

Original Article

Knowledge, Attitude and Practice Regarding COVID-19 Infection Among Dental Professionals

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ABSTRACT

Objectives: This study aimed to evaluate the knowledge, attitude, and practice (KAP) measures of dental professionals in Lucknow City towards COVID-19 infection.

Material and Methods: A cross-sectional study was conducted for 6 months (November 2021 & April 2022). A total number of 430 people were involved in this study after obtaining consent. All data analysis were conducted with Statistical Package for Social Sciences (SPSS) version 21.0. First, frequencies of correct knowledge answers and various attitudes and practices were described. Then, to assess the associations between demographic variables and KAP, Chi-Square tests were used. A p-value <.05 was considered statistically significant.

Results: In the present study, most dentists have acceptable knowledge, attitudes, and practices on infection prevention methods regarding COVID-19. The study showed that female dental practitioners are less likely to have adequate knowledge than male dental professionals.

Conclusion: Improved knowledge and comprehension of COVID-19-related practices may increase societal awareness and minimize virus transmission.

Keywords: Attitude, COVID-19, Dental professionals, Knowledge, Lucknow, Practice

INTRODUCTION

Coronaviruses are large enveloped viruses with a single-stranded, positive sense Ribonucleic acid genome that can cause respiratory disorders in humans, ranging from the common cold to severe acute respiratory syndrome (SARS).^[1,2] Fever, dry cough, sore throat, shortness of breath, myalgia, and malaise are the most prevalent symptoms, with sputum, headache, haemoptysis, and diarrhea being less common. A well-designed questionnaire is a great way to learn about dentists' knowledge and attitudes.^[3-6] The current study analyzes dental professionals' knowledge, attitude, and practice regarding the COVID-19 disease, transmission mode, infection control measures, and their concerns.^[7,8]

MATERIAL AND METHODS

A total number of 430 people were involved in this study after obtaining consent. The data for this study was collected online by emailing the practicing dental professionals. Participants were informed about the study's purpose at the time, assessed the questionnaire involved, and assured

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anonymity. Participants who confirmed their voluntary willingness to participate and had completed Master of Dental Surgery (MDS) and practicing dentistry for a minimum of 2 years were included in the study. Those who did not respond to the email sent to them within a maximum period of 3 days were excluded.

Ethical clearance was obtained from the Institutional Ethical Committee (FP-01/OMR/2021/IEC). Informed consent was taken from the included study subjects in their local, regional language before the start of the study.

A structured self-administered questionnaire was used to obtain information on the study participants related to sociodemographic characteristics, awareness, and KAP toward COVID-19. The questionnaire assessing KAP toward COVID-19 was answered on a yes/no basis. Data was collected from practicing dental professionals who have practiced for a minimum of 2 years.

The first part consisted of the pretested and predesigned questionnaire, which included demographic details like age, gender, mobile number, place of work, address, and email ID.

The second part consisted of a self-administered questionnaire on Knowledge, Attitude and Practice regarding COVID-19 infection among dental professionals. Correct answers were assigned 1 point; other answers were given 0 points. Points were summed for a total knowledge score of 0–12, with higher scores indicating better knowledge of COVID-19.

Statistical procedures

All data analysis were conducted with Statistical Package for Social Sciences (SPSS) version 21.0. First, frequencies of correct knowledge, attitudes, and practices were described. Then, to assess the associations between demographic variables and KAP, Chi-square tests were used. A p-value <.05 was considered statistically significant.

RESULTS

Demographic characteristics of participants

A total of 430 dental professionals based in Lucknow were involved in this web survey after obtaining consent from them. The distribution of males and females among different age groups was significantly different ($p < 0.05$). Females were found to be considerably more in the 25–30 yrs age group than other age groups. Practitioners working in government set-ups were found to be significantly more in the 31–35 yrs, 36–40 yrs and 46–50 yrs age group than in other age groups.

Table 1 shows the gender-wise distribution of subjects in different age groups. Among the 25–30 year age group, 61 (26.2%) were males and 172 (73.8%) were females. Among the

Table 1: Gender-wise distribution of subjects in different age groups.

Age group	Sex		Total
	M	F	
25–30 years			
N	61	172	233
%	26.2%	73.8%	100.0%
31–35 years			
N	35	30	65
%	53.8%	46.2%	100.0%
36–40 years			
N	21	21	42
%	50.0%	50.0%	100.0%
41–45 years			
N	34	11	45
%	75.6%	24.4%	100.0%
46–50 years			
N	16	9	25
%	64.0%	36.0%	100.0%
51 years & above			
N	15	5	20
%	75.0%	25.0%	100.0%
Total			
N	182	248	430
%	42.3%	57.7%	100.0%
p-value		<0.001, S	

M: Male, F: Female, N: number of male and female in the respective age group

31–35 age group, 35 (53.8%) were males and 30 (46.2%) were females. Among the 36–40 age group, 21 (50%) were males and 21 (50%) were females. Among the 41–45 year age group, 34 (75.6%) were males and 11 (24.4%) were females. Among the 46–50 age group, 16 (64%) were males and 9 (36%) were females. Among the 51 and above age group, 15 (75%) were males, and 5 (25%) were females. The distribution of males & females among different age groups was significantly different ($p < 0.05$). Females were found to be considerably more in the 25–30 age group than other age groups.

