



# Knowledge, Attitude and Practice towards COVID-19 among Dental Practitioners in Bhutan

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**INTRODUCTION:** Corona virus disease was first reported in Wuhan city of China in 2019. The disease is caused by a highly infectious virus which can be transmitted from human to human through physical contact, droplets, or touching surfaces contaminated with the virus.

**AIM:** The study aims to get an assessment of knowledge, attitude and practices towards COVID-19 disease among the dental practitioners in Bhutan.

**MATERIAL AND METHODS:** An online cross-sectional study was conducted among dental practitioners working in different hospitals across the country. All dental professionals who provided their email address were included in the study. Data were collected using a structured questionnaire shared through email. A total of 157 dental professionals were invited through e-mail to participate in the study.

**RESULTS:** A total of 125 dental professionals participated in the study (response rate 79.6%). Over half of the participants (51.2%) were between the age group 20-30 years. Despite almost everyone (98.4%) knowing the causative agent and management of COVID-19 positive patients, only around a half of the participants (48%) had a good level of knowledge on COVID-19.

**CONCLUSION:** The study found that less than half of the participants have a good level of knowledge on COVID-19 while a majority of them feel that there is discrimination against COVID-19 positive patients and health professionals working for COVID-19 patients. The study highlights the need to conduct sensitization, trainings or CME on COVID-19 periodically to keep all health professionals updated with latest advancements to help maintain safety in clinical practice.

**KEYWORDS:** Bhutan, COVID-19, Dental practitioners, Knowledge, Practice

## INTRODUCTION

Corona virus disease was first reported in Wuhan city of China in 2019.<sup>1</sup> The virus came into limelight when atypical cases of patients suffering from pneumonia like illness was reported in Wuhan.<sup>2</sup> One such patient who suffered pneumonia was admitted to one of the hospitals who was later confirmed to be affected by corona virus, specifically  $\beta$ -coronavirus 2019-nCov.<sup>3,4</sup> The virus was identified and named as SARS-Cov-2 on 11th February 2020 and the disease as Corona Virus Disease (COVID-19) by the World Health Organization (WHO).<sup>3</sup> A month later, on 11th March 2020 it was declared as a pandemic by WHO.<sup>5</sup>

The most common symptoms of the disease are high fever, dry cough, sneezing, fatigue, loss of smell, difficulty in breathing, body aches and chest pain among others. The virus can be transmitted to humans from animals where it mutates and can be transmitted from humans to humans through physical contact, droplets, or touching surfaces contaminated with the virus.<sup>6,7</sup> Its transmission is rapid and these modes have been established.<sup>6</sup> Droplets can travel up to 6 feet and the virus remains active and contagious, suspended in the air for up to 4 hours.<sup>7</sup> These droplets can settle on the surfaces which in turn can infect people who handle them. A person gets infected if they touch the

surfaces contaminated by the virus and then touch eyes, nose, mouth or any other mucous membranes.<sup>7</sup> Therefore, washing hands frequently with soap and water or alcohol based hand rubs have been recommended to prevent infection by health experts including the WHO.<sup>8</sup>

In Bhutan first positive case of COVID-19 was detected on 5<sup>th</sup> March, 2020. The country experienced two national lockdowns; first lockdown from 11th August 2020 which lasted for 21 days and second lockdown from 20<sup>th</sup> December 2020 till 31<sup>st</sup> January 2021 for 43 days in a stretch due to sporadic community transmission. The lockdowns helped curb the community transmission which was controlled very effectively. As of 1<sup>st</sup> March, 2021 the country recorded a total of 867 confirmed cases with 865 being declared recovered and one death taking the recovery rate to 99.8%.<sup>9</sup>

It is important for health professionals to keep themselves abreast with the latest updates on COVID-19 in order to prevent and contain the disease. Assessment of knowledge, attitude and practices (KAP) on COVID-19 among dental practitioners is important due to nature of work and close proximity of the



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working environment. Therefore, such studies are being conducted to obtain accurate information about what is known, believed or practiced in a population or community to prevent and fight the disease.<sup>10-12</sup> It is important to get accurate and timely information about this infectious disease so that people do not panic during the pandemic and are well prepared to overcome it. Sharing confusing or wrong information during pandemic can lead to unnecessary panic and distress.<sup>12</sup> Therefore, KAP is crucial for the understanding of peoples' level of knowledge and attitudes and practices towards COVID-19.<sup>13</sup> This study aims to describe knowledge, attitude and practices regarding COVID-19 among the dental practitioners in Bhutan.

