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AWARENESS, PERCEPTIONS AND DENTAL SERVICES UTILIZATION BY PATIENTS A TERTIARY CARE CENTRE DURING COVID-19 PANDEMIC

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ABSTRACT

BACKGROUND. COVID -19 pandemic has imposed multiple questions and consideration in the minds of the patients and dental professionals. The understanding of patient's perceptions and dental services utilization can aid in modifying the pre-existing dental practices. The aim of the present study was to assess the awareness, perceptions and dental services utilization by patients visiting a tertiary care centre during COVID-19,

METHODOLOGY. A cross-sectional study on 437 patients was carried using a validated questionnaire consisting of 22 questions on three domains. Strict sterilization protocol and infection control measures were practiced to avoid any contact between the investigator and the patient.

RESULTS. Patients were aware of COVID -19 pandemic and were willing (76.7%) to inculcate preventive practices even post-pandemic. Concerns regarding the spread of infection (37.3%) and hygiene/cleanliness (28.6%) were most commonly reported. Patients visited the dental centre primarily for emergency management and preferred their queries being solved on the phone.

CONCLUSION. Patients had a positive outlook towards visiting the dental centre for treatment in the near future and did not report any anxiety before visiting a dental centre.

Key words: *coronavirus, pandemics, perception, dental service, hospital*

INTRODUCTION

Coronaviruses a huge virus family is associated with disease in animals or humans. Coronaviruses affects humans with infections ranging from the common cold to dreadful diseases. (1) The recently discovered coronavirus causes COVID-19 infection which was unknown before the outbreak started in Wuhan, China, on 31st December 2019 (1)

This outbreak was announced as a Public Health Emergency on 30 January 2020 by the World Health Organization (WHO); however, pertaining to over 118,000 cases in more than 110 countries and surrounding areas across the globe COVID-19 was declared as a pandemic by WHO on March 11. [2], [3] The first case of COVID-19 pandemic emerged in India on 30th January 2020 in Kerala state (4),

A nationwide campaign of lockdown was initiated by the Government of India on 24th of March 2020, initially for 21 days thereby curbing daily operations of the whole 130 crores residents of India as a precautionary step against the COVID-19. It started after a 14-hour voluntary mass curfew followed on by execution of regulatory series in the various COVID – 19 affected states (5). Because of continuous rise in the

number of coronavirus cases the lockdown was further extended till the end of May in different phases. The lockdown restrictions were subsequently lifted in a sequential manner from then onwards and services were resumed in a phased manner (5).¹

The routine healthcare services in India were also hampered during this lockdown with medical and dental professionals providing only emergency treatment procedures. The Dental Council of India issued a detailed advisory on May 7, which categorized dental issues as an emergency, urgent and advised against performing any procedures that involve use of aerosols, essentially ruling out root canal treatment, implants and most other surgical procedures (6).

Despite the large scale transmission of COVID-19, demand for dental treatment decreased only a little during the pandemic. The need for provision of urgent dental treatment and care was always considered essential (7).

The changing global scenario in addition to the demand for safe dental care has imposed multiple questions and consideration in the minds of the patients and dental professionals. An understanding of patient's perceptions and dental services utilization can not only aid in modifying the pre-existing dental

practices but can also lay down the path in determining the pivotal changes required in dental settings during and post COVID -19 eras.

The present study was thus carried out to assess the perceptions and dental service utilization of the patients visiting a tertiary care centre. Additionally, the study also assessed the awareness among the patients regarding COVID-19 pandemic.

METHOD

A questionnaire-based cross-sectional study was carried out among the patients visiting the dental centre of All India Institute of Medical Sciences (AIIMS), New Delhi. Patients willing to participate and intellectually and physically capable of responding to the questionnaire were included, whereas the patients who did not wish to cooperate with the study protocol were excluded from the present study.



