Study of Knowledge, Attitude and Practice among the Nursing Students Regarding COVID-19 Preparedness in A Rural Tertiary Care Center in Eastern India

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Abstract

The present pregression of the highly contagious novel coronavirus [COVID-19] has been testing the healthcare system globally pressing the medical staff everywhere. Present and future healthcare workers' updated knowledge, proper attitude towards the pandemic and adequate preventive practices are of paramount importance for the combat effectiveness of the healthcare burden.This study assessed the knowledge, practice and attitudes regarding COVID-19 among the nursing students of a tertiary care center in Eastern India. KAP scores were compared with their socio-demographic variables. Inter-relation between knowledge, attitude and practice was also assessed.Out of the 131 students participated in the study the KAP parameters were not significantly different based on the socio-demographic factors. Though knowledge and attitude parameters were positively correlated among them, it was found that practice was negatively correlated to both knowledge and attitude. This finding can be attributed to them being non-exposed and inexperienced in the regular healthcare activities as well to the fact that Indian population was to some extent unprepared to cope up with this type of epidemic for a long time. Training on the updated knowledge along with exposure to simulated environment with scheduled supervision to reflect the behavior of the students is of great importance so that in extreme situation, the trainee students can also come handy into utilization if needed.

Key-words: *knowledge, attitude, practice, nursing students, COVID-19*

Introduction

The novel coronavirus disease (COVID-19) has been spreading extensively involving the world since its inception in Wuhan city and surrounding locality of China in December 2019.[1-3]The World Health Organization (WHO) declared this a pandemic by 11th March, 2020.[4]Till now around 66 million people have been infected globally with about 1.5 million deaths and a massive blow to the structure of economy and health sectors of many countries[5]. The situation in India has been dire as well with nearly 9.6 million cases and the number of COVID-19 related mortalities nearing 140000 as of now.[6]The stretched medical facilities as well as the resource depletion are on the verge of waning.[7]

COVID-19 spreads person to person by means of droplets when an infected person talks, coughs or sneezes and through direct contact. The viruses have an incubation period extending upto 4-14 days.[8]The aged population and patients who suffered with chronic ailments such as diabetes,cardiovascular diseases and COPD are more vulnerable to have infection severely. The common manifestations of COVID-19 are fever, cough, respiratory distress, muscle aches, tiredness,

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anosmia, loss of taste sensation as well as having imaging evidence of pneumonia. Complications (e.g., acute respiratory distress syndrome [ARDS], arrhythmia, shock, acute cardiac illness, renal failure and secondary infection) and death may happen sometimes in severe cases[9]. As there is no recommended antiviral therapy or vaccine available for COVID-19 till now, so the mainstay of treatment is symptomatic management of cases and to implement public health measures to prevent and/or control COVID-19 spread.[9]

Healthcare workers of all levels are mainly active in formulating and catering the care of the patients of this highly transmittable virus. Healthcare workers are facing serious occupational health risks due to their frequent exposure to the ill persons.[10]Intra-hospital transmission of infection as well as protection of the healthcare workers are now highly important to block the spread of the viruses and at the same time to save the workforce. It is possible only when the healthcare workers have updated knowledge regarding the preventive measures to be taken against the spread of the virus as knowledge of the disease may help the worker's attitude and practices to change.[11]Correct attitudes and practices can lower the risk of infection directly.

Scientific studies suggest that the scarcity of knowledge and understandings among HCPs may lead to delayed diagnosis, poor infection control and disease transmission[12,13] To block the intra-hospital transmission of this communicable disease is of paramount importance now[12].

Now it is clear with the community level spread of the disease and further stretch of the existing healthcare sector that the chance of recruiting students pursuing nursing and medical education as a reserve force combating the disease appears more practicable. Many state governments may consider the feasibility on the verge of the acute shortage of healthcare workers in this war of attrition.[13] Therefore it becomes necessary to assess the preparedness of the nursing students towards the current pandemic.

The purpose of our study was to assess the knowledge, attitudes and practices of the nursing students during the COVID-19 outbreak. In addition, we can hint about possible measures to be taken to enhance their knowledge and to appropriate their attitudes and practices which may help us to have few steps ahead in preventing the COVID-19 transmission and severity.