Table 2 shows that the distribution of private and government practitioners among different age groups was significantly different ($p < 0.05$). Practitioners working in government set-ups were considerably more in the 31–35, 36–40 and 46–50 age groups than in other age groups.

Table 3 shows dental professionals' perceived knowledge, attitude, and practice level.

Knowledge

When the participants were asked whether they had heard about COVID-19, most responded (99.5%) with the correct answer, except a few in the 25–30 and 46–50 age groups. When the study participants were asked whether COVID-19

Table 2: Distribution of private & government practitioners among different age groups.

Age group	Practice type		Total
	Private	Government	
25–30 years			
N	219	14	233
%	93.6%	6.4%	100.0%
31–35 years			
N	55	10	65
%	84.6%	15.4%	100.0%
36–40 years			
N	33	9	42
%	78.6%	21.4%	100.0%
41–45 years			
N	42	3	45
%	93.3%	6.7%	100.0%
46–50 years			
N	20	5	25
%	80.0%	20.0%	100.0%
51 years & above			
N	19	1	20
%	95.0%	5.0%	100.0%
Total			
N	388	42	430
%	90.0%	10.0%	100.0%
p-value		0.009, S	

M: Male, F: Female, N: number of male and female in the respective age group

is a contagious disease, most practitioners (98.4%) of all the age groups replied “Yes”. The prevalence of correct knowledge about the disease’s incubation period significantly differed among different age groups. The knowledge about the disease’s incubation period was found to be very low (72.4%) among the 46–50 age group compared to other age groups.

The response to “It is my opinion that early detection of COVID-19 can improve treatment and outcome” significantly differed among age groups. The “Yes” response was very high (99.1%) among all the age groups. The response to “The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, sore throat & myalgia” was not found to be significantly different among different age groups. Almost all age groups (91.4%) agreed with the statement. The response to “COVID-19 spreads through” was found to be “contact transmission” among the majority (56.6%). Significantly fewer participants in younger age groups, i.e., till 45 years, had correct knowledge regarding this question. The responses to the question, “Personal Protective Equipment (PPE) recommended for staff in dental office reception is effective against”, were not significantly different among different age groups. A majority (91.4%) responded to all the above. Their responses differed significantly when the study participants were asked about the Effective disinfectant against

COVID-19 infection. Significantly fewer participants in the 41–45 age group, around 31.3%, reported Isopropyl alcohol. All the participants (100%) agreed with the statement that “Disinfectant is necessary in all the areas where the patient had come in contact in the clinic”.

Attitude

When participants were asked about their vaccination status, the majority (98.8%) were vaccinated for COVID-19. Although most reported having the Covishield vaccine (88.2%) compared to other vaccines, Covaxin was found to be significantly high (21.4%) in the 36–40 age group. A majority (98.4) of them got both vaccine dosages. When the study participants were asked about the type of facemasks required by the dental residents to prevent infection, their responses were significantly different. Significantly more residents (54.3%) in the 36–40 age group reported N95 masks without respirator. The response to “Surfaces such as door, door handles, patient’s waiting area, chairs, tables, dental chairs, should be disinfected frequently every 1–2 hours” significantly differed among different age groups. Most (97.2%) of the population responded with “yes”. The response to “What type of dental care should be provided during the pandemic” was not found to be significantly different among different age groups. Most (55.0%) of the age groups responded as “Emergency”. The response to “Intra Oral Periapical Radiograph (IOPAR) should be replaced with Orthopantomogram (OPG)/Cone Beam Computed Tomography (CBCT) during the COVID-19 Pandemic” was found to be significantly different among different age groups. Significantly fewer participants in the younger age groups, 25–30 years, 31–35 years, and 36–40 years, agreed with the statement, but a majority (87.5%) responded with “yes”. The responses to “Aerosol generating procedures and minor oral surgery procedures should be done on the last appointment of the day” were not found to be significantly different among different age groups. Most (92.3%) of the age groups responded as “Yes”.

Practice

When participants were asked whether they were covering their mouth and nose while coughing and sneezing with a tissue, handkerchief, etc., during the outbreak, most of the age groups reported following this (99.3%).

The response to “Maintaining social distance of 2 meters is mandatory to prevent the spread of COVID-19” was not found to be significantly different among different age groups. Most (97.2%) of all the age groups agreed with this statement.