Fig. 1



Fig.2

Ethical approval to conduct the study was taken from the Institutional Review Board of All India Institute of Medical Sciences, New Delhi (IEC-742/07, RP -16/2020). Written informed consent for participation was obtained. Strict sterilization protocol and infection control measures were practiced to avoid any contact between the investigator and the patient (Fig. 1 and 2). This study was carried out for one month (July 2020) after the strict lockdown phase was over and sequential unlocking of the regular health care services started in India. The total patients visiting the tertiary centre study duration were 546 of which 437 patients (response rate 80%) participated in the study. The non respondents lacked the capacity to cooperate with the study protocol or did not provide consent to participate in the study. The study sample thus comprised of conveniently selected 437 patients visiting the Centre for Dental Education and Research (CDER), AIIMS New Delhi.

DEVELOPMENT OF QUESTIONNAIRE

A questionnaire for awareness related to COVID-19, perceptions and dental services utilization was used in this study. Initial preparation of the questionnaire was done in English; translated into Hindi language and further back-translated into English by professional translators to check for the efficiency and correctness of the information conveyed.

The development of the questionnaire followed the sequential steps starting with the identification of three domains: Awareness, Perception and Dental Service Utilization. The questionnaire was designed in accordance with the identified domains using relevant literature as well as upon the opinions based on the professional expertise of the authors. The first part of the questionnaire included socio-demographic details like age, gender, level of education and occupation. The other parts consisted of multiple-choice questions and a picture-based question based upon the identified domains. The pictorial question was incorporated in accordance to the thematic appreciation test in which the respondents were asked to explain the picture about what they think is happening in it.^[8] The results of the pictorial question were quantified into correct and incorrect response for analysis.

The awareness domain consisted of 10 questions whereas the perceptions and dental service utilization consisted of 15 questions. Thus a total of 25 item pool was developed by a group of four dental professionals. The group then discussed the items and eliminated three items one from awareness and two from utilization domain which was not found to be relevant.

The assessment of questionnaire validity qualitatively was carried out by evaluating the content

and face validity. The questionnaire was presented to six experts from public health dentistry, community medicine, orthodontics, oral surgery and biostatistics that were acquainted with the topic. Based on the professional judgment necessary changes were made. The quantitative assessment of validation was done using the content validity ratio (9).

The final questionnaire consisted of three sections. The demographic characteristics were assessed in the first section and the final questionnaire comprised of 22 questions with nine questions evaluating the patient's awareness regarding Covid-19 pandemic and 13 questions assessing the patient's perceptions and dental services utilization. The questions on dental service utilization and perceptions consisted of reasons of visiting the dental centre, associated anxiety, perceived change in the dental services post-pandemic and effectiveness of teleconsultation as a means of rendering dental services post lockdown.

Test-retest reliability was assessed by determining the level of agreement between initial scores and scores at the second assessment. No items were deleted/modified at this stage.

A pilot study was conducted among 20 patients who were divided into two groups of ten patients each. Data collection in the first group was done using Google forms via a tablet whereas in the other group it was done using the paper format. The pilot study was conducted to determine the feasibility of the study and the acceptability of the recording format for the present study. The paper format was better accepted by the patients in spite of following all the appropriate infection control protocols in both the methods. Data collection by paper format was thus adopted in this study. The results of the pilot study were not included in the final analysis.

The data collected was entered in Microsoft Excel and subjected to statistical analysis using Statistical Package for Social Sciences (IBM Corp., Armonk, N.Y., USA Version 20). The level of significance was fixed at 5% and $p \leq 0.05$ was considered statistically significant. Kolmogorov-Smirnov test and Shapiro-Wilks test were employed to test the normality of data. Chi-square test was performed for quantitative variables.

RESULTS

The mean age of the patients in this study was found to be 31.74 ± 14.79 years. Females (52.7%) outnumbered male patients (47.3%) and of the 437 patients assessed in the present study majority of patients were students (39.8%) with the undergraduate level of education (33.0%) (Tab, I).

