Research Article

Knowledge, attitude and practice of Nepali medical and dental practitioners on infection control during Covid-19 Pandemic

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ABSTRACT

Introduction: Coronavirus Disease 2019 (COVID-19) has been declared a global public health emergency which is affecting people across the world. Health care professionals and their working environment are in close by vicinity to the patient. The chance of cross-contamination and spread of infection is high if proper infection control measures are not taken. Hence, the aim of this study was to assess the knowledge, attitude and practice (KAP) of Nepali medical and dental practitioners on infection control during the COVID-2019 pandemic.

Materials and Method: A self administered questionnaire was formulated and circulated online among health care practitioners. Questionnaire consisted of questions on knowledge, attitude and practice regarding infection control on COVID-19 pandemic. A scoring criteria was set, giving score 1 to the correct answer and score 0 to the incorrect answer. Total scores were calculated and levels of knowledge, attitude and practice were assessed. Mean scores for medical and dental practitioners were also assessed and compared.

Result: Total 80% of the total participants had not received training on infection prevention and control practices specifically for COVID-19. Only 19.3%, 4.7%, 9.5% participants scored maximum scores for knowledge, attitude and practice, respectively. Majority of the participants (around 80%) had good attitude towards infection control regarding Covid-19 pandemic.

Conclusion: There is a need for specific training on infection prevention and control on COVID-19 for Nepali health care professionals. Supply of personal protective equipment materials required for infection control against COVID-19 in health care facility should improve to combat against this pandemic.

KEYWORDS: COVID-19, health care professionals, infection, pandemic, personal protective equipments.

INTRODUCTION

COVID-19 is emerging respiratory disease that is caused by a new member of the coronavirus family called novel coronavirus.[1] Low pathogenicity and high transmissibility are the unique features that distinguish it from other members of the coronavirus family, namely SARS-CoV (Severe Acute Respiratory Syndrome) and MERS-CoV (Middle Eastern Respiratory Syndrome).[2,3] Furthermore, its relatively prolonged incubation period (median incubation period was estimated to be 5.1 days and maximum up to 14 days for some cases before any symptoms appear) and post-infection period make it challenging for health professionals to recognize the presence of COVID-19 infections, which could increase the spread of the disease.[4,5,6] Human-to-human transmission of the virus occurs through airborne droplets, contact or touch of an infected person or from a contaminated surface.[7] The main route of human-to-human transmission is through respiratory droplets (coughing and sneezing). It is also transmitted from contact (shaking hands) with an infected person or a contaminated surface and transferring it to the mouth, nose or eyes.[8]

In addition, absence of definitive treatments warrants that the only best way to deal with COVID-19 epidemic is to control the sources of infection.[9] Someone who is asymptomatic can spread COVID-19 with high efficiency. Healthcare professionals (HCP) are at higher risk of exposure to infectious diseases, including the novel corona virus. A large number of medical staffs were reported to have acquired the disease while working with infected individuals.[10] Safety of healthcare workers is essential not only to safeguard continuous and effective patient care but also to ensure they do not transmit the virus. Aggressive measures (such as N95 masks, goggles and protective gowns) to ensure the safety of health professionals during this COVID-19 outbreak (especially in the initial stages where limited information about the transmission and infective potency of the virus is available). Hence, health care professionals should possess a high level of awareness to deal with the disease and be able to control and manage its spread. The knowledge and attitude of health professionals regarding COVID-19 are important in achieving victory in the battle against the pandemic.[11]

Giao et al. concluded that the majority of healthcare workers had good knowledge and positive attitude towards COVID-19. However, the level of knowledge and attitude for some topics were found to be lower than that expected for their respective position. Additional educational interventions and campaigns are required for healthcare workers.[12] Bhagavathula et al. identified a significant gap in information source, poor knowledge levels and discrepancies in perceptions of COVID-19 among health care workers.[13] Zhou et al. found that 89% of HCWs had sufficient knowledge of COVID-19, more than 85% feared self-infection with the virus and 89.7% followed correct practices regarding COVID-19. They concluded that measures must be taken to protect HCWs from risks linked to different factors like job category, work experience, working hours, educational attainment and frontline HCWs.[14] Poudyal et al. found that only 27% of the Nepalese health care workers surveyed had been trained in infection control. Technical understanding of infection alone may be insufficient for infection control. Education must address issues like availability of infection control guidelines, risk of cross transmission and indications for hand hygiene during patient care.[15] Infection preventive and control measures that may reduce the risk of exposure include use of face masks, covering coughs and sneezes with a flexed elbow, regular hand washing with soap or disinfection with hand sanitizer containing at least 70% alcohol, maintaining a distance of 1.5 to 2 meters from humans and refraining from touching eyes, nose, and mouth with hands.[16] Hence, the objective of this study was to assess the knowledge, attitude and practice (KAP) of medical/dental practitioners on infection control regarding the COVID-2019 pandemic in Nepal.

