

Original Research

Challenges in Dental Care of Children with Visual and Auditory Impairment – A Questionnaire Survey

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ABSTRACT:

Background: Dental care is the most common unmet health care need of disabled children. Hearing and visually impaired special children are at a greater risk for developing oral health problems and pose unique difficulties in their dental treatment. The COVID-19 pandemic seems to be the biggest challenge that special care dental services have ever faced. **Aim:** This study was undertaken with the aim of assessing the views and perception of dentists regarding the treatment needs and the challenges faced by visually impaired and hearing-impaired children during the pandemic. **Methodology:** A total of 402 dental practitioners participated in the study out of which 133 were BDS graduates and 269 were MDS graduates. An online cross-sectional survey using Google forms was formulated and all practitioners were given 18 close-ended questionnaires pertaining to the knowledge and awareness regarding the impact of COVID-19 on the dental treatment of hearing and visually impaired children. **Results:** The results of our study showed that 87.6% of the practitioners were aware regarding the impact of COVID-19 on hearing and visually impaired children and 80.3% of them believe that the dental appointments of disabled children decreased during post COVID time. **Conclusion:** Results of our study showed majority of the practitioners were aware of the methods that can be adapted in this pandemic to reduce the barriers in the treatment of specially-abled children.

Keywords: Visual Impairment, Auditory impairment, COVID-19, Questionnaire Survey

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INTRODUCTION

The oral health of individuals with certain general health conditions can have a direct impact on their health. Children with disabilities have a high rate of unmet dental needs.¹The terms “hearing impairment” and “hearing loss” indicate that the audiometric evaluation is below the standard hearing threshold, around 15 decibels (dBs). The term “deaf” is described in cases of severe or complete loss of hearing.²Whereas, Visual impairment relates to a person's eyesight which cannot be corrected to normal vision. WHO has defined blindness as “visual acuity of less than 3/60m or corresponding visual field loss in the better eye with the best possible correction”.³ The World Health Organization estimates that 466 million people worldwide, including 34 million children in India, are hearing impaired. Indian census 2011 indicates that over three million people have hearing disabilities. Furthermore, out of the 38 million

blind people worldwide, around six million are in India.¹Special children with hearing impairments and those with visual impairments are particularly prone to oral health problems, presenting unique challenges for dentists.¹

These disabled children have the greatest unmet health need when it comes to dental treatment, as their families are overwhelmed with their medical condition emotionally, physically, and financially, thus creating a barrier of treatment cost, accessibility of facilities, fear of pain and acceptability of dentistry.⁴A lack of relevant literature and structured programs to convey knowledge is hampering the development of specific management strategies for dealing with these children.⁵

Special care dental services have never faced a challenge like the COVID-19 pandemic.⁶The pandemic and the national lockdown designed to stop the spread of the virus pose many challenges,

including health care access. Due to this situation, strict safeguarding measures were introduced to protect individuals, which proved to be considerably more problematic for patients with special needs, such as children with hearing and vision impairments.^{7,8,9} In order to protect clinicians and patients, Personal Protective Equipment (PPE) is mandated, visitors' assistance in medical settings is restricted, and in-person medical interpreters are eliminated.⁷ While these safety procedures protect patients and health care workers, they complicate effective communication, making it more difficult to manage patients with special needs.^{6,7} Additionally, PPE impairs the ability to discern lip movements and extraoral facial expressions, and adversely affects speech intelligibility. It has been shown that between 60% and 70% of communication is held by non-verbal cues such as lip patterns and facial expressions, which are essential for the communication of patients with communication difficulties, without which patients with communication difficulties experience emotional stress.¹⁰

Hence, this study was undertaken to assess the knowledge and perception of dentists regarding the treatment needs and the challenges faced by visually impaired and hearing-impaired children during the pandemic.

MATERIALS AND METHODS

A total of 402 dental practitioners with experience between <5 years to >10 years, out of which 133 BDS graduates and 269 MDS graduates from all over India participated in this study. This study was approved by the ethical committee of Rajarajeswari Dental College and Hospital. A pilot study was conducted among 30 practitioners to estimate the desired sample size. The estimated sample size was 402 with an alpha error of 5% and a power set at 80%. The results of the pilot study were included in the final analysis. The questionnaire consisted of three parts: (1) Basic details (2) Practise management during pre-COVID setting and (3) Practise management during COVID

setting. All the participants were requested to complete a close-ended questionnaire, which consisted of 18 questions, including questions pertaining to their basic details, knowledge, attitude and related to practice and behaviour regarding oral health.

All the questions formulated under the awareness, willingness, knowledge and attitude category were close-ended questions with multiple choices. The questionnaire done with the help of Google Forms was sent through various online applications and through email to all dental practitioners across various groups. Respondents were collected based on their willingness to participate in the study, which was regarded as consent. The questionnaire was sent to a total of 500 practitioners across the country and a reminder was sent the following week. 402 forms were received at the end of 8 weeks and data entry was done. The data collected were entered in the SPSS for Windows, Version 22.0, and were further analysed.

