

Impact of COVID-19 on the Psychology of the Public in Chennai towards Dental Treatment – A Cross-sectional Survey

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Citation of this Article: Abirami Vetriselvan, P. Rithika Raj, Dr. Uma Sudhakar, “Impact of COVID-19 on the Psychology of the Public in Chennai towards Dental Treatment – A Cross-sectional Survey”, IJDSIR- July - 2021, Vol. – 4, Issue - 4, P. No. 540 – 549.

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: While dentists are relentlessly adapting towards COVID-19 to ensure safety and prevent disease transmission, there has been an inexplicable fear among the public in undergoing dental treatment leading to decline in oral health.

Aim: This study aimed to assess the attitude of the people of Chennai towards dental treatment during COVID-19 pandemic.

Methodology: A cross sectional online-survey was conducted among 542 participants residing in Chennai, using self-administered questionnaire that assessed the impact of pandemic on the mental attitude, financial aspect as well as availability of dental services and their effect on dental visits.

Results: This study reveals that COVID-19 has had a negative impact on 75% of the participants among which

over 83% are aware of the source of disease transmission while only 37% were aware of the effects of oral health on COVID-19 leading to a negligence and decline in oral health.

Conclusion: This study reveals the lack of adequate knowledge among the public towards oral health and the resultant trepidation in undergoing dental treatment during COVID-19. Awareness on implications of oral health on COVID-19 among the public alongside following a strict infection control protocols will incorporate a positive attitude towards dental treatment.

Keywords: Attitude, Psychology, Public, COVID-19, Dental Practice, Pandemic, Infection control.

Introduction

The outbreak of the novel corona virus disease, transmitted by severe acute respiratory syndrome-CoV2(SARS-CoV2) created a state of panic across the

world. In December 2019, numerous cases were reported with atypical pneumonia of unknown cause in the Wuhan city, China [1]. Later in January 2020, this unknown virus was identified as SARS-CoV2 that adversely affected the livelihood of many. With rapidly increasing rates of the infection worldwide, the World Health Organization (WHO) declared COVID-19 infection as a pandemic on 12th March 2020 [2].

All healthcare professionals, especially dentists have a high risk of exposure due to close contact with patients' oral fluids in their routine practice [3]. The WHO along with ADA (American Dental Association), Centre for Disease control (CDC) formulates periodical guidelines that are to be followed by each healthcare worker. Dental professionals around the globe also accommodated to this changing environment to ensure safety and prevent disease transmission. Alongside the rise in pandemic, the public has had strong agitations towards disease transmission during dental procedures [4]. Furthermore, the abundant information available on online search platforms has resulted in ambiguity rather than clarity, leading to unnecessary fright among the public.

Despite several public awareness campaigns conducted across the country on COVID 19 transmission, disease progress and precautionary measures, evidence based studies showed that the risk of cross-infection during dental procedures are unavoidable [5] and aerosol-generating procedures in dentistry could be potential sources of infection [6] instilling a negative impact on individuals to visit the dentist [7]. Consequently, assessment of an individual's attitude towards dental treatment during COVID-19 will help identify the drawbacks in routine dental practices and instill a positive attitude towards oral health.

This study aims at assessing the change in attitude of the public towards dental treatment during the Pandemic and

their knowledge on the general and oral aspects of COVID-19 in order to enhance the awareness of public and encourage them towards maintaining a good oral health, thereby achieving an overall health.

Materials and Method

This cross-sectional questionnaire survey was conducted among 542 participants across the city of Chennai to assess the attitude of an individual towards dental treatment during COVID-19 pandemic from the month of April to May after obtaining the ethical clearance from the Institutional Review Board (IRB). The required information was collected through published scientific articles pertaining to the study and a self-administered questionnaire was drafted in English language. The questionnaire had a combination of selective response based questions as well as close ended questions (Yes/No type). The questionnaire majorly focused at assessing the impact of the pandemic on the mental attitude, financial aspect as well as availability of dental services at their locality and thereby its effect on dental visits along with a few questions evaluating the knowledge on transmission of COVID-19 and the infection control measures. A preliminary survey was conducted among 20 subjects to validate the questionnaire to standardized forms. The estimated sample size was 385 with margin of error at 5% and 95% confidence level.