## MATERIAL AND METHOD

A cross-sectional online survey was conducted in February 2021 among dental practitioners working in different hospitals across the country to assess the knowledge, attitude and practices on COVID-19. Data were collected using a structured questionnaire shared through email. There were a total of 191 dental practitioners in the country during the conduct of this study. Dental professionals not willing to share their email address and those without email address were excluded from the study. A total of 157 (82.2%) dental professionals working across the country provided their email address and were invited through e-mail to participate in the study. Informed consent form was included at the beginning of the online survey and those responding to questionnaire were assumed to have consented for the study. Data management was done using Microsoft Excel and analyzed using SPSS. The findings are presented as frequency and percent. Mean and standard deviations also have been presented wherever applicable. Knowledge is categorized as 'good', 'moderate' and 'poor' depending on the total score of the participant using Benjamin Bloom criteria. Ethical clearance was granted by the Research Ethics Board of Health (REBH), Ministry of Health, Bhutan (Approval No. REBH/Approval/2020/x06).

## RESULTS

A total of 125 dental professionals participated in the study (response rate 79.6%). Over half of the participants (51.2%) were between the age group 20-30 years. Around a half of the participants (49.6%) did not attend sensitization meeting/ CME on COVID-19 and over a half (52.8%) of them reported that COVID-19 financially affected them. Only around one-fifth

(22.4%) of the participants followed Ministry of Health/Prime Minister's Office for updates on COVID-19 (table 1).

VARIABLES	CATEGORY	FREQUENCY	PERCENT
Age	20-30	64	51.2
	31-40	43	34.4
	41- 50	14	11.2
	51 and above	4	3.2
Sex	Male	62	49.6
	Female	63	50.4
Designation	Dental Specialist	6	4.8
	Dental Surgeon	38	30.4
	Dental Hygienist	58	46.4
	Dental Technician	23	18.4
Clinical Work Experience	Less than 1 year	3	2.4
	1 - 5 years	54	43.2
	6 - 10 years	29	23.2
	11 -15 years	18	14.4
	16 - 20 years	6	4.8
	More than 20 years	15	12
Attended COVID-19 sensitization meeting/ CME	Yes	63	50.4
	No	62	49.6
Source of update on COVID-19	Newspapers	0	0
	Television	3	2.4
	MOH/PMO	28	22.4
	Social media	12	9.6
	All of above	82	65.6
Did COVID-19 financially affect you?	Yes	66	52.8
	No	59	47.2
Did COVID-19 psychologically affect you?	Yes	88	70.4
	No	37	29.6

**Table 1.** Sociodemographic Characteristics (n=125) \*MOH/PMO: Ministry of Health/Prime Minister's Office

Correct responses to knowledge questions have been presented in table 2. Almost everyone (98.4%) the causative agent of COVID-19 and management of COVID-19 positive patients. However, only around one fourth (26.4%) had an idea about the clinical

QUESTIONS	FREQUENCY	PERCENT
What is causative agent of COVID-19?	123	98.4
The clinical symptoms of COVID-19 are	33	26.4
The mode of transmission of COVID-19	108	86.4
COVID-19 is riskier to people who are	124	99.2
Which age group is affected the most from COVID-19?	89	71.2
How many hours can COVID-19 can survive outside the body?	44	35.2
The new strain of COVID-19 is B117	104	83.2
The new strain of COVID-19 (B117) is 70% less infectious than of earlier strain	101	80.8
At present, there is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection	123	98.4
We already have vaccine to prevent COVID-19	71	56.8

**Table 2.** Correct responses to knowledge questions(n=125)

symptoms and around one-third (35.2%) were aware of the life span of virus outside the body. Around 10% of the participants had a poor level of knowledge and less than a half of them (48%) had a good level of knowledge on COVID-19 (table3).

LEVEL OF KNOWLEDGE	FREQUENCY	PERCENT
Poor (0-5 scores)	12	9.6
Moderate (6-7 scores)	53	42.4
Good (8 and above)	60	48.0
Mean:7.32, SD:1.28, Median: 7		

**Table 3.** Level of Knowledge (n=125)

Attitude of participants towards COVID-19 is presented in table 4. A majority of the participants (89.6%) reported that they are scared of human to human transmission of COVID-19 and discrimination against COVID-19 positive patients and health professionals working for COVID-19 patients (86.4%). All the participants agreed that avoiding crowded places would help to prevent COVID-19 infection. However less than half (48%) reported that COVID-19 will be successfully controlled in dental clinic or laboratory.

Practices of dental professionals to prevent COVID-19 is presented in table 5. Almost everyone (97.6%) followed cough etiquettes and a majority (92.8%) of the participants' practices hand hygiene. However, only around two-third (69.6%) of dental professionals used

PPE during dental procedures and only around 60% of the participants disseminated information on COVID-19 prevention to patients visiting them.

