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Knowledge of COVID-19 among nursing and Allied health care professionals working in tertiary care hospital

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ABSTRACT

The rapid spread of the COVID-19 pandemic has become a major cause of concern for the healthcare profession. The pandemic is on-going and actively developing and countries around the world are taking drastic measures to reduce the spread of disease by measures like initiating social distancing, closing of schools and nonessential businesses. The present study is being conducted to assess the knowledge of COVID-19 among the nursing and allied health care professionals. A cross sectional study on knowledge of COVID-19 was conducted among nursing and allied health care professionals working in tertiary care hospital. A structured questionnaire comprised of 25 questions developed by investigators was administered to 177 health care professionals that includes nursing and allied health professionals working in a tertiary care hospital. Among the 177 nursing and allied health care professionals, majority 92.1% of them has adequate knowledge regarding the present global pandemic and 7.9% had moderate knowledge. This study concludes that nursing and allied health care services professionals in tertiary centre has adequate knowledge regarding COVID-19 pandemic.

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INTRODUCTION

Novel corona virus was named as coronavirus disease 2019 (COVID-19) by WHO in the month of February and on the same day international virus classification commission announced that Novel corona virus was named as Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2). In the past two decades corona virus has caused two epidemic diseases namely severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) (de Wit *et al.*, 2016).

Novel corona virus induced pandemic was first reported when the case started appearing in the month of December 2019 in Wuhan city of china (Zhou *et al.*, 2020). The first reported cases started appearing in January 29 2020 in India. As of April 23 2020 there were about 23,076 confirmed cases of which 17610 cases were active 4,749 of them recovered and 718 deaths have occurred so far in India (COVID-19 India , 2020).

Coronavirus are enveloped viruses containing a single stranded, positive sense RNA genome of approximately 29,000 nucleotides. A distinctive club shaped projection is present over the virus surface which gives the appearance of a crown or corona from which its name was derived. Four corona virus genera (Alpha, Beta, Gamma & Delta) have been identified so far, with human infection only seen in Alpha (Guery *et al.*, 2013). The virus contains five structural proteins Spike or S-protein, Hemagglutinin esterase(HE), Matrix (M), Envelop (E) and Nucleotide (N). Spike protein (S) is a glycoprotein envelops which helps in the attachment of the cells and cell membrane. Hemagglutinin esterase(HE) is found only in few strains. The structural proteins are thought to be the targets for the antiviral drug activity (Marra *et al.*, 2003).

The virus genomic sequencing done in the patients has revealed previously unknown Beta-Cov strain which has the identical sequence with two bat derived severe acute respiratory syndromes like corona viruses and MERS CoV (Abdel-Moneim, 2014).

Understanding the transmission of disease is incompletely understood. Initial investigation in Wuhan at the beginning of the outbreak has identified the source of the infection from a wet market. The virus is transmitted from person to person in the form of fomites, when the person coughs and sneezes. The infection also spreads from when an individual comes in direct contact with the infected surface and the touches his or her nose, eyes or mouth. Droplet transmission usually do not travel more than 6 feet and do not linger in air for a longer period (Schwartz and Graham, 2020).

The incubation period is thought to be within 14 days following exposure, with most cases occurring between four to five days of infection. The spectrum of illness depending on the symptoms ranges from mild to critical. The asymptomatic spread of infection has been documented diamond price cruise ship when all its occupants were tested. Approximately 17 % of them tested positive for the virus in which half of them are asymptomatic (Lu *et al.*, 2020).

As for the management of the affected patients, asymptomatic patients with mild & moderate symptoms should be isolated to prevent viral transmission to others. Severely sick patients should be transferred to respective intensive care units for expert management.

As the evidence suggests that the disease is transmitted from person to person through the droplets. Health care workers are at a high risk of being infected by the viral disease and protecting the health care workers is of great importance.

COVID -19 has reached the pandemic state and has become a topic of discussion in media outlets and among general public ,especially health care workers and patients. For this reason we have investigated health care workers knowledge towards the present emerging health crisis.