Patients reported gathering information about COVID-19 from more than one medium; however, television was the single major source of information about COVID-19. Majority of the patients in the present study were aware of the common symptoms, most affected age group and primary mode of transmission of COVID-19; however, were unable to identify (58.4%) the violation of the COVID-19 norms when recorded via a picture based question. In our study, 81% of the patients avoided social events in this current pandemic whereas three-fourth (74.4%) of the patients felt that the pandemic will be controlled eventually. Patients were more willing (81%) to visit hospitals for dental services rather general health services and were willing (76.7%) to inculcate preventive practices in routine life post-pandemic (Tab,II).

Assessment of the perceptions and dental service utilization by the patients in the present study revealed that majority of the patients did not self-report

Table I: Descriptive characteristics of study patients

Characteristics	Categories	N (%)
Gender	Male	204 (46.7)
	Female	233 (53.3)
Level of Education	Primary	49 (11.2)
	Secondary	142 (32.5)
	Undergraduate	144 (33.0)
	Postgraduate	78 (17.8)
	PhD	9 (2.1)
	Other	15 (3.4)
Occupation	Student	174 (39.8)
	Employed	128 (29.3)
	Not employed	70 (16.0)
	Others	65 (14.8)

Table II: General awareness about COVID-19 among the patients visiting the center

Questions	Options	N (%)
Major source of information about COVID 19	Social Media	79 (18.1)
	Newspaper	30 (6.9)
	Television	94 (21.5)
	Government Websites	22 (5.0)
	AarogyaSetu	41(9.4)
	Other	5 (1.1)
	More than one option	166 (38)
The most common symptoms of COVID 19	Fever, Dry Cough, Tiredness	316 (72.3)
	Pain	10 (2.3)
	Body ache	8 (1.8)
	Sore throat	20 (4.6)
	More than one option	83 (19)
Age group more likely to develop serious illness	Children	30 (6.8)
	Young Adults	12 (2.7)
	Older People	190 (43.5)
	All of the above	126 (28.8)
	More than one option	79 (18.1)
Primary mode of transmission of COVID- 19	Serum	30 (6.9)
	Saliva	41 (9.4)
	Blood	21 (4.8)
	Respiratory Droplets	308 (70.5)
	More than one option	37 (8.5)
Do you think COVID 19 pandemic will be controlled eventually?	Yes	325 (74.4)
	No	33 (7.6)
	Maybe	79 (18.0)
Have you avoided social events due to current pandemic?	Yes	354 (81)
	No	45 (10.3)
	Sometimes	38 (8.7)
Do you wish to inculcate preventive practices in your routine life post COVID 19?	Yes	335 (76.7)
	No	52 (11.9)
	Unsure	50 (11.4)
Type of services preferred during hospital visiting in time of pandemic	General Health Services	97(22.2)
	Dental Services	181 (41.4)
	Both	91 (20.8)
	None	68 (15.5)
Awareness about COVID- 19 norms violation	Yes	182 (41.6)
	No	255 (58.4)

deterioration in oral health or anxiety signs before visiting a dental centre; however, we're concerned about safety measures (54.9%) before visiting the dental centre. Concerns regarding the spread of infection (37.3%) and hygiene/cleanliness (28.6%) were most commonly reported by the patients. Amongst the various mode of registration assessed mobile application (27.2%) was considered as the most preferred mode of registration whereas on spot in queue (13%) registration was considered as the least preferred

mode when compared with the website, telephonic/on-call modes of registration. Emergency treatment/pain (33.6%) was reported as the chief reason for visiting the dental centre in this study.

Majority of the patients were not sure whether COVID infection can spread during dental treatment and did not think that the PPE kits can create hindrance in communication during the dental procedure. On one side patients preferred getting their dental queries solved on phone as compared to the visit at the clinic;

however, on the other, were also not hesitant in visiting a dental care centre for routine dental treatment in the near future. Patients felt that teleconsultation can serve as an effective means of providing dental care post-COVID 19 (Tab. III).

