Original Research Article

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Awareness of nursing assistants regarding COVID-19 epidemiology and preventions: a hospital based cross-sectional study

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ABSTRACT

Background: COVID-19 is a disease caused by a beta coronavirus belonging to the larger family coronaviruses. It is very important that health care workers have adequate knowledge regarding COVID-19 and epidemiological characteristics for disease prevention. This study was meant to assess awareness of nursing assistants working in a tertiary care institution in Kerala regarding COVID-19 infection, modes of transmission, symptoms, isolation, and preventive measures instituted for self-protection and hospital sanitation. The objectives of this study was to assess the awareness including the knowledge attitude and practices of hospital staff about basic infection control practices and epidemiological characteristics.

Methods: The study was conducted in medical college, Thiruvananthapuram. Study objective was to study awareness of nursing assistants working in the hospital about COVID-19 preventive measures and epidemiology. Participants selected by simple random sampling with sample size 100. Data was collected using semi structured questionnaire was entered into MS Excel and analysis done using appropriate statistical software. Total score calculated for each of the questions for each participant by summing up the responses for each choice in the question, individual domain and grand total scores calculated. Finally a grand total was calculated for each participant.

Results: Out of total participants 77 (68.8%) scored between 35-49 (good), 36 (31.2%) (average) between 18 and 34, and 0 below 18 (poor).

Conclusions: The results obtained indicate the nursing assistants had good knowledge about COVID-19 epidemiology which will prevent hospital infections of COVID-19.

Keywords: Awareness, COVID-19, Epidemiology, Nursing assistants, Prevention

INTRODUCTION

COVID-19 is a disease caused by a type of beta coronavirus belonging to the larger family of coronaviruses. They usually cause common cold and similar infections in human beings. They along with rhinoviruses are respiratory pathogens. Their involvement in causing severe diseases in humans with mortality and extreme morbidity has been noticed in the recent years of the 21st century by the onset of diseases like MERS (Middle-East respiratory syndrome) and SARS (severe acute respiratory syndrome). Both the above mentioned diseases are caused by coronaviruses. SARS was reported

in China during 2003 and MERS IN 2014 in the Middle East countries. The causative agent of SARS spread to humans from the civet cats and MERS from the camels. 1,2 Both the diseases had mortality rates ranging from 11% and 35% respectively. 3,4 The present disease COVID-19, which has started to cause a pandemic around the world affecting over 194 countries is estimated to have a casefatality rate of 4%. 5 COVID-19 started as a reporting of atypical pneumonia cases in Wuhan city of China in late 2019 in December. Further investigations into the etiology of the disease led to the discovery of the new strain of virus causing the illness, which was a mutant strain of coronavirus and was named as the novel corona

virus. The symptoms of the disease are fever and respiratory symptoms like dry cough, shortness of breath and fatigue and myalgia. Very few cases leads to the progression of illness to pneumonia requiring assisted ventilation. Majority of patients developing the infection only develop milder illness and especially the old aged people and those with comorbidities are prone to develop severe illness. By January the disease spread to countries around the globe from China and by April 7 2020 infected over 15 lakh people and caused over 81,000 deaths.

It was possible to curb the infection in China by lockdown of affected cities and provinces and by carrying out cleaning drives and case detection, contact tracing, isolation of cases, testing and quarantining of suspects and providing supportive care to the confirmed cases. No effective drug is available so far against the disease and also there is a non-availability of an effective vaccine till date. Intensive supportive care is instituted to all severely ill patients. All around the world it has resulted in the adoption of protective measures by people by initiatives taken by governments and generation of awareness through various measures like wearing of masks, handwashing, social distancing etc. lockdowns were established in many countries around the globe including India where a nation-wide lockdown for 21 days is announced. The people at the greatest risk of contracting the illness are the health care workers, including doctors, nurses, nursing assistants, and also other staffs like hospital cleaning and house-keeping staff who are directly or indirectly exposed to the patient or his belongings.6 There has been a reported shortage of personal protective equipment and related accessories in many places. Taking all of this into consideration it is very important that the health care workers have adequate basic knowledge regarding COVID-19, epidemiological characteristics like mode of spread and preventive aspects concerned with infection control such that each one among them is protected themselves from contracting the illness even when they themselves are involved in their work in places where COVID-19 patients are treated.7 This study was meant to assess the awareness of nursing assistants working in a tertiary care institution in the Indian state of Kerala regarding COVID-19 infection, modes of transmission, symptoms, isolation, and preventive measures instituted for self-protection and hospital sanitation.