MATERIALS AND METHODS

This was a cross-sectional study carried out in Panimalar Medical College Hospital & Research Institute in Chennai. By the investigators in a online structured questionnaire was developed. The link of the questionnaire was shared with the investigator. After they consented to take the survey, they filled up the demographic variables and questionnaire related to the knowledge of COVID-19 appeared sequentially, which participant answered. The socio-demographic variables include age, gender, profession, education, and professional experience. An online self-reported questionnaire developed by the investigator contained 25 yes/no questions on novel coronavirus, signs and symptoms, transmission, and treatment. Descriptive and Inferential statistics have been used in this study to analyse the findings. The study protocol was approved by the Institutional Review Board (IRB) of the Panimalar Medical College Hospital & Research Institute, Chennai (Panimalar Medical College Hospital & Research Institute IRB #1/2020/002) and conformed to the requirements of the Declaration of Helsinki (as revised in Seoul 2008).

Statistical Analysis

The obtained data was coded validated and analysed using SPSS software version 17. Descriptive analysis was applied to calculate frequencies and means. The chi-square test was used to investigate the level of association among the various demographic variables. P values of less than 0.05 were considered statistically significant.

RESULTS

A total of 177 participants responded. All the participants were health care professionals. Among the participants, age below 20 years 11.3%, 21-25 years 38.4%, 26-30 years 24.3%, above 30years 26%. In gender, 75.7% were female and 24.3% males. More than 87% of participants were nurses, 11.3% were pharmacists, 1.7% were Allied health sciences. Among nursing participants, 42.4% were diploma holders, 33.9% were undergraduate, and 23.7% were postgraduates surveyed in this study demonstrated (Table 1).177 participants answered 100% correctly regarding signs, symptoms, and prevention of COVID-19 in survey (Figure 1). Considerable number of participants demonstrated adequate knowledge of COVID-19 (Table 2). The knowledge level of COVID-19 Mean score is 21.41 and standard deviation score of 1.920. In association, there is no significant relationship between levels of knowledge with their socio demographic variables age, gender, education (Table 3).

DISCUSSION

Coronaviruses are human and animal pathogens. Towards the end of 2019 Novel corona virus was identified as leading cause of pneumonia cases in Wuhan city of china which resulted in an epidemic in china. Since its initial outbreak, the COVID-19 disease has a cascading effect worldwide and developed into a global pandemic.

The study participants up to 88% responded correctly in identifying novel coronavirus can cause fatal respiratory infectious disease. Currently, COVID-19 is a global discussion topic in the media and among the public, especially among health care professionals and patients. With the current mounting of COVID-19 transition raised tensions in everyone, including health officials and health system, this raised an important recurring question about how we manage information to help the frontline health care professionals. All the participants had knowledge regarding how to decrease the chance of getting COVID-19 and how to take preventive measures, etc. This indicates that the participants will take measures to prevent COVID-19 infection as they have adequate knowledge. From this perspective scientific prevention control, health care professionals should place a high value on wearing of Personal Protective Equipment (PPE) and procedure for discarding PPE, it is necessary to prevent further contamination and infection (Lu *et al.*, 2020).

Since the outbreak of the disease in china the virus has been rampart in many parts of the world. As of April 23 there were about 23,076 confirmed cases of which 17610 cases were active 4,749 of them recovered. Isolation of the suspect cases should be the first step in curbing the spread of the viral disease.

In about 88% of the study participants are able to identify that Novel corona virus is causing serious respiratory problem in the affected individuals. In a study conducted by Zunyou Wu and Jennifer M et al 44672 patients that is around 62% of their study population one or the other form of the respiratory complaint (Russell *et al.*, 2020). All most all the study population is able to identify the disease origin to Wuhan city of Hubei province of china.

In about 69.5% of the study population was able establish that corona viruses can origin from the animal sources. Over the past 16 years SARS-Cov,MERS –CoV and COVID19, along with other avian origin influenza A virus H5N1 and H7N9 zoonotic origin has been established, whereas phylogenetic analysis suggests that MERS-CoV has likely originated from the Bat coronaviruses (To *et al.*, 2013).

Person to person disease transmission possibility was acknowledged by most of the study population. But the concept of Air borne transmission was understood only by 62.7% of the study group. As per the evidence available droplet transmission occurs when a person is in close contact with someone with respiratory complaints who is in less than one meter distance (WHO, 2020).

98% of the study population has identified that health care workers are at the risk of developing complications related to coronavirus. Incubation period of 1-14 days was identified by most of the study participants and the same was identified in a study conducted by Stephen A. Lauer Kyra H. Grantz, BA et. al where 181 confirmed cases the median incubation period was around 5.1 days and 987.5% developed symptoms within days of exposure with the virus. With this available data it is safe to assume that symptoms will develop after 14days (Lauer *et al.*, 2020).