MATERIALS AND METHOD

Online questionnaire based cross-sectional study was conducted among different health care professionals of Nepal. Questionnaire was designed after reviewing relevant literature and guidelines. Reliability of questionnaire was checked by calculating Cronbach's alpha (which was calculated to be 62.4% for knowledge, 68.3% for attitude and 70.7% for practice). The study was conducted between May-June, 2020. Medical and dental health care professionals, with at least bachelor's degree who are involved in providing health care during this period were included in the study. The data was collected through a self-administered questionnaire which were circulated online. Questionnaire consisted of four different sections namely participant's details, questions on knowledge, attitude and practice. Knowledge section included six dichotomous questions, attitude section included seven dichotomous questions and practice section included eight dichotomous questions and two open ended multiple choice questions. Total score on knowledge, attitude and practice was calculated by scoring each correct answer as score 1 and incorrect answer as score 0 for Yes/No questions. Maximum score that can be achieved in knowledge, attitude and practice was 6, 7 and 8 respectively. Open ended questions were analyzed and discussed separately. This study was approved by Institutional Review Committee, Kantipur Dental College. (Ref. No. - 19/020).

Sample size was calculated according to the following formulae: Sample size = $Z^2p(1-p)/e^2$ where, Z=1.96 at confidence level 95%, p=0.05 (50%)[17] and margin of error (e) = 0.05 (5%). Using above formulae, sample size was calculated as 384. Data analysis was done using SPSS Statistics 23. Frequency distribution and mean scores were calculated. Mann-Whitney U test was done to compare the mean scores of knowledge, attitude and practice among medical and dental health care professionals.

RESULT

450 responses were collected, out of which only 430 were providing health care at present. Mean age of the participants was 31.49 years. 70.7% (304) of the participants were male and 29.3% (126) of the participants were female. 46.3% (199) of the participants' belonged to medical field (MBBS, MD/MS, Mch/DM, Residency, Public health) and 53.7% (231) of the participants belonged to dental field (BDS, MDS, Residency).

47% (202) participants had received general training on infection, prevention and control procedures, while only 19.5% (84) of the participants had received specific training in infection prevention and control practices for COVID-19.

Table 1, 2 and 3 shows the response of the participants on different questions on knowledge, attitude and practice, respectively, which were used to calculate the total scores.

Table 1: Response of the participants on knowledge

Knowledge	Yes	No/Don't know
Mortality is higher in COVID-19 patients when associated with other health problems	343 (79.8%)	87 (20.2%)
There is difference between isolation and quarantine	420 (97.7%)	10 (2.3%)
Asymptomatic COVID-19 patient can infect virus to others	415 (96.5%)	15 (3.5%)
Hand hygiene, covering nose/mouth while coughing, and avoiding contact with sick prevent COVID-19 transmission	412 (95.8%)	18 (4.2%)
Full PPE is required to check all patients	205 (47.7%)	225 (52.3%)
Maximum incubation period of coronavirus is upto 14 days	223 (51.9%)	207 (48.1%)

Table 2: Response of the participants on attitude

Attitude	Yes	No/Don't know
My health care facility has adequate supply of infection control materials required for COVID-19	42 (9.8%)	388 (90.2%)
Risk of COVID-19 infection is higher for me as a part of my job	414 (96.3%)	16 (3.7%)
I will be able to follow recommended PPE protocol for COVID-19	225 (52.3%)	205 (47.7%)
It is my professional responsibility to take all necessary measures to care COVID-19 patients	398 (92.6%)	32 (7.4%)
Following the recommended infection prevention procedures will add additional effort to my work	392 (91.2%)	38 (8.8%)
I will self-isolate when I feel sick after exposure to high-risk environment	405 (94.2%)	25 (5.8%)
I should treat every patient as a potential asymptomatic COVID-19 carrier	350 (81.4%)	80 (18.6%)

Table 3: Response of the participants on practice

Practice	Yes	No/Don't know
I avoid hand-shake and social gathering to prevent transmission of the disease	421 (97.9%)	9 (2.1%)
Everyone in my health care facility follow infection prevention and control protocol for COVID-19	167 (38.8%)	263 (61.2%)
I correctly donn and doff PPE to prevent transmission of COVID-19	217 (50.5%)	213 (49.5%)
I restrict aerosol generating procedures after COVID-19 outbreak	345 (80.2%)	85 (19.8%)
I clean working surfaces with 1% Sodium hypochlorite or 70% Ethanol after every procedure	278 (64.7%)	152 (35.3%)
I defer non-emergency treatment during the COVID-19 outbreak	351 (81.6%)	79 (18.4%)
All my auxiliary staffs wear required protective equipments	211 (49.1%)	219 (50.9%)
My health care facility has proper method of waste disposal for COVID-19 patients	160 (37.2%)	270 (62.8%)

Mean score of medical and dental health care professionals are calculated and compared as shown in table 4. Minimum score, maximum score, mean score and standard deviation of knowledge, attitude and practice are shown in table 4.

