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Assessment of knowledge, attitude and practice towards COVID-19 among paramedical staff in Central India: A cross-sectional, online survey

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Abstract:

BACKGROUND: Knowledge of a disease can influence paramedic's attitudes and practices, and incorrect attitudes and practices directly increase the risk of infection. Understanding paramedic's knowledge, attitudes, and practices (KAPs) and possible risk factors helps to predict the outcomes of planned behavior. To assess KAP regarding COVID-19 through Google form among paramedical staff at tertiary care teaching institutes of central India.

MATERIALS AND METHODS: A cross-sectional, multicentric, questionnaire-based study was conducted from May 2020 to August 2020 among 230 paramedical staff from two tertiary care teaching institutes through Google form. Data were analyzed by Chi-square test and parametric test using GraphPad prism software version 5.0.

RESULTS: All participants had knowledge about symptomatology of COVID-19. However, significantly more participants in nursing cadre know about definition of close contact. The mean knowledge score was 4.84 ± 0.6 . The mean score for attitude was 4.48 ± 0.83 . Overall, 54.78% of paramedical staff follow correct prevention strategies. Of them, significantly more nursing staff correctly practice infection control measures upon arrival of COVID-19 patients ($P = 0.033$). There was a significant difference among both groups regarding wearing of appropriate personal protective equipment while transporting/accompanying patients who are confirmed with COVID 19 ($P = 0.009$). The overall score for practice is 3.97 ± 1.03 . The practice score was significantly better in nursing cadre as compared to nonnursing cadre ($P = 0.038$).

CONCLUSION: Majority of the participants had good knowledge and positive attitude. Nursing cadre follows better preventive practices as compared to nonnursing cadre while performing COVID-related duties. Considering these facts, dodges responsible for poor practices should be identified and resolved so that India will be able to conquest the battle against the disease.

Keywords:

COVID-19, knowledge, attitudes, and practice, nursing staff, personal protective equipment

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Introduction

A cluster of cases with pneumonia of unidentified etiology was reported in Wuhan city, Hubei province of People's Republic of China in December 2019. Later, it was identified to be caused by a novel strain of coronavirus which was named as severe

acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the disease caused by it as the coronavirus disease (COVID-19). In India, the first COVID-19 case was reported in Trissur, Kerala, on January 30, 2020.^[1] On August 6 2020, Ministry of Health and Family Welfare confirmed 5,95,501 active cases, 13,28,336 cured and 40,699 death cases in India.^[2] In the management of COVID-19,

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people's adherence to precautionary measures such as use of mask, social distancing, cough etiquettes, and hand hygiene practices play an important role. Adoption of these precautionary measures is largely affected by their knowledge, attitudes, and practices (KAPs) toward COVID-19 in accordance with KAP theory.^[3]

Paramedical personnel, also called paramedics, are those who provide clinical services to patients under the supervision of a physician. The term generally encompasses nurses, therapists, technicians, and other ancillary personnel involved in medical care. Paramedical staff is the backbone of any hospital setting since they are actively involved in patient care. In the present COVID 19 emergency medical situation, paramedics are playing a great role not only in the direct patient care but also in the field at community level to prevent the transmission of disease. Hence, regular and intensive training for all health-care providers is necessary to promote preparedness and efficacy in crisis management.^[4] Knowledge of a disease can influence paramedic's attitudes and practices, and incorrect attitudes and practices directly increase the risk of infection. Understanding paramedic's KAPs and possible risk factors helps to predict the outcomes of planned behavior.^[5] Hence, in the current scenario, to facilitate the outbreak management of COVID-19 in India, there is an urgent need to understand the KAP of COVID-19 among paramedics. Therefore, the objective of the present study was to assess the knowledge, attitude, and practice regarding COVID-19 through Google form among paramedical staff at tertiary care teaching institutes of central India.

Materials and Methods

A cross-sectional, multicentric, questionnaire-based study was conducted at two tertiary care teaching institutes of Central India from May 2020 to August 2020 after obtaining approval from the Institutional ethics committee (IEC/Pharmac/100/2020 dated May 9, 2020). A self-developed questionnaire was used. Questionnaire was first assessed for content and construct validity by way of expert review. Face validity of questionnaire was evaluated in terms of readability, feasibility, layout, and style and clarity of wordings. Content validity was assessed by calculating content validity index (CVI). CVI for scale (S-CVI/Ave) was calculated by taking average of the I-CVIs for all items on the scale. S-CVI/Ave was 0.90. Reliability was tested by sharing questionnaire at different time periods to the same subset of responders. Score was calculated and compared using Pearson's correlation coefficient formula. Pearson's correlation coefficient value was 0.72.^[6] The questionnaire consists of two parts: demographics and KAP. Demographic variables included were age,