Gender wise comparative evaluation in our study revealed a significant difference between males and females only for question related to the most concerning aspect before visiting a dental centre. No significant difference concerning gender was seen among the patients for knowledge or dental service utilization (Tab.IV).

Table III: Perceptions and Dental service utilization aspects among the patients visiting the centre during pandemic

Deterioration in oral health during lockdown and COVID- 19 pandemic	Yes	91 (20.8)
	No	296 (67.7)
	Maybe	50 (11.4)
Anxiety signs like numbness/tingling, dizziness, nervousness before visiting a dental centre	Yes	39 (8.9)
	No	381 (87.2)
	Maybe	17 (3.9)
Concerns about safety measures visiting the dental centre during COVID 19 pandemic	Yes	241 (54.9)
	No	151 (34.6)
	Maybe	45 (10.3)
If yes, most concerned aspect before visiting a dental centre	Hygiene/ Cleanliness	125(28.6)
	Large number of people	58 (13.3)
	Dental Treatment	37 (8.5)
	Spread of infection	163 (37.3)
	More than one options	54 (12.3)
Awareness of different methods of registration at the dental centre	Yes	290 (66.4)
	No	94 (21.5)
	Maybe	53 (12.1)
If yes, preferred mode of registration	Mobile Application	119 (27.2)
	On spot in queue	57 (13.0)
	Website of dental centre	85 (19.5)
	Telephonic/On call	113 (25.9)
	More than one options	63 (14.4)
Chief Complaint/ Reason for visiting the dental centre	Routine OPD	134 (30.7)
	Emergency Treatment /Pain	147 (33.6)
	Trauma/ Fracture	19 (4.3)
	Follow up	108 (24.7)
	Any other	29 (6.6)
Do you think COVID infection can spread during dental treatment?	Yes	168 (38.4)
	No	94 (21.5)
	Maybe	175 (40.1)
Do you think you can wait for long duration during the dental treatment procedures at dental centres?	Yes	159 (36.4)
	No	177 (40.5)
	Maybe	101 (23.1)
Do you think the PPE kits can create hindrance in communication during dental procedure?	Yes	87 (19.9)
	No	225 (51.5)
	Maybe	125 (28.6)
Would you prefer your dental queries being solved via phone as compared to your visit at the dental centre?	Yes	202 (46.2)
	No	129 (29.5)
	Maybe	106 (24.3)

Do you feel teleconsultation can serve as effective means of providing dental care post COVID 19?	Yes	281 (64.3)
	No	156 (35.7)
Do you plan to visit a dental centre for routine dental treatment in near future?	Yes	316 (72.3)
	No	27 (6.2)
	Maybe	94 (21.5)

Table IV: Comparative evaluation of Gender with awareness, perceptions and dental service utilization by study patients

Questions	Options	Male N	Female N	P value
Major source of information about COVID 19	Social Media	41	38	.206
	Newspaper	9	21	
	Television	45	49	
	Government Websites	13	9	
	AarogyaSetu	17	24	
	Other	4	1	
	More than one option	75	91	
The most common symptoms of COVID 19	Fever, Dry Cough, Tiredness	149	167	.563
	Pain	7	3	
	Body ache	4	4	
	Sore throat	8	12	
	More than one option	36	47	
Age group more likely to develop serious illness	Children	19	11	.333
	Young Adults	4	8	
	Older People	87	103	
	All of the above	61	65	
	More than one option	33	46	
Primary mode of transmission of COVID- 19	Serum	15	15	.817
	Saliva	19	22	
	Blood	9	12	
	Respiratory Droplets	147	161	
	More than one option	14	23	
Do you think COVID 19 pandemic will be controlled eventually?	Yes	150	175	.744
	No	16	17	
	Maybe	38	41	
Have you avoided social events due to current pandemic?	Yes	164	190	.740
	No	23	22	
	Sometimes	17	21	
Do you wish to inculcate preventive practices in your routine life post CO19VID 19?	Yes	158	177	.774
	No	25	27	
	Unsure	21	29	
Type of services preferred during hospital visiting in time of pandemic	General Health Services	44	53	.597
	Dental Services	80	101	
	Both	48	43	
	None	32	36	
Awareness about COVID- 19 norms violation	Yes	92	90	.171
	No	112	143	