Methodology

This study was conducted in the Department of Psychiatry, North Bengal Medical College, a tertiary center in the Siliguri corridor linking the North East India with the rest of the country. Owing to its proximity to three foreign borders and three of neighboring states of India, it became one of the important area in terms of COVID transmission across the country. Hence, it was selected as the setting to evaluate the knowledge, attitude and practice of the nursing students.

Inquiry surveys were sent to the nursing students pursuing B.Sc. Nursing irrespective of their year of training after approaching for the Institutional Ethical Clearance. 131 students consecutively responded via mobile messenger system. It was a cross sectional observational study. Consents were taken beforehand. Students who were comfortable in English participated in the study. A semi-structured Performa was developed and used in this study to collect information about various socio-demographic variables, i.e., age, sex, education, religion, background, marital status, number of family members and family income at an average.

To assess KAP we used a questionnaire structured as per the WHO guideline used in prior studies.[1,13]It is used to assess the Knowledge, attitudes, and practices of the subjects regarding the ongoing pandemic. Itcontained 16 items to assess the students' KAPs concerning the COID-19 pandemic. A short test including eight items assessed pandemic infection knowledge based on a Likert scale ranging from 1 to 6 ('Not understanding' to 'Master') with total scores ranging from 8 to 40. Attitudes were assessed through four items regarding their level of fear, confidence, feelings of fatigue, and attitude regarding revealing their exposure. Practices were measured through four items regarding the frequency of hand washing and practice about other protective measures.

Statistical Analysis

Data were analyzed using SPSS version 16 with

two-tailed $P < 0.05$ considered to indicate statistical significance.

Based on the questionnaire applied four items each from the practice and attitude subtitles were assessed and calculated as follows. Every dependent variable possessedtwo possible values: 1(one) stands for"always/ most of the time" and 0(zero) stands for "some time/ occasionally/rarely". Chi square test and Pearson's correlation test were done to assess the inter-relation that can affect the attitude and behavior of the studentsfrom among the four independent variables: age (below and above 20 years), urban or rural background, family income (below and above Rs. 20000/- per month) and knowledge level (scored as a continuous variable).

Result

Among the 131nursing students participated in this study, only 2 of them were married, the mean age was 20.85 years (± 1.47 years) with an average family income of Rs. 25201.64 per month. Most of the students were from rural background (59.5%). The average number of family members was reported to be 4.53 (± 1.46).

In the knowledge category we kept key questions in the domains of modes and routes of COVID-19 transmission, isolation and other prevention strategies including hand hygiene and social distancing. From the KAP questionnaire designed on COVID-19, the values in the knowledge subset were found to be 21.75 ± 5.15 in the sample population. It was seen in the Table No. 1 that majority showed understanding regarding the usefulness of patient isolation (75%), proper usage and disposal of face mask (50%), medical waste disposal (49%), PPE usage (56%) and knowledge regarding the modes (54%) and routes (52%) of infection transmission. Majority students showed greater understanding in the importance of wearing mask during aerosol generating procedure and other related situations (60%). Around 42% students responded in the 'familiar' domain when asked about the proper use of disinfectants.

Table 1: Response among the students in the knowledge category of the KAP questionnaire

Knowledge items	Responses					
	Not understanding	Understanding	General	Familiar	Master	Not answered
Suspected and confirmed COVID-19 cases should be isolated in a separate ward with a minimum 1m distance between the beds.	2 (1.5%)	98 (74.8%)	11 (8.4%)	19 (14.5%)	1 (0.7%)	0
Wearing a mask (N95, FFP2 or equivalent) during aerosol generating procedure or entering in a room with suspected or confirmed COVID-19.	2 (1.5%)	36 (27.5%)	79 (60.3%)	12 (9.2%)	2 (1.5%)	0
Proper using and disposal of the face mask.	2 (1.5%)	66 (50.4%)	8 (6.1%)	51 (38.9%)	4 (3.0%)	0
Proper disposal of medical waste products during care of COVID-19 patients.	35 (26.7%)	64 (48.8%)	10 (7.6%)	19 (14.5%)	2 (1.5%)	1 (0.7%)
Proper use and disposal of PPE	2 (1.5%)	73 (55.7%)	13 (9.9%)	16 (12.2%)	24 (18.3%)	3 (2.3%)
Proper use of disinfectants.	1 (0.7%)	25 (19.0%)	47 (35.9%)	55 (41.9%)	1 (0.7%)	2 (15.3%)
Mode of viral transmission	1 (0.7%)	71 (54.2%)	35 (26.7%)	18 (13.7%)	4 (3.0%)	2 (15.3%)
Routes of COVID-19 transmission	2 (1.5%)	68 (51.9%)	7 (5.3%)	25 (19.0%)	25 (19.0%)	4 (3.0%)

