followed by ministry of health website (27%) and social media (20.6%). The majority of participants of UAE [12] study (n=276, 61.0%) used social media to obtain information and in developed nation Greece [10], the 69.8% received information from electronic media. (TV/radio).

The symptom recognition along with relevant history of contact is most effective strategy in early recognition and isolation of patients to prevent further spread. Therefore, we wanted to see familiarity of junior doctors and nurses with the symptoms of covid-19 which have been

described so far. So individual symptoms like fever was marked correctly by 126 (90.65%), followed by cough 118(84.89%), sore throat 107 (76.98%), abnormality of smell sensation by 76(54.68%) malaise 72 (51.80%), sneezing 57 (41.01%) and running nose by 45 (32.37%) participants. It is important here that almost 90 % of residents and nurses were aware of fever, only 54% correctly marked the symptom of loss of smell sensation and 51% identified malaise as one of the complaints of the patient. As very few patients will present with all the classical symptoms of the disease, the high index of suspicion and knowledge of all the symptoms including the uncommon ones is of paramount importance to the resident doctors so that they don't miss the patients as delay in diagnosis in a pandemic can result in spread of the disease and massive surge in cases and overburdening of the health care facilities. Similarly, the early recognition of the disease, in high-risk people, in elderly or when there is suggestion of contact history will be single most effective step in a pandemic to limit the further spread of the disease. The residents' doctors and nurses are likely to be in prolonged and repeated contact with patients and colleagues who have atypical, few, or no symptoms while still being highly contagious [16,17], so this has important implication for their own health and of those they come in contact with.

Overall, 79.14% (n=110) had adequate knowledge with mean score of 8.16 ± 1.3 out of 11. The score of 70% or more was used to define adequate knowledge. In a study from another Northern Indian tertiary care centre [18]. HCWs had an average correct response rate of 65%. In study from neighboring Nepal, majority of healthcare workers had good to moderate knowledge (n = 82.15%, and in another neighboring country [13] knowledge score was quite good (93.2%, n=386). Now if we compare these results with some other developing nations, the mean correct answer rate was 80.4% in Egypt [9], 69% (n=94) in Uganda [11], 78.6% in Nigeria [8], 89% in China [19] and 88.28% in Greece where as in Iran [20], another country severely affected early in the pandemic, 99% of respondents had excellent knowledge level regarding the modes of transmission but as far as symptoms were concerned, only 86% had sufficient knowledge. On the other hand, in a study from the United Arab Emirates, a significant proportion of HCWs had poor knowledge of its transmission (n=276, 61.0%) and symptom onset (n=288, 63.6%).

Table 1. Distribution of knowledge of study subjects

Knowledge	Frequency	Percentage
Symptoms		
Sore throat	107	76.98%
Sneezing	57	41.01%
Cough	118	84.89%
Running nose	45	32.37%
Fever	126	90.65%
Abnormality of smellsensation	76	54.68%
Myalsia	72	51.80%
Treatment of COVID 19		
No definitive treatment is available	4	2.88%
Only symptomatic and supportive management	27	19.42%
Both options are correct	108	77.70%
Majority of COVID 19 patients are asymptomatic and can transmit the disease		
False	12	8.63%
True	127	91.37%
Elderly , those with chronic disease, those with immunosuppression are more likely to develop the disease		
False	7	5.04%
True	132	94.96%
Patients who are COVID positive but dont have any symptom cannot transmit the disease		
False	117	84.17%
True	22	15.83%
Contact with animals / Eating non veg food can transmit the disease		
False	111	79.86%
True	28	20.14%
The virus spreads mainly through		
None of the above	1	0.72%
Contaminated surfaces	3	2.16%
Respiratory droplets	13	9.35%
Both of the above	122	87.77%
Effective protection of elderly by means of social distancing should be the top priority in current situation		
False	5	3.60%
True	134	96.40%