Table 3: Dental professionals' knowledge, attitude, and practice towards COVID-19.

Questions	Percentage of correct answers from each category with most responded/right option in bracket	Options
K1. The incubation period of the disease	72.4% (3–14 days)	Less than 2 days, 2–5 days & 3–14 days
K2. It is my opinion that early detection of COVID-19 can improve treatment and outcome	99.1% (Yes)	Yes, No
K3. Covid Spreads through	32.9% (Both)	Airway, Contact transmission & Both
K4. Effective disinfectant against COVID-19 infection is	23.0% (All of the above)	Isopropyl alcohol, Sodium hypochlorite, Chlorhexidine & All of the above
A1. If yes, then with what kind of vaccine	88.2% (Covishield)	Covishield, Covaxin & Sputnik
A2. What types of masks should dental residents wear to prevent infection by the coronavirus	54.3% (N95 mask without respirator)	Cloth mask, three ply mask, N95 mask with respirator & N95 mask without respirator
A3. Surfaces such as doors, door handles, patient's waiting area, chairs, tables, and dental chairs should be disinfected frequently every 1–2 hours	97.2% (Yes)	Yes, No
A4. Intraoral Periapical Radiograph should be replaced with Orthopantomogram /Cone Beam Computed Tomography during the COVID-19 Pandemic	87.5% (Yes)	Yes, No
E1. Have you ever been infected with COVID-19 infection	61.0% (No)	Yes, No & Unaware
E2. Have you noticed symptoms of COVID-19	58.5% (No)	Yes, No
E3. When were you infected	67.3% (Not applicable)	Before vaccination, After 1st dose, After 2nd dose & not applicable
E4. Do you have any idea where you got infected from	51.0% (Unknown)	Market Home, Public gathering, Unknown, Workplace & Not applicable
E5. Were you hospitalized or home quarantined	64.3% (Home quarantined)	Hospitalized, Home quarantined & Not applicable
E6. Have you faced any complications regarding COVID-19	50.6% (Yes)	Yes, No & not applicable
E7. What complications did you experience	52.9% (Minor)	Minor, Major & not applicable
E8. Have you faced any side effects of the medications administered to you for Covid-19	54.1% (Not applicable)	Yes, No & not applicable

A majority (99.3%) of all the age groups followed the WHO guidelines on hand hygiene. Most age groups, around 94.2%, knew that screening every patient for COVID-19 before dental treatment was mandatory.

All (100%) believed that washing hands or using alcohol-based sanitizers before and after screening should be recommended. The responses to “Pre and Post-procedure mouth rinse such as 1% hydrogen peroxide, 0.2% povidone-iodine, and chlorhexidine are effective against COVID” were not found to be significantly different among different age groups. Most (91.6%) of the age groups responded “Yes”.

Exposure

The response to “Have you ever been infected with COVID-19 infection?” was found to be “No” (61%) among all the age groups. When patients were asked, “Have you noticed

symptoms of COVID-19?” most of the population responded with “No” (58.5%). Most of the population responded for the first time (69.8%) when asked how often they have been infected with COVID-19.

The response to “When were you infected?” significantly differed among age groups. The “not applicable” response was very high (67.3%) among all the groups. When asked about the source of infection regarding COVID-19, a majority (51%) of the population got it from an unknown source.

The response to “Were you hospitalized or home quarantined?” was found to be “home quarantined” for most of the population (64.3%). Senior age groups tend to be hospitalized significantly more than younger age groups.

When asked whether they have faced complications after COVID-19 infection, the majority (50.4%) responded with “yes”. Those in the 41–45 age group reported complications post-COVID condition as compared to other age groups.

The response to “What complications did you experience?” was significantly high, with 52.9% of people reporting with “minor”. The response to “Have you faced any side effects of the medications administered to you for COVID-19?” was found to be significantly different among different age groups, but in a majority (54.1%) of the cases, the options were found to be “not applicable”.

The responses to “What are your sources of information regarding COVID-19?” were not found to be significantly different among different age groups. Most (32.2%) of the age groups responded as “Social Media”.

DISCUSSION

Our study focused on the perceived knowledge, attitude, and practice of dental professionals in Lucknow regarding actions and methods of receiving information concerning COVID-19.