gender, education, and profession. The questionnaire consists of 15 multiple choice questions: 5 regarding knowledge, 5 questions about attitude, and 5 questions about practice related to COVID-19. Knowledge section includes questions about awareness about COVID 19 pandemic, its symptomatology, spread of disease, close contacts, and risk for elderly. Attitude was assessed by means of statements related to COVID-19. Participants were asked to choose option "agree" or "disagree." Statements were: a. India will be able to control the disease successfully, b. Symptoms of COVID-19 may appear up to 14 days after exposure, c. No chance of survival if anyone contracted COVID-19, d. Washing of hands when they are visibly dirty is not sufficient to prevent spread of infection, e. Ready for isolation if come in contact with COVID-19-infected patient without protective measures. Practice related to COVID-19 were assessed by means of questions related to appropriate precautionary measures followed while going to hospital/outside; correct practices followed while giving ancillary care to infected patient; hand hygiene practices; infection control measures practiced and using appropriate personal protective equipment (PPE) while transporting/accompanying patients.

The questionnaire was distributed as a Google form (via docs.google.com/forms) through E-mail or WhatsApp to 400 paramedical staff. Electronic informed consent was obtained from the study participants after explaining the purpose of the study. Paramedical persons of either gender willing to give electronic informed consent were recruited and asked to fill the questionnaire in Google form. Those who were not willing to give electronic informed consent were excluded from the study. Knowledge was assessed using 5 questions, each correct response weight 1 point and 0 for incorrect response. Similarly, for positive attitude, one point is allotted, and for negative attitude, no score was given. In practice section, for each correct answer, participants score one point. Hence, in all three sections (KAP), score range is 0–5.

Data were analyzed and expressed as mean \pm standard deviation or percentage wherever applicable. Categorical data were analyzed by Chi-square test using GraphPad prism software version 5.0. $P < 0.05$ will be considered as statistically significant. Student's *t*-test and one-way ANOVA were used to compare the score of knowledge, attitude, and practice with that of demographic variables.

Results

Of the 400 paramedics approached, 230 responded giving a response rate of 57.5%. Out of 230 respondents, 102 were nursing officers, whereas 128 belong to nonnursing cadre which include technicians, attendants, receptionists, and

multitasking staff. Demographic parameters mentioned in Table 1. The main source of information about COVID-19 is media (TV, newspaper, social platforms, etc.) [Figure 1]. As depicted in Table 2, more than 90% of participants had good knowledge about the disease. Almost all participants know about symptomatology of COVID-19. However, significantly more participants in nursing cadre know about definition of close contact ($P < 0.0001$). The mean knowledge score was 4.84 ± 0.6 . Ninety-two percent of the participants scored 80% or more and were considered to have sufficient knowledge. Only two participants scored <50%.

Attitude was assessed with five questions. Participants had given option “agree” and “disagree.” Mean score for attitude is 4.48 ± 0.83 . 91.30% of participants believed that India will be able to control the disease successfully. However, 26 (11.30%) thought that there is no chance of survival if diseased. Although not significant, more participants from nonnursing cadre had negative attitude about survival. Majority (95.65%) were ready for isolation if come in contact with positive patients without safety measures [Table 3].

Table 4 demonstrates the number and percentages of participants following correct practices related to COVID-19. Overall, 54.78% of paramedical staff correctly practice infection control measures upon arrival of patients with suspected COVID-19 infection. Of them, significantly more nursing staff follows correct prevention strategies as compared to nonnursing staff ($P = 0.033$). When compared, there was a significant difference among two groups regarding wearing of

appropriate PPE while transporting/accompanying patients who are confirmed with or under investigation for COVID 19 within a health-care facility ($P = 0.009$). The overall score for practice was 3.97 ± 1.03 .

Table 5 cites the scores of knowledge, attitude, and practices toward COVID-19 with respect to demographic variables such as gender, qualification, and occupation. KAP scores of the female were slightly higher than that of males, although the difference was not significant ($P > 0.05$). The practice score was significantly better in nursing cadre as compared to nonnursing cadre ($P = 0.038$).

Discussion

Paramedics are at the forefront of the fight against COVID-19 and likelihood of acquiring disease is high among them. Hence, it is of paramount importance that they should have sufficient knowledge and positive attitude and should adopt correct practices to tackle the infection. The present study evaluated the knowledge, attitude, and practice regarding COVID-19 among paramedical staff in central India.