The objectives of this study was to assess the awareness including the knowledge attitude and practices of hospital staff about basic infection control practices and epidemiological characteristics.

METHODS

Study setting

The study was conducted in a tertiary care institution in the Indian state of Kerala in the city of

Thiruvananthapuram. Kerala is the state that first reported case of the novel corona virus disease in India towards the end of January amongst a group of medical students who were studying medicine in Chinese universities located at Wuhan, which was the epicenter of the outbreak of the disease from where it was spread to the rest of the world including India.8 There was 1 case reported initially with subsequent detection of 2 more cases, which led to massive state wide exercises to curb the infection spreading to the local population. All travelers from china and affected countries were tested, positive cases were isolated and treated in designated isolation wards and asymptomatic people were sent for home quarantine. Almost all hospitals inside the state imparted knowledge related to infection prevention and control practices to all hospital staffs through training sessions conducted by experts in that field. During the second phase of infection that started by March of 2020, massive ramp-up of contact-tracing, case-detection, testing and treatment and training for a wide spectrum of workers was given state-wide. Similar training sessions were conducted in Government Medical College, Thiruvananthapuram also which is our study setting, which is declared as a COVID hospital which is dedicated for the testing and treatment of COVID-19 patients that too for severe cases.

Study population

The nursing assistants are the study population chosen for this study. They even though do not involve in direct patient care are associated with it indirectly by helping nursing staffs as well as doctors in providing patient care. They were given training classes regarding infection prevention and control well before the declaration of the hospital, our setting as a COVID hospital by the state government. An assessment of their knowledge regarding COVID-19 will be imperative in knowing the impact of such training sessions on the knowledge, attitude and practices amongst the nursing assistants which will help in preventing them from acquiring the illness as well in transmitting it to others.

Sample size and sampling technique

The estimated sample size for the study was calculated as 100. It was calculated by assuming that a proportion of 50% of the nursing assistants have adequate knowledge regarding the illness and its prevention and by setting an absolute precision of 20%. There are about 273 nursing assistants working at Government Medical college Hospital, Thiruvananthapuram. The detailed list was obtained from the nursing superintendent from which all who give consent for participating in the study were recruited randomly into the study since all of them are working in the hospital and at any time they can be posted in the wards meant for housing COVID confirmed persons and also that all of them had attended the training sessions.

Selection criteria

There were no specific exclusion criteria. All the nursing assistants had to work in covid care settings, all were given training classes.

Study design

The study design used in the conduct of the study was a Hospital based cross-sectional study, among the nursing assistants working in the setting during the study period.

Study period

The study was conducted between 14 June 2020 and 31 July 2020.

Data collection

Data was collected from the study participants by using a semi-structured questionnaire using face to face interview. The questionnaire was administered to the participants by the interviewer and responses are marked.

Statistical analysis

We formulated a semi structured questionnaire with questions on various modes of transmission of COVID-19 which contained multiple choices with yes/no responses. Some of the choices were a yes were others were no. Similarly questions with choices and each choice having an yes/no response was asked in the questionnaire about the symptoms, prevention, substances that can destroy the virus, expression of symptoms in patients and transmission from asymptomatic persons, articles of patients that can transmit infection, concentration and strength of bleach solution used in wards, and each correct response was assigned a score of 1 and wrong response 0.

Total score was calculated for each of the questions for each participant by summing up the responses for each choice in the question. A question on steps of hand washing was asked and scoring was done out of 6 based on enumeration of the steps by the participant, one point for each step. Finally a grand total was calculated for each participant. There were 9 items in the questionnaire as follows: 1) knowledge regarding transmission of covid-19, 2) knowledge on symptoms of COVID-19, 3) knowledge about prevention of COVID-19, 4) knowledge destructibility of COVID-19 virus, 5) knowledge about isolation period, 6) knowledge about bleach solution, 7) knowledge about transmission during patient care, 8) knowledge about glove use, and 9) hand washing knowledge

We calculated individual domain scores and total score and analysis was done using appropriate statistical software after entering the data into MS Excel.

We expressed quantitative variables in mean and standard deviation and qualitative variables in proportion. Significance was tested using appropriate tests of significance.

Ethical considerations

Clearance was obtained from institutional ethics committee and the institutional research committee before commencing study. All data collected were kept confidential, anonymity was maintained and there was no financial burden on study participants.