Since this study was conducted during COVID-19 lockdown period, online Google forms were generated and distributed through social media platforms. All the participants were informed about the purpose of the study and assured that their participation was purely voluntary. An informed consent was attained from each participant. Non-probability, random sampling technique was employed yielding information from 542 individuals, were taken into this observational study having a cross-sectional design categorized based on age, gender,

educational qualification, occupation, monthly income and residency.

Responses recorded among the selected population were evaluated by frequency distribution and descriptive analysis using Microsoft Excel. On statistical evaluation it was observed all 542 samples were valid for the study with Cronbach's alpha reliability score being **0.882** (Significant score).

Results and Discussion

The socio-demographic details of the study participants (Table 1) with the mean age observed to be 31.61±9.98 years ranging from 16 to 64 years of age at 95%

Table 1: Socio-demographic details of study participants

Detail	Category	Frequency (n)	Percentage (%)
Age	16-25 Years	212	39.1
	26-35 Years	158	29.1
	36- 45 Years	120	22.1
	46-55 Years	45	8.3
	56-65 Years	8	1.4
Gender	Male	293	54
	Female	249	46
Residents of Chennai (As of May 2021)	Permanent Resident	446	82
	Temporary Residents (For past five years or more on account of Job & Education)	96	18
Socio-economic Status	Upper	300	55
	Middle	140	26
	Lower	102	19

This study aimed at assessing the attitude of the general population in undergoing a dental treatment before and after the emergence of COVID-19 pandemic. As in Table 2, the questions involving the pre-pandemic perception of dental treatment revealed that over 94% of the total study population had visited a dentist at least once in their lifetime among which 42% of respondents practiced a

confidence interval. Out of the 542 participants 249 (46%) were females and 293 (54%) were males among which 86% were permanent residents of Chennai while the remaining 18% have been residing in Chennai for past five years or more on account of job, education etc. Over 55% of the total participants belonged to the upper class, 26% to the middle class and 19% to the lower class according to Modified Kuppaswamy Scale for Socio-economic status-2020 that is calculated based on cumulative score of educational status, monthly income and occupation of the individual.

routine dental checkup. Over 42% visited government hospitals or dental colleges for acquiring dental treatment and 32% opted for private dental practitioners. The choice of dental facility was advertently related to the socio-economic status as well as the availability of various forms of dental services. When questioned over the purpose of dental visits only 19% felt that regular dental

checkup is as important as a medical evaluation to maintain an overall health while majority sought dental services only for an emergency or esthetic concern. Further when assessed about their conceptions about dental services, 34% felt that dentists drain a lot of money for dealing with a small tooth, while 27% were in a thought that a treatment once done does not require further checkup and 27% felt that dental treatments lead to further

complications that might need frequent visits. This data reveals an ignorant attitude among the public towards maintaining good oral health as well as a misconception that dental services are exclusive for the elite and can be acquired by the general population only under unavoidable circumstances. Added to these shortcomings, the risk of COVID-19 transmission has further discouraged the public from undergoing dental therapy.

Table 2: Perceptions on dental services before COVID-19 among the study participants

Question	Response	Frequency (n)	Percentage (%)
Have you ever visited a dentist in a lifetime?	Yes	509	94
	No	33	6
Did you go for regular checkup?	Yes	225	42
	No	317	58
Frequency of dental visits	Once in three or six months	184	34
	Once in a year or two	159	29
	Only in case of severe ailment	199	37
Type of dental service	Government hospitals and dental colleges	226	42
	Private dental practitioners	175	32
	Corporate or Private hospitals	141	26
Common reason for dental visit	Routine screening of oral health	104	19
	Aesthetic corrections	101	19
	Restoration of impaired teeth	213	39
	Extraction of impaired teeth	124	23
Perception about dental therapy	Dentists bring up multiple problems when we visit them for one minor complaint	133	25
	Once a dental treatment is done it must last for a lifetime without regular follow-up	147	27
	Dentists drain a lot of money for dealing with a small tooth	184	34
	Regular oral screening is necessary	78	14