In the present study, the prevalence of correct knowledge about the disease’s incubation period was significantly different among different age groups. The knowledge about the disease’s incubation period was very high among the 25–30 age group compared to other age groups. Similar findings were reported by Hleyhel *et al.*, in which 73% of the dentists reported the correct average incubation period of the coronavirus disease. *This can be because they performed clinical duties in the OPD when the pandemic started, which significantly increased their knowledge.*

The association between early detection of COVID-19 can improve treatment and outcome” was significantly different among different age groups. The “Yes” response was found to be very low among the 41–45 age group compared to other age groups. *This can be because they had limited access to information related to COVID-19.*

The distribution of different types of vaccine were found to be significantly different among different age groups. However, a majority reported having the Covishield vaccine compared to other vaccines. However, Covaxin was reported by a significantly higher proportion of respondents in the 36–40 age group. *This can be due to the Covishield vaccine’s easy availability during the Government’s Vaccination drive.*

The response to “Have you ever been infected with COVID-19 infection?” was found to be significantly different among different age groups. The “No” response was very low among the 51-year-old and above age group compared to other age groups. The “Unaware” response was significantly higher among the 51-year-old and above age group than others. *The reason for this can be that the people in that age group stayed at home instead of going out and followed strict COVID-19*

protocols, which might have resulted in them not getting infected during the pandemic.

The response to “Have you noticed symptoms of COVID-19?” significantly differed among different age groups. The “Yes” response was found to be very low among the 41–45 age group compared to other age groups. *The reason for this can be that the people in that age group either did not get any symptoms even after getting infected or did not get infected.*

The response to “How many times have you been infected?” was found to be significantly different among different age groups. The “None” response was found to be very low among the 51-year-old & above age group as compared to other age groups. *The reason for this can be that the people in that age group stayed at home and followed COVID-19-related protocols strictly.*

The response to “When were you infected?” significantly differed among age groups. The “before vaccination” response was very high among the 25–30 years group compared to other age groups. *The reason for this can be that when the pandemic broke down, youngsters were not taking any precautions due to the misinformation related to COVID-19 infection.*

The response to “Do you know where you got infected from?” significantly differed among different age groups. The “Workplace” response was very high among the 46–50 age group compared to other age groups. *This can be because even if people in that age group took strict prevention measures, they were still exposed to the fatal virus during hospital duty or in the clinical setup.*

The response to “Were you hospitalized or home quarantined?” significantly differed among age groups. Senior age groups tend to be hospitalized considerably more than younger age groups. *This is because the population in that age group is more susceptible to infection due to impaired immunity and associated co-morbidities.*

The response to “Have you faced any complication after COVID-19 infection?” significantly differed among age groups. Those in the 41–45 age group reported complications post-COVID infection compared to other age groups. *The reason for this can be that the population in that age group had co-morbidities and late diagnosis of the COVID-19 infection, leading to poor outcomes and the development of complications.*

The response to “What complications did you experience?” was found to be significantly different among different age groups. Those who were in the 25–30 years age group reported minor complications markedly more as compared to other age groups. *The reason for this can be that the population in that age group did not have any co-morbidities and better immunity than other age groups.*

The response to “COVID-19 spreads through” significantly differed among age groups. Significantly fewer participants in younger age groups, i.e., till 45 years, had correct knowledge regarding this question. *This is because the population in that age group had limited access to COVID-19-related information and had difficulties equipping themselves with up-to-date information. Also, other reasons can be the wrong source of information, like social media platforms, which can also lead to the spread of false information among the same population.*

When the study participants were asked about the type of facemasks required by the dental residents to prevent infection, their responses were significantly different. Significantly, more residents in the 36–40 age group reported N95 masks without respirators. *The reason for this is that the population in that age group had more accurate sources of information as they relied on data from scientific journals.*

Their responses differed significantly when the study participants were asked about the Effective disinfectant against COVID-19 infection. Significantly, fewer participants in the 41–45 age group reported Isopropyl alcohol. *The reason for this can be the availability of various disinfectants in the market, leading to malformation regarding the appropriate disinfectant.*

The response to “IOPAR should be replaced with OPG/CBCT during the COVID-19 Pandemic” significantly differed among age groups. Significantly fewer participants in the younger age groups, 25–30 years, 31–35 years and 36–40 years, agreed with the statement. *The reason for this can be the poor availability of OPG/CBCT in their clinical setup and, hence, more significant usage of IOPAR films for day-to-day use.*

The responses to “Have you faced any side effects of the medications administered for COVID-19?” significantly differed among different age groups. Significantly fewer participants in the age groups 36–40 years, 41–45 years and above 50 years were reported to have any side effects. *The reason for this can be a lack of knowledge regarding the side effects of medications administered to them during the COVID-19 pandemic.*

CONCLUSION

According to the findings of this study, dental practitioners in India today are well aware of the current health issues and the steps that must be taken to avoid spread of the disease.

Most dentists in the current study have acceptable knowledge, attitudes, and practices on infection prevention methods in COVID-19. The study shows that female dental practitioners are less likely to have adequate knowledge than male dental professionals.

Ethical approval

The author(s) declare that they have taken the ethical approval from IEC (FP-01/OMR/2021/IEC).

Declaration of patients consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest

Use of Artificial Intelligence (AI)-Assisted Technology for manuscript preparation

The authors confirm that there was no use of Artificial Intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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