Common method of spreading infection is through coughing and sneezing was identified by many people in the study group along with other symptoms like fever and shortness of breath. According to WHO, the most common symptoms fever, tiredness and dry cough. Some patients also presented with runny nose, sore throat, nasal congestion dyspnoea after 8 days of symptom onset. Many patients were also reported with gastro intestinal symptoms (Wickramaratchi *et al.*, 2020).

At present state 95.5% of the study participants are agreeing to social distancing in public places, in com-

Table 1: Characteristics of the respondents (N=177)

Demographic variables		Number	Percentage
Age in years	Below 20 years	20	11.3%
	21-25 years	68	38.4%
	26-30 years	43	24.3%
	Above 30 years	46	26%
Gender	Female	134	75.7%
	Male	43	24.3%
Profession	Nursing	154	87%
	Alliedhealth sciences	3	1.7%
	Pharmacy	20	11.3%

Educational qualification			
Diploma	75	21.25	2.034
Undergraduate	60	21.40	1.787
Post Graduate	42	21.69	1.906
Total	177	21.41	1.920

Table 2: Mean and standard deviation on knowledge of COVID-19

S.No	Demographic Variables	N	Mean	Standard deviation	P-Value
1	Age				.826
	< = 20 Years	20	21.80	1.673	
	21 - 25 Years	68	21.41	1.712	
	26 - 30 Years	43	21.28	2.250	
	> 30 Years	46	21.35	2.013	
	Total	177	21.41	1.920	
2.	Gender				.559
	Female	134	21.44	1.874	
	Male	43	21.30	2.076	
	Total	177	21.41	1.920	
3.	Profession				.109
	Nursing	154	21.28	1.887	
	Allied Health Sciences	3	22.67	1.528	
	Pharmacy	20	22.25	1.618	
	Total	177	21.41	1.920	

munity , work places and at home at least 1 meter. Non pharmaceutical interventions (NPI) social distancing of total population, case isolation in the home, voluntary home quarantine closers of educational institutions are the only methods to interrupt the person to person disease transmission (Ferguson *et al.*, 2020).

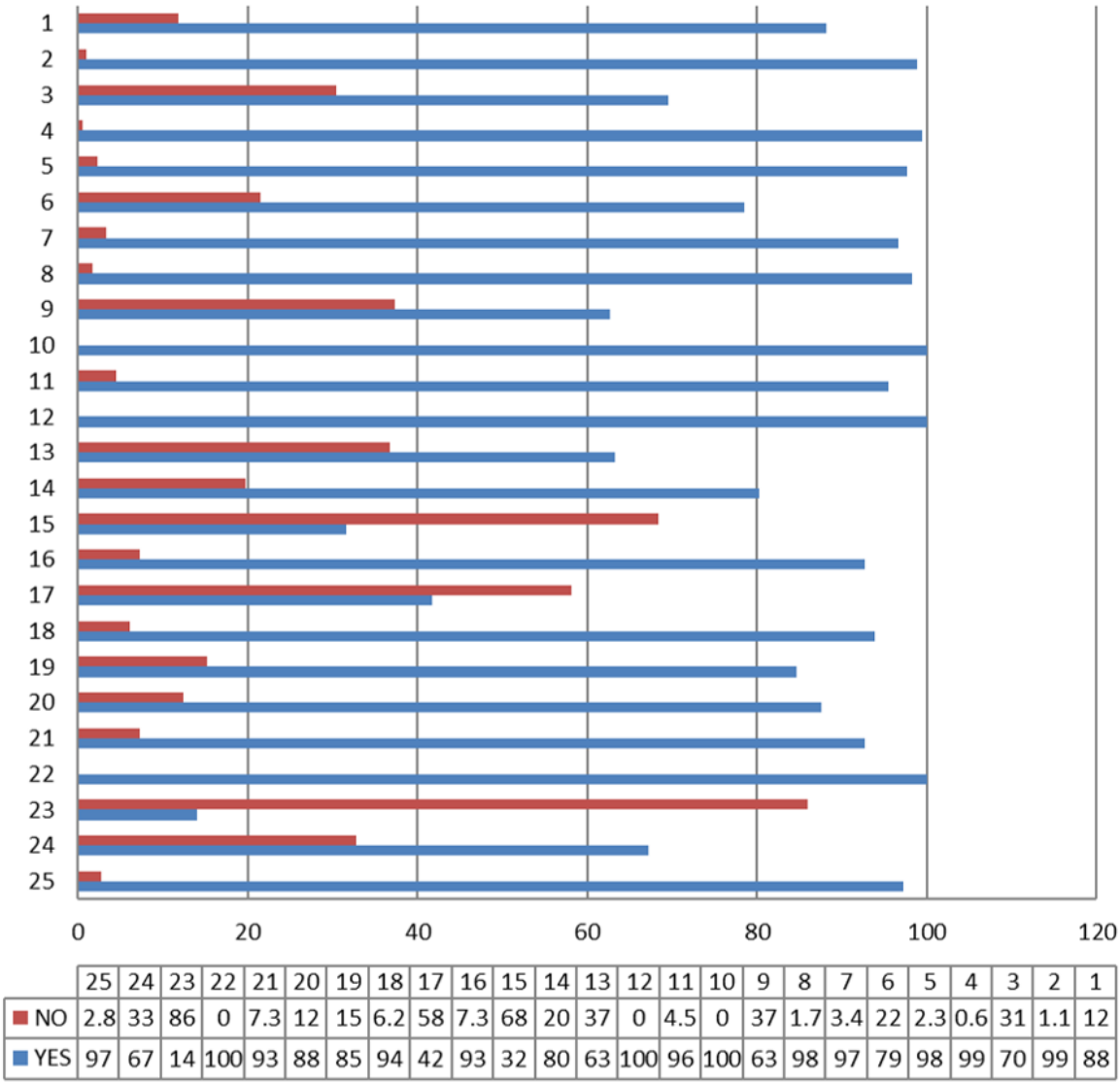
All the participants were agreed that virus transmission can be decreased by avoiding touching of eyes, mouth and nose. CDC has suggested that the disease transmission is possible when a person comes in contact with the contaminated surface or object that has virus on it and then touching their own mouth, nose or possibly their eyes (Centers for Disease Control and Prevention, 2020).