Deterioration in oral health during lockdown and COVID- 19 pandemic	Yes	42	49	.882
	No	137	159	
	Maybe	25	25	
Anxiety signs like numbness/tingling, dizziness, nervousness before visiting a dental centre	Yes	19	20	.617
	No	179	202	
	Maybe	6	11	
Concerns about safety measures visiting the dental centre during COVID 19 pandemic	Yes	117	124	.498
	No	70	81	
	Maybe	17	28	
If yes, most concerned aspect before visiting a dental centre	Hygiene/ Cleanliness	64	61	.05* (s)
	Large number of people	25	33	
	Dental Treatment	15	22	
	Spread of infection	80	83	
	More than one options	20	34	
Awareness of different methods of registration at the dental centre	Yes	126	164	.116
	No	53	41	
	Maybe	25	28	
If yes, preferred mode of registration	Mobile Application	52	67	.876
	On spot in queue	27	30	
	Website of dental centre	40	45	
	Telephonic/On call	57	56	
	More than one options	28	35	
Chief Complaint/ Reason for visiting the dental centre	Routine OPD	60	74	.106
	Emergency Treatment /Pain	58	89	
	Trauma/ Fracture	9	10	
	Follow up	60	48	
	Any other	17	12	
Do you think COVID infection can spread during dental treatment?	Yes	75	93	.705
	No	47	47	
	Maybe	82	93	
Do you think you can wait for long duration during the dental treatment procedures at dental centres?	Yes	71	88	.576
	No	88	89	
	Maybe	45	56	
Do you think the PPE kits create hindrance in communication during dental procedure?	Yes	39	48	.385
	No	112	113	
	Maybe	53	72	
Would you prefer your dental queries being solved via phone as compared to your visit at the dental centre?	Yes	92	110	.448
	No	66	63	
	Maybe	46	60	
Do you feel teleconsultation can serve as effective means of providing dental care post COVID 19?	Yes	138	143	.274
	No	66	90	
Do you plan to visit a dental centre for routine dental treatment in near future?	Yes	151	165	.709
	No	11	16	
	Maybe	42	52	

DISCUSSION

The present study conducted was first of its kind in assessing the patient's outlook and their needs and demands for dental care in this new era during and after COVID 19 pandemic. Given the novelty, high transmissibility of the disease and dental treatment procedures generating aerosols; during this pandemic, alterations are and will be required to maintain a healthy environment for the patients and the dental team.

In the present study, patients gathered information regarding COVID 19 from multiple sources (Social media, Newspaper, Television, Government websites and Government's COVID-19 Aarogyasetu app). Television and social media were reported to be the common single point source of information related to COVID-19. Akalu Y et al.(10), Lincoln Leehang Lau et al. (11) in their studies reported television and radio (59.9%) as the major primary sources of information for COVID-19.

72.3% of the patients in our study were aware of the primary symptoms of the COVID 19 infection and 70.5% reported respiratory droplets as the primary mode of transmission of the virus; a study conducted by Lincoln Leehang Lau et al.(11) also reported that coughing and sneezing were identified as a transmission route by 89.5% of respondents in their study. The awareness regarding COVID-19 infection in our study is mainly attributed to the widespread measures taken for health promotion and prevention of the pandemic in India.

Patients in the present study did not report any anxiety before visiting a dental centre. In contrast to our study findings, a systematic review and meta-analysis conducted by Nader Salari et al.,(12) revealed a prevalence of anxiety as 31.9% and depression as 33.7%. They observed the prevalence in general population whereas we assessed the anxiety of patient before visiting a dental centre.