RESULTS

Age distribution

The histogram shown below illustrates the age distribution if participants enrolled into our study.

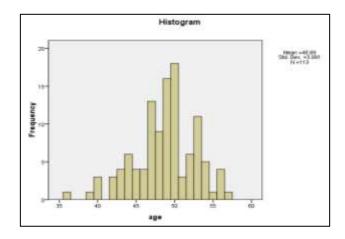


Figure 1: Age distribution of study participants.

Gender distribution

The gender distribution of the study participants is shown in the following pie chart. Males comprised of 6.2% (n=7) and females comprised of 93.8% (n=106).

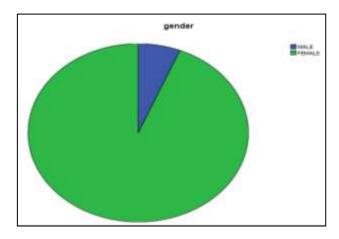


Figure 2: Gender distribution of study participants.

Years of experience

Years of experience of the study participants can be inferred from the table and bar diagram depicted below.

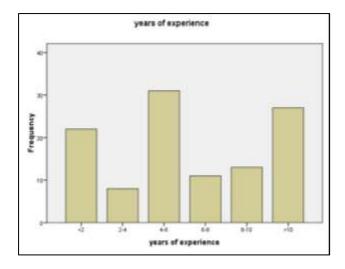


Figure 3: Years of experience of study participants.

Knowledge scores of individual domains

The following tables provide information pertaining to the various questions asked to the study participants using our questionnaire to assess knowledge regarding various parameters related to COVID-19, as mentioned in the methodology.

Table 1: Knowledge regarding transmission of COVID-19.

Knowledge of transmission of COVID-19	Yes (%)	No (%)
Cough	113 (100)	0 (0)
Sneeze	110 (97.3)	3 (2.7)
Talk	100 (88.5)	13 (11.5)
Sharing articles	97 (85.8)	16 (14.2)
Food	21 (18.6)	92 (81.4)
Water	24 (21.2)	89 (78.8)
Insects	15 (13.3)	98 (86.7)
Contact with infected person	94 (83.2)	19 (16.8)
Rodents	5 (4.4)	108 (95.6)

Table 2: Knowledge on epidemiology of COVID-19.

Variables	Yes (%)	No (%)
Knowledge on symptoms of COVID-19		
Fever	97 (85.8)	16 (14.2)
Cough	95 (84.1)	18 (15.9)
Throat pain	111 (98.3)	3 (2.7)
Runny nose	93 (83.2)	20 (17.7)
Breathlessness	105 (92.9)	8 (7.1)
Jaundice	106 (96.8)	7 (6.2)
Hematemesis	107 (94.7)	5 (4.4)
Knowledge about asymptomatics	Yes (%)	No (%)
Occurrence in asymptomatics	83 (73.5)	30 (26.5)
Transmission from asymptomatics	64 (56.7)	49 (43.4)
Knowledge about prevention of COVID-19	Yes (%)	No (%)
Using masks	109 (96.5)	4 (3.5)
Hand hygiene	107 (94.7)	6 (5.3)
Social distancing	99 (87.6)	14 (12.4)
Avoiding non-veg food	96 (85)	17 (15)
Cough hygiene	107 (94.7)	6 (5.3)
Steam inhalation	11 (9.7)	102 (90.3)
Ginger tea	12 (10.6)	101 (89.4)
Vitamin tablets	12 (10.6)	101 (89.4)
Naturopathy	13 (11.5)	100 (88.5)
Knowledge destructibility of COVID-19 virus	Yes (%)	No (%)
Soap and water	107 (94.7)	6 (5.3)
Bleaching powder	99 (87.6)	14 (12.4)
Sunlight	35 (31)	78 (69)
Hand sanitizer	99 (87.6)	14 (12.4)
Neem	31 (27.4)	82 (72.6)
Turmeric	31 (27.4)	82 (72.6)

Table 3: Knowledge on prevention of hospital based transmission of COVID-19.