The disease transmission from asymptomatic person to others was acknowledged by 63.3% of the study participants. The same was demonstrated in a study done by Zhiling Hu, Ci Song et al a typical asymptomatic transmission to the coha-biting family members, which even caused severe COVID-19 pneumonia. Overall, the asymptomatic carriers identified from close contacts were prone to be mildly ill during hospitalization (Hu *et al.*, 2020).

The first case was reported in India in the state of Kerala in the month of January in student returning

Table 3: Association between demographic variables and knowledge on COVID-19 among health care professionals

S.No	Demographic variables	Moderate knowledge		Adequate Knowledge		Chi-square
		Number	Percentage	Number	Percentage	
1.	Age in years					
	Below 20 years	1	5%	19	95%	0.312
	26-30 years	3	4.4%	65	95.6%	
	Above 30 years	6	14%	37	86%	
		4	8.7%	42	91.3%	
2	Gender					
	Female	11	8.2%	123	91.8%	0.794
	Male	3	7%	40	93%	
3	Profession					
	Nursing	16	8.6%	138	91.4%	0.192
	Allied Health Sciences	0	0%	3	100%	
	Pharmacy	0	0%	20	100%	



	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
NO	2.8	33	86	0	7.3	12	15	6.2	58	7.3	68	20	37	0	4.5	0	37	1.7	3.4	22	2.3	0.6	31	1.1	12
YES	97	67	14	100	93	88	85	94	42	93	32	80	63	100	96	100	63	98	97	79	98	99	70	99	88

Figure 1: Frequency and Percentage of Knowledge questionnaires on COVID-19 (N=177)

from china due to the lock down in the Wuhan city due to the virus outbreak was identified by most of the study population due to availability of the information from various sources like media out lets.

Vaccination against the corona virus is not available at present time and this is well under stood by most of the study participants. With the emergence of the disease covid19 there are about 15 potential vaccines in pipeline globally where wide range of technologies were applied. It is likely to take about a year for most of them to start phase 1 trials. (Pang *et al.*, 2020).

CONCLUSIONS

As the global threat of COVID-19 continues to emerge, it is time to improve knowledge among health care Professionals. Irrespective of different age groups, gender, education and experience health care professionals had good knowledge regarding COVID-19 pandemic disease. However further educational interventions are required to battle the present pandemic situation.

Abbreviation

WHO- World Health Organization, PPE-Personal Protective Equipment, HCP-Health Care Professional, COVID-19- Corona Virus Disease-2019.

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