Table 4: Comparison of mean score between medical and dental practitioners and maximum/minimum scores

Variable		Mean ± SD	Mean Rank	P value	Total Mean ± SD	Maximum score with frequency	Minimum score with frequency
Knowledge	Medical	4.81 ± 0.94	227.72	0.04*	4.73 ± 0.89	6 (83, 19.3%)	0 (1, .2%)
	Dental	4.67 ± 0.84	204.98				
Attitude	Medical	5.05 ± 1.06	201.72	0.02*	5.18 ± 1.02	7 (20, 4.7%)	0 (2, .5%)
	Dental	5.28 ± 0.97	227.37				
Practice	Medical	4.53 ± 1.78	184.79	<0.001*	5.00 ± 1.84	8 (41, 9.5%)	0 (4, .9%)
	Dental	5.39 ± 1.80	241.96				

*Statistically significant

Total score of knowledge, attitude and practice were divided into three different grade groups. Maximum score that can be achieved in each category was divided by three and the range score for each grades were set into nearest whole number. Distribution of participants according to grades are shown in table 5.

Table 5: Distribution of participants according to grades

Parameter	Good	Fair	Poor
Knowledge	271 (63.0%)	156 (36.3%)	3 (0.7%)
Attitude	343 (79.8%)	82 (19.1%)	5 (1.1%)
Practice	183 (42.6%)	206 (47.9%)	41 (9.5%)

Two questions in practice sections were multiple choice questions. They are shown in table 6 and 7.

Table 6: Common symptoms sought while taking history (N=430)

Common symptoms	Percentage of participants
Fever	96.7%
Travel history	95.6%
Cough	91.2%
Contacts with suspected case or person with travel history	90.2%
Shortness of breath	87.9%
Fatigue	50.9%
Gastro-intestinal problems	31.4%

Table 7: Use of different personal protective equipment measures (N=430)

Equipment	Percentage of participants
N95 respirator (FFP2 equivalent)	94.7%
Gloves	90.5%
Face shield	88.6%
Eye-protection / goggles	87.9%
Head cap	85.6%
Shoe cover	85.1%
Fluid resistant gowns	79.8%
Full body disposable suit	76.5%
Surgical masks	46.3%
Apron	35.8%

DISCUSSION

Sample size was calculated to be around 384. Questionnaire was circulated among different health care professionals through email and different social media. After reminder, 450 samples were collected, among whom 430 were actively providing health care during this period. Majority of health care professionals surveyed were male (around 70%). 199 of the participants belonged to medical field and 231 belonged to dental field.

47% of the participants had received general training on infection prevention and control procedures for communicable diseases previously. While 80% of the

participants had not received training on infection prevention and control practices specifically for COVID-19. This signifies need for specific training on infection prevention and control on COVID-19 for Nepali health care professionals. Study done by Paudyal et al.[15] in 2008 showed that 27% of Nepali health care workers had received infection control training. The research was conducted among 158 doctors and 166 nurses. From 2008 to 2020, this number seems to increase to 47%.

Around 93% of the participants think that it is their professional responsibility to take all measures necessary to care for COVID-19 patients. Only, 9.8% think that they have adequate supply of materials required for infection control against COVID-19 in health care facility where they work, and 52% think that they will be able to follow recommended procedures related to personal protective equipment (PPE) for COVID-19. This indicate that resources need to improve to properly combat this pandemic. Around 50% of the participants are not confident in correctly donning and doffing PPE to prevent transmission of COVID-19. Around 20% of the participants have not been restricting aerosol generating procedures and have not been deferring non-emergency treatment during the time of COVID-19. Around 96% of the participants think that risk of getting COVID-19 is higher for health care professionals as a part of their job. Study done in China also showed that more than 85% feared self-infection.[14]

Only 19.3%, 4.7%, 9.5% of the participants scored maximum score for knowledge, attitude and practice respectively. Mean score of knowledge, attitude and practice were 4.73 (out of 6), 5.18 (out of 7) and 5 (out of 8) respectively. Comparing among medical and dental health care professionals, we found knowledge score to be significantly higher in medical professionals. Attitude and practice score was found to be significantly higher in dental professionals. A multinational study found dentists to have good knowledge and practice scores, which is important to combat COVID-19.[18] Another study done among health care workers in China also showed that majority of healthcare workers had good knowledge and positive attitude toward COVID-19.[12]

80% had good attitude score, only 63% had good knowledge score and only 42% had good practice score. This signifies that if good learning oppurtunity is provided, health care professsionals are willing to improve their knowledge and practice to help combat this pandemic. At present, around 10% of the participants had poor practice score. This score should improve to effectivley combat the spread of COVID-19. A cross-sectional study also concluded it is critical to improve the knowledge and perceptionsf HCWs to combat against the global threat of COVID-19.[13]

CONCLUSION

1. There is need for specific training on infection prevention and control on COVID-19 for Nepali health care professionals.
2. Majority of the participants think that it is their professional responsibility to take all measures necessary to care for COVID-19 patients.
3. Supply of materials required for infection control against COVID-19 in health care facility should increase to combat against this pandemic.

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