Knowledge	Frequency	Percentage
Children and young adults need not to take any precaution to prevent COVID 19		
False	124	89.21%
True	15	10.79%
People who have contact with a COVID positive patient should be isolated immediately and kept under observation		
False	6	4.32%
True	133	95.68%
In todays time when their is no vaccine for COVID the norms of mask wearing/social distancing is the only preventive measure		
False	5	3.60%
True	134	96.40%
Knowledge score		
Inadequate knowledge	29	20.86%
Sufficient knowledge	110	79.14%
Mean \pm Stdev	8.16 \pm 1.3	
Median(IQR)	9(8-9)	
Range	2-9	

Table 2. Distribution of practice of study subjects

Practice	Frequency	Percentage
Because of the risk of acquiring the disease I usually avoid going to the crowded places		
Always	103	74.10%
Never	7	5.04%
Ocassionally	29	20.86%
I wear a mask whenever i am in hospital		
Always	131	94.24%
Sometimes	8	5.76%
In last few months i have refrained from shaking hands		
Always	116	83.45%
Never	3	2.16%
Sometimes	20	14.39%
I remember to wash my hands before and after handling the patient and touching any potentially contaminated surface		
Always	128	92.09%
Sometimes	11	7.91%
Practice score		
Good practice	132	94.96%
Poor practice	7	5.04%
Mean \pm Stdev	11.37 \pm 1.12	
Median(IQR)	12(11-12)	
Range	7-12	

Table 3. Association of sociodemographic characteristics with knowledge and practice

Sociodemographic characteristics	Inadequate knowledge (n=29)	Sufficient knowledge (n=110)	P value	Test performed	Good practice (n=132)	Poor practice (n=7)	P value	Test performed
Age(years)								
20-30	21 (72.41%)	90 (81.82%)	0.329	Fisher Exact test	106 (80.30%)	5 (71.43%)	0.335	Fisher Exact test
30-40	7 (24.14%)	15 (13.64%)			21 (15.91%)	1 (14.29%)		
40-50	1 (3.45%)	5 (4.55%)			5 (3.79%)	1 (14.29%)		
Gender								
Female	18 (62.07%)	73 (66.36%)	0.665	Chi square test,0.187	88 (66.67%)	3 (42.86%)	0.234	Fisher Exact test
Male	11 (37.93%)	37 (33.64%)			44 (33.33%)	4 (57.14%)		
Place of work								
Both	7 (24.14%)	33 (30%)	0.130	Chi square test,4.086	36 (27.27%)	4 (57.14%)	0.177	Fisher Exact test
General ward	15 (51.72%)	66 (60%)			79 (59.85%)	2 (28.57%)		
Intensive care(ICU/MICU/SICU)	7 (24.14%)	11 (10%)			17 (12.88%)	1 (14.29%)		
Qualification								
Junior doctors	7 (24.14%)	51 (46.36%)	0.031	Chi square test,4.662	56 (42.42%)	2 (28.57%)	0.699	Fisher Exact test
Nursing staff	22 (75.86%)	59 (53.64%)			76 (57.58%)	5 (71.43%)		
Source of information on COVID 19								
Any other	1 (3.45%)	3 (2.73%)	0.003	Fisher Exact test	2 (1.52%)	2 (28.57%)	0.024	Fisher Exact test
News Media	9 (31.03%)	32 (29.09%)			40 (30.30%)	1 (14.29%)		
Official sources(govt websites/WHO)	6 (20.69%)	57 (51.82%)			60 (45.45%)	3 (42.86%)		
Social media(whatsapp/facebook)	13 (44.83%)	18 (16.36%)			30 (22.73%)	1 (14.29%)		