Knowledge on prevention of hospital based transmission				Yes (%)		No (%)	
Knowledge about isolation period			67%		33%		
Knowledge about bleach solution				Yes (%)		No (%)	
Percentage of bleach solution used				27 (23.9))	86 (70.1)	1
Preparation of bleach solution				14 (12.4)	99 (87.6)	١
Knowledge about transmission du	ıring patie	nt care		Yes (%))	No (%)	
Bed sheet				107 (94	.7)	6 (5.3)	
Syringe				102 (90	.3)	11 (9.7)	
Medicine bottle				80 (70.8	3)	33 (29.2)	ı
Cotton				104 (92	.1)	9 (7.9)	
Urinary catheter				97 (85.9))	16 (14.1)	
Food plate				105 (92	.9)	8 (7.1)	
Knowledge about glove use			Yes (%)		No (%)		
Should hand sanitizer be used after removing gloves			106 (93.8)		7 (6.2)		
Can glove used for one patient used for another patient			2 (1.8)		111 (98.2)		
Hand washing knowledge score	0	1	2	3	4	5	6
Number of participants (%)	0 (0%)	0 (0%)	0 (0%)	44 (38.9%)	52 (46%)	17 (15%)	0 (0%)

Total score

We classified the total number of participants into three categories based on the total knowledge scores. The total score of the questionnaire was 49.

Table 4: Total score regarding knowledge about COVID-19.

Total score (mean and SD)	37.44 (5.99)	49
Total score	Number	Percentage
35-49 (good)	77	68.8%
18-34 (average)	36	31.2%
<17 (poor)	0	0%

The results indicate that there is adequate knowledge among the nursing assistants regarding the modes of transmission of the novel corona virus, its symptoms, presence and transmission of symptoms from asymptomatic, prevention and the destructibility of SARS CoV₂, and glove usage. However there was a decreased awareness regarding preparation of 1% bleach solution which is used for cleaning isolation wards and a very few participants had knowledge regarding the percentage of bleach solution used.

DISCUSSION

There were no similar studies published during the period or before the period of this study. This is one of the first studies to be conducted regarding the topic during the initial phases of COVID-19 pandemic. This study would definitely provide necessary light into those areas of health staff training and education which is needed for infection control. According to a latest study published which assessed the awareness and practices amongst

health care professionals of which results for nursing assistants specifically is unavailable, fifty two percent of health care professionals had awareness and 72% were practicing adequate measures to combat COVID-19. The majority (81.9%) believed that the sign and symptoms are similar to a common flu and the main strata of population that could be affected by COVID-19 are elderly (79%). Seventy three percent of participants did not attend any lecture, workshop or seminar on COVID-19 for awareness purpose. Sixty seven percent of health care professionals were practicing universal precaution for infection control and 57.4% were using sodium hypochlorite as a surface disinfectant in dental surgeries.⁷ Another study conducted in China, which studied the implementation of COVID prevention and control measures. The average overall implementation rate of COVID-19 prevention and control measures was 80.0% (143.97/180). The average implementation rates for hygienic behavior management and access management were lower, at 75.3 and 78.7%, respectively. Number of medical staff and transformational leadership score of nursing home's manager were associated with total implementation score (p<0.05). A total of 69.8% (322/461) of the nursing home managers had serious resource problems, and inadequate protective supplies (72.0%) and staff shortages (47.7%) were the two primary problems.8

A study on nursing students of Saudi Arabia which calculated the overall average score in the knowledge questionnaire was 9.85 (SD = 1.62, range = 0-12), which is equivalent to 82.1%. the study concluded that the majority of the students always performed most of the preventive behavior identified in the survey, except "washing hands with soap and water for at least 20 sesonds after blowing my nose, coughing, or sneezing" (39.2%) and "daily cleaning and disinfecting frequently touched surfaces" (41.6%).9

CONCLUSION

The present study had concluded that nursing assistants in the institution had adequate knowledge regarding transmission (mean score 6.62 out of 9), symptoms (5.26 of 7), transmission from asymptomatics (1.29 of 2), preventive measures (6.58 of 9), destructibility (4.10 of 6), isolation period (0.86 of 1), transmission from patient care (5.26 of 6), glove usage (1.92 of 2). The total mean score of the participants were 38.36 out of 49. It indicates that the classes conducted in the institution for creating awareness about the novel coronavirus infection has adequate impact and it had helped in increasing the knowledge of the participants which would not only help in increasing he awareness but also in reducing the spread of infection in the hospital staff from patients and also among the hospital staffs. Various initiatives of the government and the mass media and the health workers might have also helped in increasing awareness about SARS CoV₂, which will only have a positive impact among the community. These types of initiatives will help in spreading awareness and have a wider impact on the health sector as a whole, tackling diverse challenges of present day and the future with a sense of unity and commonality.

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Ethical approval: The study was approved by the Institutional Ethics Committee, Government medical college, Thiruvananthapuram

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