Majority paramedics rely on media, including TV, newspaper, and social platforms, for seeking information about COVID-19 followed by official websites of health ministry just like other studies.^[7,8] The findings showed that paramedics are more interested in social media to

Table 1: Demographic profile of study participants (n=230)

Demographic variables	Nursing cadre (n=102)	Nonnursing cadre (n=128)	Total, n (%)
Gender			
Male	20	84	104 (45.21)
Female	82	44	126 (54.78)
Age (mean±SD)	27.53±5.42	29.48±6.32	28.73±5.31
Qualification			
≤ 12 th	00	24	24 (10.43)
Graduate	92	64	156 (67.82)
Postgraduate	10	40	50 (21.73)

Figure in bracket indicates percentage. SD=Standard deviation

Table 2: Analysis of awareness about coronavirus disease 2019 among paramedical staff (n=230)

Parameter	Paramedical staff		Total, n (%)
	Nursing cadre (n=102)	Nonnursing cadre (n=128)	
Aware about COVID-19 pandemic	100	122	222 (96.52)
Aware about symptomatology of COVID-19	102	128	230 (100)
Aware about spreads of virus via infected respiratory droplets	96	124	220 (95.65)
Aware about definition of close contact	102****	108	210 (91.30)
Aware that elderly population is more at risk	102	124	226 (98.26)

Figure in bracket indicates percentage. Chi-square test; **** $P < 0.001$. COVID-19=Coronavirus disease 2019

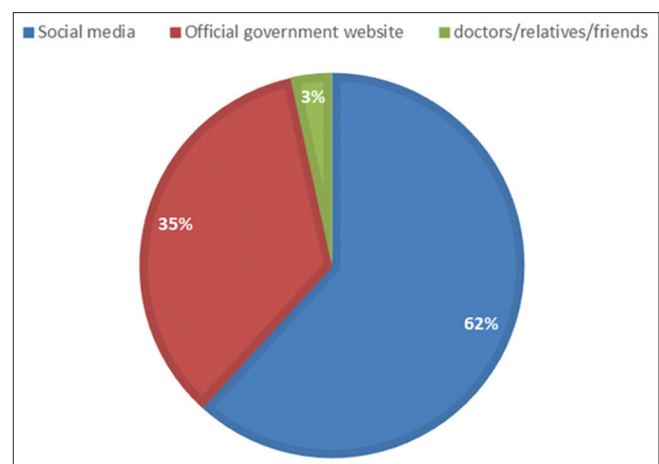


Figure 1: Sources of information about COVID-19 (n = 230)

Table 3: Attitude of paramedical staff toward coronavirus disease 2019 (n=230)

Parameter	Paramedical staff		Total, n (%)
	Nursing cadre (n=102)	Nonnursing cadre (n=128)	
India will be able to control the disease successfully	102	108	210 (91.30)
Symptoms of COVID-19 may appear up to 14 days after exposure	96	122	218 (94.78)
If anyone get COVID-19, no chance of survival	8	18	26 (11.30)
Washing of hands when they are visibly dirty is not sufficient to prevent spread of infection	80	96	176 (76.52)
Ready for isolation if come in contact with COVID -19 infected patient without protective measures	98	122	220 (95.65)

Figure in bracket indicates percentage. COVID-19=Coronavirus disease 2019

Table 4: Practices related to coronavirus disease 2019 among paramedical staff (n=230)

Parameter	Paramedical staff		Total, n (%)
	Nursing cadre (n=102)	Nonnursing cadre (n=128)	
Appropriate precautionary measures followed while going to hospital/ outside	100	114	214 (93.04)
Correct practices followed while giving ancillary care to infected patient	80	90	170 (73.91)
Hand hygiene practices followed whenever required	100	112	212 (92.17)
Infection control measures practiced upon arrival of patient with suspected COVID-19 infection	64*	62	126 (54.78)
Wear appropriate personal protective equipment while transporting/ accompanying patients who are confirmed with or under investigation for COVID 19 within a health-care facility	80**	80	160 (69.56)

Figure in bracket indicates percentage. Chi-square test; *P<0.05; **P<0.01. COVID-19=Coronavirus disease 2019

Table 5: Distribution of knowledge, attitude, and practice score of paramedical staff according to demographic variables (n=230)

Demographic parameter	Score (mean±SD)		
	Knowledge	Attitude	Practice
Gender			
Male	4.78±0.77	4.28±0.99	3.76±1.18
Female	4.88±0.40	4.65±0.62	4.14±0.85
Qualification			
<12 th	4.92±0.26	4.14±0.77	3.57±1.08
Graduation	4.81±0.68	4.47±0.91	3.98±1.06
Postgraduation	4.88±0.43	4.72±0.45	4.16±0.85
Occupation			
Nursing	4.86±0.56	4.60±0.66	4.19±0.77*
Nonnursing	4.82±0.63	4.39±0.93	3.79±1.17