The psychological impact of COVID-19 pandemic in this study; however, was perceived in the safety concerns reported by the patients before visiting the dental centre. The spread of infection was reported as most concerning aspect of visiting the dental centre thus highlighting the need of strict implementations for outpatient department and advocates policy level changes.

In line with the COVID prevention norms, social distancing and avoiding large gathering patients of our study reported standing in a queue in hospitals as the least preferred method of registration at the dental centre. Registration via mobile phones and telephonic/on-call were more preferred by the patients. This is in accordance with the guidelines by MoHFW and

Dental Council of India for dental patients planning to visit dental hospitals.

The dental treatment during this pandemic emphasized primarily on emergency/ urgent management of the dental diseases; in line with this statement majority of patients in the study too visited with a complaint of emergency treatment/ pain; Routine OPD and follow up for previous dental treatment were the other two reasons reported for visiting the dental centre this could be due to the emerging and previous history of dental diseases among the study patients.

The dentist's personality and communication have been cited as crucial in providing satisfactory dental care.(13). The incorporation of strict infection control and sterilization measures more than ever the dental treatment procedures have and will undergo multiple changes. Screening before treatment procedures, personal protective equipment (PPE) and longer time duration will be the "New Normal". (14). Patients in our study did not feel that PPEs can create hindrance in communication during dental procedures; however, were not willing to wait for a longer duration during the dental treatment procedures at the dental centre. This can be attributed to the fact that the patients had not encountered the actual dental care at the dentist's chamber but dentist with the PPE visualization was a mere concept to them as seen in various social media platforms.

Technological advances provide humanity with new, previously unavailable options. Telemedicine in this regard is of critical importance when one considers the consequences of health-care providers contracting COVID-19 as a result of direct exposure (15) or vice versa.

Suhani Ghai (16) in their study reported that teledentistry can complement the existing compromised dental system and can offer a novel solution to resume dental practice during the current pandemic. Patients in our study too preferred their queries being solved on the phone when compared to their visit at the dental centre and felt that teleconsultation can serve as an effective means of providing dental care post-COVID 19. Provisions for teleconsultation across all levels of health care systems can thus aid in delivering healthcare facilities at even remote locations of the country.

Gender differences among knowledge and dental service utilization were not reported except for the safety concerns in visiting a dental centre. In line with our findings the study conducted by Sonam Maheshwari et al., (17) also revealed no significant difference in knowledge scores of males and females for COVID-19.

The present study thus enlightens the perceptions and dental service utilization by the patients and

highlights the avenues for appropriate, tailored strategies post-COVID to make dental care services more effective and equipped. The inclusion of patients from one centre due to pandemic although theoretically limits the generalizability of our study findings to other setting but can serve as a baseline in understanding the outlook of patients in general. This study can also aid in providing background information for determining the policy level changes in the routine treatment procedures following universal precautions and in all healthcare facilities required in this new era of dentistry.

Futuristically, patients in our study were not hesitant and planned to visit the dental centre for routine dental treatment, felt that COVID 19 pandemic will be controlled eventually and wished to include the preventive practices in routine life post-COVID 19 pandemic. The present study thus opens avenues for researches on perceptions and dental service utilization by patients in dental clinics, different levels of healthcare facilities' and in multicentre setting.

CONCLUSION

The study assessed the awareness, perception and dental service utilization by the study patients. The study findings reveal that the patients were aware of the pandemic and visited the dental centre primarily for emergency management. The patients had a positive outlook towards visiting the dental centre for treatment in near future, were willing to continue the preventive practices post COVID and highlighted the importance of teledentistry in the post-COVID-19 era.

ACKNOWLEDGEMENT

We thank all the patients for their active participation. We thank Mr. Ashish Kumar for the illustration development. We owe our gratitude to Mr. Kapil Kumar for the help in maintaining the stringent infection protocol for the study. We are also sincerely grateful to the registration counter staff of CDER, AIIMS New Delhi for streamlining the patient for participation in this study.

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Received: 30.11.2020

Accepted for publication: 26.02.2021

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