## DISCUSSION

The study found that less than half of the participants had a good level of knowledge on COVID-19 disease. This corresponds to findings reported by studies conducted in other countries which have reported that dental professionals had insufficient knowledge on COVID-19 disease and disinfection processes.<sup>14,15</sup> Contrary to this, a global study among dental professionals found that dentists had a good level knowledge to deal with COVID-19 disease.<sup>16</sup> This study found that a majority of the dental professionals feel that there is discrimination against COVID-19 positive patients and health professionals working for COVID-19 patients. The working distance for dental personnel is very less with long contact duration which puts them at a higher risk of contracting COVID-19.<sup>11</sup> Similar findings were reported among medical and dental professionals in Nepal.<sup>17</sup> The COVID-19 pandemic has shown drastic effects on individuals' social lives, since all sorts of gatherings, social events and even usual hospital cares are closed to reduce the transmission. It has also affected people financially and psychologically. Various preventive measures are put in place including occasional lockdowns to disrupt the transmission chains.<sup>18</sup>

Although the dental professionals had intentions to practice appropriately, some did not have adequate knowledge to implement in practice against COVID 19 disease which was similar to the study by Acharya et al. where 80% of the participants did not have good

QUESTIONS	AGREE		DISAGREE		UNCERTAIN	
	n	%	n	%	n	%
Do you agree that COVID-19 is contagious	122	97.6	1	0.8	2	1.6
It is not necessary for younger dental professionals to take measures to prevent COVID-19 infection	14	11.2	110	88.0	1	0.8
Do you agree that COVID-19 infection will be controlled successfully in Dental clinic or laboratory	60	48.0	54	43.2	11	8.8
Contacting wild animals would result to COVID-19 infection	30	24.0	72	57.6	23	18.4
We should avoid crowded places to prevent COVID-19 infection	125	100	0	0.0	0	0.0
Dental professionals who have contact with COVID-19 patients should be immediately isolated in a proper place for 21 days observation	116	92.8	8	6.4	1	0.8
Do you agree that the virus transmits from animals to humans and vice versa?	69	55.2	35	28.0	21	16.8
Are you scared by human-to-human transmission of COVID-19?	112	89.6	10	8.0	3	2.4
It is important to create awareness about the COVID-19 in family	125	100.0	0	0.0	0	0.0
COVID-19 is generating discrimination against specific groups of people like COVID-19 positive persons, persons suspected with COVID-19 and Frontline workers	108	86.4	13	10.4	4	3.2

**Table 4.** Attitude(n=125)

knowledge.<sup>17</sup> Our study found that around 10% of participants had a poor level of knowledge on COVID-19. This is in consistence to the findings reported by many other studies on COVID-19.<sup>14,15,17</sup> This could be because many participants did not attend the training on COVID-19 disease and/or do not follow media and other COVID-19 related developments. Thus, there is a

need to implement activities such as online classes, workshops and trainings to upgrade their knowledge.

Latest guidelines and protocols of Ministry of Health should be made available to all health professionals to stay safe and protect others from becoming infected (14, 18). Not being able to include dental professionals

QUESTIONS	YES		NO		SOMETIMES	
	n	%	n	%	n	%
Do you wear personal protective equipment (PPE) to prevent COVID-19 infection during the dental procedures	97	77.6	8	6.4	20	16.0
Do you practice 5 moments of hand hygiene to prevent COVID-19 infection	116	92.8	1	0.8	8	6.4
Do you wear a face mask when leaving home/ duty?	120	96.0	3	2.4	2	1.6
Are you disseminating information on preventive measure against COVID-19 to the patients visiting you?	93	74.4	5	4.0	27	21.6
Do you follow proper cough etiquettes when you cough or sneeze in clinic, home, market or in crowd	122	97.6	1	0.8	2	1.6
Does all dental healthcare providers in your healthcare facility wear personal protective equipment (PPE) to prevent COVID-19 infection during the dental procedures	87	69.6	15	12.0	23	18.4
Does all dental healthcare providers in your healthcare facility practice 5 moments of hand hygiene to prevent COVID -19 infection	92	73.6	9	7.2	24	19.2
Does all dental healthcare providers in your healthcare facility wear a face mask when leaving home/ duty	120	96.0	1	0.8	4	3.2
Does all dental healthcare providers in your healthcare facility follow proper cough etiquettes when you cough or sneeze in clinic, home, market or in crowd	103	82.4	4	3.2	18	14.4
Are all dental healthcare providers in your healthcare facility disseminating information on preventive measure against COVID-19 to the patients visiting them	80	64.0	7	5.6	38	30.4

Table 5. Practice (n=125)

without email address and non-response rate of around 20% were limitations of the study.