The relative change in the attitude towards dental services due to the pandemic is as shown in Table 3. It is observed that 75% of the participants feel that COVID-19 Pandemic has had a negative impact on their routine dental visit and

62% avoided visiting a dentist on regular basis. The high rates of disease transmission and its co-morbidities have led to a thought that dental treatment are unsafe during the pandemic situation among 52% of the participants. On the

other hand about 69% illustrated limited dental facilities in their locality during the pandemic as well as rise in customary fee as stated by 65% have other reasons for restraining from dental services. In order to avoid dental visits, 30% have sought for home remedies like use of salt water rinse, 19% suggested the use of clove while 27% opted for self-administered medications for tooth pain. In the midst of this gloom, majority of participants have witnessed that dental centers have been following appropriate safety measures of which 82% stated the

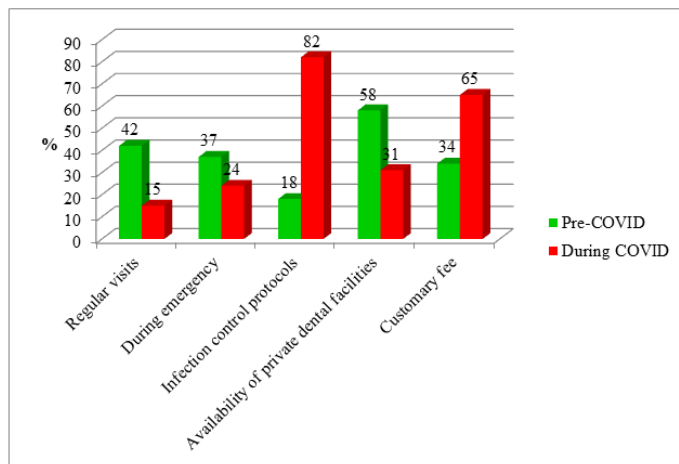
cumulative use of PPE kits, proper disinfection, appropriate history taking, maintenance of SpO2, temperature and following social distancing. As an alternative to conventional dental consultations, 56% prefer tele-dentistry to get an opinion from dentist on oral health status unless there is a need for treatment. The change in attitude towards dental visits before and after the emergence of COVID-19 has been illustrated in Figure 1.

Table 3: Perceptions on dental services during COVID-19 among the study participants

Question	Response	Frequency (n)	Percentage (%)
Did the pandemic have an impact on your dental visits?	Yes	406	75
	No	136	25
Do you feel safe about undergoing dental treatment during pandemic?	Yes	262	48
	No	281	52
Is there a limited private dental facility due to COVID-19?	Yes	374	69
	No	168	31
Is there a rise in customary fee due to COVID-19?	Yes	355	65
	No	187	35
Attitude in visiting a dentist during Pandemic	Avoided visiting the dentist on regular basis unless an emergency	336	62
	Completely stopped visiting a dentist	127	23
	No change in my dental visits	79	15
What are the alternatives you take to avoid visiting a dentist in case of pain?	Use of salt water rinse	162	30
	Use of clove or clove oil	102	19
	Self-administered medication	148	27
	Always approach a dentist	130	24
Preventive measures taken in dental centers on account of COVID-19	Use of PPE kits, gloves, N95 and face shield by dentists and assistants and proper disinfection of equipment after each patient	51	9
	Maintenance of patient history, recording SpO2, Temperature and	172	32

	maintaining social distancing		
	All the above	223	41
	No change in infection control protocol when compared to pre-pandemic time	96	18
Suggest a better alternative for avoiding high risk of exposure due to dental visits	Properly scheduled appointments with intervals between each patient for disinfection	118	22
	Avoiding multiple sittings for procedures that can be done in one stretch	87	16
	Use of tele-dentistry	304	56
	No suggestions	33	6

Figure 1: Changes in attitude and perception toward dental visit before and during COVID-19 pandemic