When we assessed the attitude regarding COVID-19 pandemic among the students, it was seen, as showed in Table 2 that the level of fear (47%) and fatigue (43%) were sometimes present. They showed high level of confidence (34%) and the necessity of intimation when facing exposure to the viral source (35%).

Table 2: Response among the students in the attitude category of the KAP questionnaire

Attitude items	Responses					
	Always	Mostly	Sometimes	Occasional	Rare	Not answered
Level of fear	44 (33.6%)	18 (13.7%)	61 (46.6%)	6 (4.6%)	2 (15.3%)	0
Frequency of fatigue	5 (3.8%)	57 (43.5%)	57 (43.5%)	2 (15.3%)	10 (7.6%)	0
Level of confidence	44 (33.6%)	22 (16.8%)	14 (10.7%)	43 (32.8%)	8 (6.1%)	0
Importance of intimation of exposure	46 (35.1%)	6 (4.6%)	20 (15.3%)	2 (15.3%)	55 (42%)	2 (15.3%)

When it came into actual practice, most response was found in the domain of proper use of hand hygiene while providing patient care (83%). 53% students stressed on the maintenance of quarantine during the outbreak, 48% mentioned proper PPE wearing during duties. The students had to some extent limited exposure in the training of infection prevention and control as shown in table 3.

Table 3: Response among the students in the practice category of the KAP questionnaire

Practice items	Responses					
	Always	Mostly	Sometimes	Occasional	Rare	Not answered
Maintenance of quarantine during outbreak	70 (53.4%)	30 (22.9%)	2 (15.3%)	22 (16.8%)	4 (3.0%)	5 (3.8%)
Participation in training of infection prevention and control	15 (11.5%)	69 (52.7%)	16 (12.2%)	4 (3.0%)	24 (18.3%)	3 (2.3%)
Practice of proper use of PPE during duty	63 (48.1%)	7 (5.3%)	30 (22.9%)	3 (2.3%)	19 (14.5%)	9 (6.9%)
Proper use of hand hygiene during provision of patient care	109 (83.2%)	10 (7.6%)	0	1 (7.6%)	2 (15.3%)	9 (6.9%)

There was no significant difference in the KAP scoring depending on age, residential background and family income as shown in table 4.

Table 4: Difference in knowledge, attitude and practice based on socio-demographic parameters

Socio-demographic variables		Knowledge	Attitude	Practice	Significance ($\chi 2$)
Age	≤ 20 years (n = 58)	19.33 ± 3.51	1.55 ± 0.86	2.95 ± 0.80	P = 0.964
	> 20 years (n = 73)	23.67 ± 5.45	2.05 ± 0.94	2.89 ± 0.85	
Residence	Urban (n=42)	22.54 ± 5.67	1.95 ± 1.05	2.87 ± 0.98	P = 0.989
	Rural (n=78)	21.53 ± 4.79	1.67 ± 0.78	3 ± 0.72	
Family income	≤ 20000 per month(n = 68)	21.32 ± 4.68	1.75 ± 0.95	3.10 ± 0.76	P = 0.980
	> 20000 per month(n= 55)	22.22 ± 5.61	1.83 ± 0.88	2.71 ± 0.89	

We assessed the level of knowledge as received from this questionnaire whether reflected on the attitude and practice. The results yielded to some extent mixed phenomena as showed in table 5. Pearson's correlation was calculated using the mean scores of knowledge, attitude and practice domain. It was seen that the gathered knowledge was correlated positively to the attitude of the students. However, questionnaire on practice and behavior was found to have negative correlation to both knowledge and attitude.