Unpaired t-test; *P<0.05. SD=Standard deviation

gather knowledge on an emerging infectious disease like COVID-19 than the official website of the Ministry of Health at the present time. Sahni discussed the positive and negative impact of mass media and social media during coronavirus epidemic on health-care professionals and on the general population. However, if used prudently, social media serves as a powerful tool to encourage people to follow the quarantine rules, to reduce panic among people, and to reinforce public trust in supporting public health measures.^[9] The major drawback of social media amid a problematic situation as COVID-19 pandemic is that it can be used as a means of disseminating misinformation because of short legal consequences, there is little or no accountability for what is said or communicated.^[10] Hence, correction

measures required to rectify misconception include timely expert advice and regular public health awareness program along with periodic communication among general people and on media algorithms. Since official government websites are most updated and more authentic source of information than other platforms, peoples should be encouraged to rely more on it.

In the current study, most of the participants have good knowledge about COVID. This is because at this stage, most of the health-care workers were exposed to a lot of information about the disease, its route transmission, and prevention ways. In many of the studies on COVID conducted till date, participants had sufficient knowledge.^[8,11,12] Nursing staff is more aware about close contact as compared to nonnursing staff. The probable reason could be they are more in contact with patients and they are comparatively more educated so they know better about close contacts. However, a study by Bhagavathula *et al.* reported poor knowledge of health-care workers about COVID-19.^[13]

Another important finding was that the vast majority of the participants had a positive attitude about COVID-19. Majority of the participants are confident that India will overcome this global threat successfully. However, a small proportion of participants are concerned about chances of survival if gets affected. Only 95% of the participants agree for isolation if it was needed. These results are likely to be related to a lack of knowledge within the paramedics about current and important

prevention and isolation strategies and treatment facilities available. Since good knowledge has a higher probability of positive attitudes, the goals of the upcoming educational program should focus on the paramedics with insufficient knowledge which will improve the rate of positive attitudes subsequently.

Majority of participants follow appropriate precautionary measures while going to hospital/outside and maintain hand hygiene which is similar to other studies^[14] Although overall practice score is good like other studies,^[15] when it comes to treat or handle COVID-positive or suspected cases, the percentage of participants taking proper precaution while giving ancillary care to positive patient or following infection control measures on arrival of positive patient in hospital is less. Similarly, less number of participants wear appropriate PPE while transporting/accompanying patients who are confirmed with or under investigation for COVID-19 within a health-care facility. Poor practices for protection had been documented in previous studies also.^[11] Although majority are aware about infection control measures, they don't inculcate that knowledge in practice. The PPEs are to be used based on the risk profile of the health-care worker. It may vary according to patient status also. If patient is mobile, it is sufficient to wear N95 mask and gloves while transporting patient. If patient is seriously ill, not able to move then in that case, wearing full PPE is necessary for transporting patient.^[16] It is a matter of great concern if paramedics don't follow correct practices since it increases chances of spread of disease. Factors responsible for poor preventive practices such as nonavailability of PPE, nonfeasibility, time constraints, and negligence should be identified and corrected. Training regarding protection should be organized considering different aspects such as level of exposure, work experience, and educational attainment. Moreover, to reduce the risk of infection among health-care professionals who are not in direct contact with patients, policy and education should be implemented to convey the importance of disclosing possible exposure to the virus. Hence, the author recommend implementation of well-planned, appropriate, and tailored strategies including health education campaigns, continuous provision of PPE, and training of all HCWs on proper infection control measures to improve health services to tackle this COVID pandemic.

The present study compared the influence of demographic variables on KAP score among nursing and nonnursing cadre which offered an intuition into ambiguities in tackling this deadly pandemic. This will help to plan corrective measures to be implemented by stakeholders. However, we admitted certain limitations of present study. In current study, we use web-based questionnaire to obtain information, so there is high chance of errors

or misrepresentation of information. Limited sample size and few demographic variables are also additional limitations.

Conclusion

In the present study, the majority of the participants had good knowledge and positive attitude. Nursing cadre follows better practices as compared to nonnursing cadre while performing COVID-related duties. Considering these facts, dodges responsible for poor practices should be identified and get it corrected so that India will be able to conquest the battle against the disease.

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Conflicts of interest

There are no conflicts of interest.

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