The degree of knowledge and awareness about COVID-19 is shown in Table 4. 72% were aware of the symptoms of COVID-19 and 92% had sufficient knowledge regarding the oral manifestations of COVID-19, while 83% are certain that COVID-19 spreads through the oral and nasal

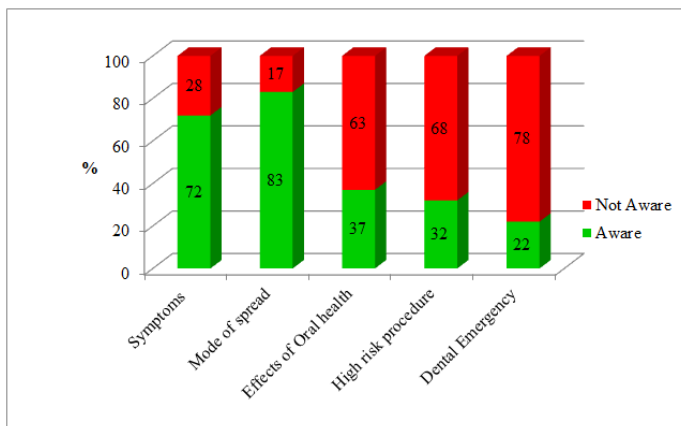
fluids from an infected person. This revealed that majority of the participants had adequate knowledge regarding the general symptoms and precautionary measures against COVID-19. Contradictorily, further questioning about the effect of oral health on COVID-19 revealed that 63% had completely no clue, while over 37% were quite certain that poor oral health is the prime cause of complications in COVID-19. When asked about the dental treatment that poses high risk in disease transmission, over 68% of the people opted for procedures other than aerosol generated procedures and over 59% were unaware of various dental emergency procedures that require immediate attention. This depicts the lack of knowledge and misconceptions regarding dental therapy during the pandemic which eventually deteriorates the oral health status as well as general health over time due to mere negligence (Figure 2).

Table 4: General assessment of knowledge and awareness regarding COVID-19

Question	Response	Frequency (n)	Percentage (%)
What are the symptoms of COVID-19?	Cough, Fever, tiredness, headache, loss of taste and smell and malaise	389	72
	Convulsions, dizziness, constipation	70	13
	Not aware	83	15

How does COVID-19 spread?	Through cough droplets, saliva and nasal discharge of infected person	448	83
	Through oriental food	39	7
	Through pets	21	4
	Not aware	34	6
Oral manifestations of COVID-19	Cough, sore throat, loss of taste	498	92
	Ulcer, tooth mobility, loss of speech	22	4
	Not aware	22	4
Effects of Oral health on COVID-19	Poor oral hygiene leads to higher risks of infection	92	17
	Oral infections decrease the body's immunity	108	20
	Not aware	342	63
Which of the following procedure has high risk of disease transmission?	Use of hand piece and Ultra-sonic scaler units	174	32
	Extraction of teeth using forceps or elevators	233	43
	Making impression using elastomeric material	135	25
Which among the following is considered a dental emergency?	Injury to oro-facial regions, airway obstruction	118	22
	Pain due to decay/ injury to teeth	162	30
	Mobility of tooth	135	25
	Not aware	127	23

Figure 2: Level of awareness on general and dental aspects of COVID-19 among the study population



A substantial number of evidence based studies have been conducted recently to assess the knowledge, attitude and practices towards COVID-19 disease, transmission, standard protocols and guidelines among the dental professionals. However very less significance were given to understand the attitude and psychological factors associated with COVID-19 pandemic at the community

level and to evaluate the worries and conception of dental patients relevant to the ongoing pandemic.

In the present study it was observed that 94% had visited dentist at least once in their lifetime among which 42% respondents visited dentist for routine dental checkup. The major cause for visits were restoration of decayed or missing tooth (39%), removal of painful or shaking tooth (23%) similar to studies by Rambabu et al (46%) [8], Ekanayake et al (61%) [9], Jaafar et al (54%) [10], Devaraj et al (57%) [11]. These results suggests that Majority of the patients in Indian scenario often visit dentist at the later stages of dental illness when symptoms such as pain, swelling, or extreme discomfort appear, rather than at the earlier stages.