## CONCLUSION

The study found that less than half of the participants had a good level of knowledge on COVID-19 while the majority of the participants felt there is discrimination against COVID-19 positive patients and health professionals working for COVID-19 patients. Only around two-third (69.6%) of the participants used PPE during dental procedures and 60% of the participants disseminated information on COVID-19 prevention to patients visiting them. The study highlights the need to conduct sensitization, trainings or CME on COVID-19 periodically to keep all health professionals updated with latest advancements and maintain safety in clinical practice.

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## REFERENCES

1. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research* 2020;24:91-8. <https://doi.org/10.1016/j.jare.2020.03.005>
2. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *The New England Journal of Medicine* 2020;382(13):1199-207. <https://doi.org/10.1056/NEJMoa2001316>
3. World Health Organization (WHO). Naming the coronavirus disease (COVID-19) and the virus that causes it (Online Article). Available from: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it). [Last Accessed on 11<sup>th</sup> February, 2021]
4. Guan W-j, Ni Z-y, Hu Y, Liang W-h, Ou C-q, He J-x, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *New England Journal of Medicine*. 2020;382(18):1708-20. <https://doi.org/10.1056/NEJMoa2002032>

5. World Health Organization. Director-General's opening remarks at the media briefing on COVID-19. (Online Article). Available from: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19--11-march-2020>. [Last Accessed on 11<sup>th</sup> March, 2021]
6. Prime Ministers Office (PMO) MoH, Royal Government of Bhutan, Bhutan. [Last Accessed on 14<sup>th</sup> February, 2021]
7. Chan JFW, Yuan S, Kok K-H, To KK-W, Chu H, Yang J, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The Lancet*. 2020;395(10223):514-23. [https://doi.org/10.1016/S0140-6736\(20\)30154-9](https://doi.org/10.1016/S0140-6736(20)30154-9)
8. Lotfi M, Hamblin MR, Rezaei N. COVID-19: Transmission, prevention, and potential therapeutic opportunities. *Clinica Chimica Acta*. 2020;508:254-66. <https://doi.org/10.1016/j.cca.2020.05.044>
9. World Health Organization. WHO save lives: clean your hands in the context of COVID-19. (Online Article). Available from: <https://www.who.int/campaigns/world-hand-hygiene-day>. [Last Accessed on 14<sup>th</sup> March, 2021]
10. Haq NU, Hassali MA, Shafie AA, Saleem F, Farooqui M, Aljadhey H. A cross sectional assessment of knowledge, attitude and practice towards Hepatitis B among healthy population of Quetta, Pakistan. *BMC Public Health*. 2012;12:692. <https://doi.org/10.1186/1471-2458-12-692>
11. World Health Organization. Coronavirus disease (COVID-19): How is it transmitted?. (Online Article). Available from: <https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-how-is-it-transmitted>. [Last Accessed on 14<sup>th</sup> March, 2021]
12. Lin Y, Huang L, Nie S, Liu Z, Yu H, Yan W, et al. Knowledge, Attitudes and Practices (KAP) related to the Pandemic (H1N1) 2009 among Chinese General Population: a Telephone Survey. *BMC Infectious Diseases*. 2011;11:128. <https://doi.org/10.1186/1471-2334-11-128>
13. Zhong B-L, Luo W, Li H-M, Zhang Q-Q, Liu X-G, Li W-T, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci*. 2020;16(10):1745-52. <https://doi.org/10.7150/ijbs.45221>
14. Sarfaraz S, Shabbir J, Mudasser MA, Khurshid Z, Al-Quraini AAA, Abbasi MS, et al. Knowledge and Attitude of Dental Practitioners Related to Disinfection during the COVID-19 Pandemic. *Healthcare (Basel)*. 2020;8(3):232. <https://doi.org/10.3390/healthcare8030232>
15. Khan AM, Nawabi S, Javed MQ. Dental Faculty's Knowledge and Attitude regarding COVID-19 disease in Qassim, Saudi Arabia. *Medico Legal Update*. 2020;20(4):1202-10. <https://doi.org/10.37506/mlu.v20i4.1991>
16. Kamate S, Sharma S, Thakar S, Srivastava D, Sengupta K, Hadi A, et al. Assessing Knowledge, Attitudes and Practices of dental practitioners regarding the COVID-19 pandemic: A multinational study. *Dental and medical problems*. 2020;57:11-7. <https://doi.org/10.17219/dmp/119743>
17. Acharya A, Thapa, P, Shrestha R, Shrestha S, Gupta A. Knowledge, attitude and practice of Nepali medical and dental practitioners on infection control during Covid-19 Pandemic. *Orthodontic Journal of Nepal* 2020;10(2):29-35. <https://doi.org/10.3126/ojn.v10i2.31065>
18. Ministry of Health, Royal Government of Bhutan, Bhutan. 2020.

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