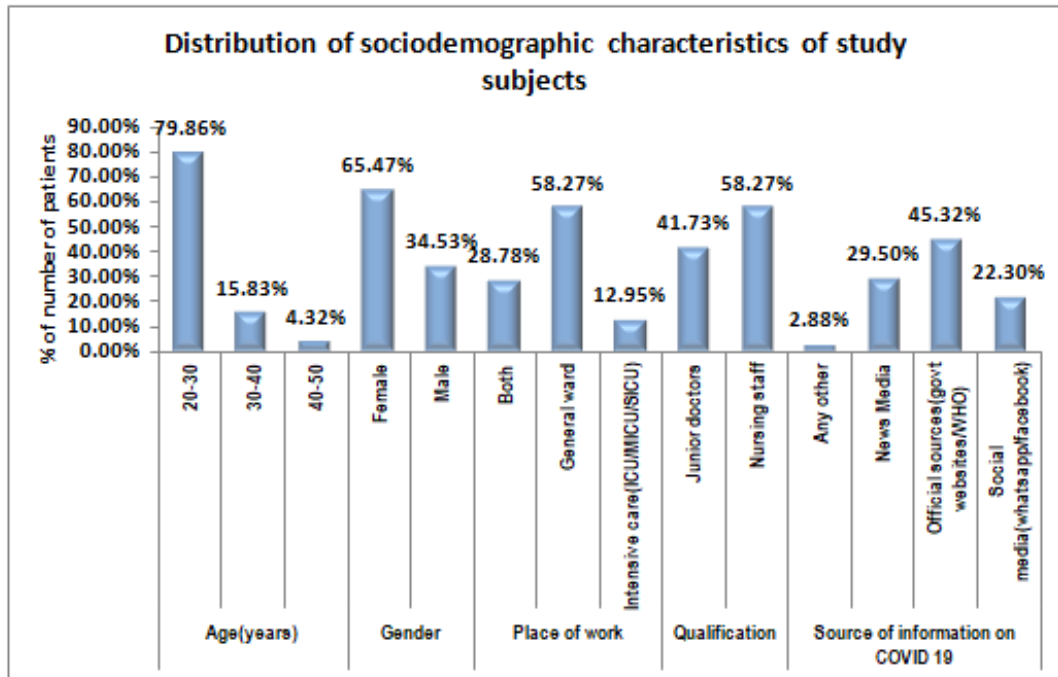


Fig. 1. Distribution of sociodemographic characteristics of study subjects

In our study in univariate logistic regression analysis of various socio-demographic variables factors like gender, age and place of work didn't show any significant association with the knowledge). The factor associated with good knowledge were qualification as trained doctor (OR, 2.597; 95% CI: 1.041-6.476 *P* value 0.031) and source of information being official government sources (*p* value 0.003). Doctors showed higher knowledge scores than nurses and paramedics in studies from China [19], Greece [10], Egypt [9] and Uganda [11]. Factors associated with knowledge in this study [11] were age >40 years and news media as information source.

In our study, majority of respondent were observing safe measures in the prevention of COVID-19. Out of 139 participants, 132 (94.96%) scored 8 or more than 8 with mean score of 11.37 + 1.12. There was no significant association with regards to age group, place of work and qualification as junior doctors or nursing staff). However, those following official sources like WHO and govt websites as their main source of information were more likely to follow good practices for the prevention of disease (*p* value 0.024) as compared to those taking information from other media. (OR: 0.037 95% CI :0.003-0.480; *p* value 0.012)) .88.7%,

(*n*=367) claimed to follow good practices in a study from neighboring nation [13] and 89.7% from China [19]. In Nepal, the practice score was 83.57% with 13.89 ± 5.33 out of 20 followed by 74% in Uganda (with age 40 years and higher education showing significant association with good practices)

5. CONCLUSION

The predominant role of resident doctors and nursing staff in this crisis management will be a transformative learning experience, provided they are adequately trained to manage COVID-19-specific illness, making sure they understand how to apply these principles to the infected patient. The good knowledge promotes good behavior thus, increases the well-being of the patients and also limit the spread of disease with in the health care setting and to the community at large and also prepares those attending the patients for coping with crisis in critical situation like this.

LIMITATION

This study had some limitations in interpreting the results because COVID-19 is a novel coronavirus and new information is emerging with each passing day.

CONSENT AND ETHICAL APPROVAL

Informed consent was obtained from all participants and ethical approval was obtained from institutional ethical Committee and confidentiality of the information provided was maintained.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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