Consequently in the present study only 14% feel that regular dental checkup is as important as a medical evaluation to maintain overall health similar to study by

Davenport et al [12], Thomson et al [13]. This shows that people do not believe in the importance of regular dental visits. Adequate measures need to be taken by creating awareness campaign to educate general public on the preventive aspects of dentistry and its role in improving the quality of life.

In this study 83% are aware that COVID-19 spread through the cough droplets, saliva, nasal discharge of an infected person comparable to studies by Mabrouk et al [14], setiawan et al [15], Olaimat et al [16] which showed widespread knowledge of the actual route of COVID-19 transmission like saliva and nasal droplets during speech, coughing or sneezing by infected individuals and shaking hands contact with SARS-COV-2 carriers, handling a patient's objects and materials as well as touching contaminated areas. As a result 52%

sense that dental treatment are unsafe during the pandemic situation and 62% have restrained from visiting dentists in the fear of acquiring the disease. Over 32% of the participants believed that the chances of getting infected are very high during procedures involving aerosol generation, while the remaining 68% had a misconception that procedures such as extraction and other minor procedures posed equal risk. Ong et al [17], Ahmed et al [18], Abdul kareem AA et al [19] showed similar results and believed this could be due to lack of understanding the role of airborne transmission and disease process in COVID 19 and steps have to be taken to instill a clarity among public.

Epstein et al [20], Ge ZY et al [21] stated that there is no evidence that aerosols generated from dental procedures caused transmission however guidelines have been recommended given the nature of pandemic by use of high-volume evacuation devices, rubber dam isolation, UV filtration, and sanitary fixed device system with

plasma cluster ion technology and portable air cleaner with high-efficiency particulate arrester (HEPA) filters.

Ahmed et al [18], Abdulkareem AA et al [19], Ali S et al [22] also observed that attitude towards dental treatment was moderately affected and fear of infection showed moderately high level among the study group. Similarly in the present study 75% of the participants feel that COVID 19 Pandemic had a huge impact on their routine dental visit among which 62% visited a dentist only when they had dental emergencies while 23% have completely stopped dental visits. This can be improved by providing quality dental services to their patients continuously by incorporating personal protective equipment, proper sterilization and disinfection protocols with subsequent simple screening of patients by checking their body temperature using a noncontact forehead thermometer, oxygen saturation level using pulse oxi-meter, gathering information regarding any relevant symptoms, travel history, and possible contacts with COVID- 19 positive patients to decrease the chances of disease transmission.

As an alternative, 56% prefer tele-dentistry to get an opinion from dentist on oral health status while 27% opted for self-administered medications for tooth pain. Ghai et al [23], Deshpande et al [24], Singh et al [25] also suggested the same but only under certain circumstances and can never replace conventional treatment modalities. The lack of acceptance to this technology among the dental practitioners as well as the public can be attributed to the complex technologies, fear of inaccurate diagnosis and concerns for rise in charges. Patient acceptance is the key to success of any technological intervention. Lack of face-to-face communication & examination may have its own drawbacks, yet, looking at the bigger picture, the need for technical advances and their acceptance has become a part of evolution.

Conclusion

Dentistry has always been considered by the public as a non-essential, cosmetic service that is exclusive for the elite and oral health has seldom been considered a crucial part of general health. Adding to this, the COVID-19 has made a huge impact on the attitude of the public in undergoing dental treatments at the risk of losing life. The lack of adequate knowledge about the disease led to a gratuitous exaggeration of fear towards visiting a dentist. This has necessitated the call for awareness campaigns on the revised Infection Control Protocols in dental practice for instilling appropriate knowledge, thereby eradicating the myths and frights regarding dental treatment among public. Moreover, dentists must ensure that protective measures are taken to decrease the chances of cross-infection during dental procedures as well as charge reasonable fee to encourage and incorporate a positive attitude towards dental treatment.

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