Table 5: Correlation between knowledge, attitude and practice among the study subjects

	Attitude	Practice	Knowledge
Knowledge	0.057	-0.212	---
Attitude	---	-0.192	0.057
Practice		-0.192	-0.212

Discussion

It is seen in our study that the participants were mostly representative of the population in this locality with urban and rural population evenly distributed. Their age range was as per expected in this type of study, and they mostly belonged to middle and lower-middle socio-economic background.

Interestingly, regarding effect on the preparedness towards the pandemic, differences in demographic parameters like age difference, albeit in a smaller range, family income or rural-urban background did not impose any significant effect.

Among the students surveyed, the knowledge demonstrated was to some extent lower than prior

studies conducted onto the healthcare workers. They showed a mean score of 21.75 while study done abroad utilizing the same scale yielded scores as high as 36-38 ranges.[11,13] Possible reason may lie in the fact that the students were not much exposed to the rough aspects of the healthcare delivery at the early phases of the career rendering their unpreparedness towards the pandemic. Similarly KAP scores were found to be lower when studies done in students of universities in different parts of the world.[14]Also, lack of exposure to similar types of epidemic in India might get to its contribution unlike those in Eastern Asia as in 2008 SARS epidemic. As we all know, to establish preventive thoughts, affirmative attitudes, and positive practices, knowledge is a definite prerequisite.[15] Personal cognition can be shaped in such way where the healthcare worker can cope up with much more insight.[16]

Also as seen in tables 1-3, the number of unanswered questions increased when it came to the domain of practice. The students had little experience in the actual clinical atmosphere as compared to other studies done with the healthcare providers[11-13] which reflected such finding. Less rating in the question regarding training of infection prevention and control as shown in table 3 also conform to such situation.

The present study complies with the fact that knowledge can induce positive attitudes.[13-16]A healthcare worker can impart more confidence in dealing with the virus if one has sufficient knowledge. This finding, as mentioned in table 5, is at par with prior studies on similar topic from different parts of the world.[9,11,13,14] It has been seen that healthcare workers while having proper attitude can disclose their risk of possible exposure thus limiting the viral load in transmission.[13]

However, as shown in table 5, here we found that the behavioral practices, that the students supposed to be sufficient in combating COVID-19 pandemic, were paradoxically negatively correlated with knowledge and attitude scorings. This finding remains in contrast to prior studies done on similar topics. We can view the difference based on the facts that the students participating in this study were not exposed the clinical set-ups in real life situation. Most of their answers were based on hypothetical scenario. Also, unlike the exposure of Eastern Asian population to SARS or that of Middle East population to MERS a decade ago, Indian people did not confront this type of epidemic in last century.[12]This may attribute to the sense of unpreparedness in our psyche that is reflected on these practice parameters. And regarding the synchronization of knowledge, attitude and practice, it is mentioned in prior studies that the behavioral practices depend on many factors apart from knowledge and attitudes namely work experience and whether the person is a vanguard in the combat or not.[16,17]A study conducted in China on the COVID-19 healthcare workers found that the group with 5-9 years of experience as the frontline worker showed much more confidence, less fatigue and better preventive practices including quarantining oneself from the family members.[13] Besides, as shown in another study, the type of healthcare worker and their frequency of exposure are also useful determinant in developing protective practices.[17] It is important in the present situation, as the nursing students, if needed to enter into the services, are at greater risk of exposure with their duty pattern.[18] Therefore, besides providing adequate knowledge, provision of training, clinical exposure and real life simulation is of utmost importance in the combative preparedness against the COVID-19 pandemic.

This study has some limitations. The survey was conducted in only one Nursing College of India, so the results may not be generalized. The study population, i.e. the students of B.Sc. Nursing, had no hands-on exposure to such types of events or epidemics. Also, due to the study design, this study catered only the young population so that the professionals with longer working experience were not included. Moreover, the estimation of KAP can not be precise because of the less number of items. More studies are required to expand and resolve such problems.

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