RESULTS

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) for Windows, Version 22.0. Released 2013. Armonk, NY, USA, IBM Corp. The descriptive analysis includes the expression of responses for the study questionnaire in terms of frequency and proportions. The Chi-square test was used to compare the responses for the study questionnaire between two study groups. The level of significance (p value) was set at $p < 0.05$.

ATTITUDES OF DENTISTS IN TREATING DISABLED CHILDREN

Table 1 represents comparison of distribution of responses to treatment of speciallyabled children which revealed 71.1% has treated a profoundly blind and/or deaf patient, 50% of them was trained in treating specially-abled children, 98% of them believed that disabled children faced problems in dental treatment/health education.

Table 1: Comparison of distribution of responses to training / treatment of specially abled patients using Chi Square Goodness of Fit Test					
Question	Responses	n	%	χ^2 value	p-value
Have you ever seen/treated a profoundly deaf and blind patient?	Yes	286	71.1%	71.891	<0.001*
	No	116	28.9%		
Are you trained in treating physically handicapped patients?	Yes	201	50.0%	0.000	1.00
	No	201	50.0%		
Do you think visually/auditory handicapped children have faced problems in dental treatment/dental health education?	Yes	394	98.0%	756.776	<0.001*
	No	2	0.5%		
	Not aware	6	1.5%		

* - Statistically Significant

PRE-COVID SETTING

Table 2 represents comparison of distribution of responses to dental practice during pre-COVID setting in which 86.8% were aware of the various communication modalities for hearing-impaired children, and 82.1% were aware of the

communication modalities for visually-impaired children. Majority (91.3%) were aware of the different means for comforting a visually/hearing impaired child. 93% of them believed in using a combination of distraction, live modelling and pharmacological methods.

Table 2: Comparison of distribution of responses to dental practice during Pre-covid setting using Chi Square Goodness of Fit Test					
Question	Responses	n	%	χ^2 value	p-value
What communication modalities were you aware of for hearing impaired children?	Patient lip reads	3	0.7%	830.438	<0.001*
	Interpreter accompanying patient	45	11.2%		
	Using Sign language	5	1.2%		
	All of the above	349	86.8%		
What communication modalities were you aware of for visually impaired children?	Braille script	35	8.7%	700.706	<0.001*
	Talking loudly and slowly and rephrasing if they cannot follow	21	5.2%		
	Demonstrative videos	16	4.0%		
	All of the above	330	82.1%		
What are the different means that you are aware of for comforting the visually/hearing impaired child?	Presence of parents/caregivers around the child	28	7.0%	946.279	<0.001*
	Reassuring physical contact	5	1.2%		
	Reduce background noise	2	0.5%		
	A combination of 2 or more of the above-mentioned methods	367	91.3%		
What are the different behaviour management techniques were you aware of for using it in a clinic set up for them?	Distraction techniques using audio/visual aids	14	3.5%	1341.234	<0.001*
	Live modelling	8	2.0%		
	Coping by switching off their hearing aid before starting the drill	2	0.5%		
	Pharmacological methods	4	1.0%		
	A combination of 2 or more of the above-mentioned methods	374	93.0%		

* - Statistically Significant

POST-COVID/DURING COVID SETTING

Table 3 represents comparison of distribution of responses to dental practice during COVID setting in which 80.3% believed COVID-19 has reduced the dental appointment in specially-abled children, where 30.3% believed the cause of it to be apprehension about disinfection.

Table 3: Comparison of distribution of responses to dental practice during covid setting using Chi Square Goodness of Fit Test					
Question	Responses	n	%	χ^2 value	p-value
Have you treated a profoundly blind and deaf patient in COVID setting?	Yes	190	47.3%	1.204	0.27
	No	212	52.7%		
Do you think COVID-19 has affected the dental experience of visually/hearing impaired children and the dentist?	Yes	352	87.6%	537.955	<0.001*
	No	5	1.2%		
	Not aware	45	11.2%		
Do you think that COVID-19 has reduced the dental appointments of hearing and visually impaired children?	Yes	323	80.3%	416.612	<0.001*
	No	6	1.5%		
	Not aware	73	18.2%		
If yes, what can be the reasons for their decreased appointment?	Apprehension about disinfection	122	30.3%	98.577	<0.001*
	Lack of presence of interpreter/parents due to ongoing pandemic	52	12.9%		
	Neglect of dental treatment	56	13.9%		
	A combination of two or more of the above-	172	42.8%		

	mentioned reasons				
Do you think COVID-19 has increased the anxiety and apprehension level in visually/hearing impaired children and their parents regarding dental treatment?	Yes	326	81.1%	427.940	<0.001*
	No	6	1.5%		
	Maybe	70	17.4%		

Table 4 represents 95.3% advocated the use of combination of clear mask, speech to text mobile applications, or demonstrative videos in hearing impaired children. About 95% advocated the use of combination of familiarizing the usual sounds in the

operatory, reducing background noise etc in visually-impaired children. 25% of the dental practitioners advocated the use of Teleconsultation for non-emergency cases.

Table 4: Comparison of distribution of responses to changes adopted at dental practice for Rx of visually/hearing impaired child using Chi Square Goodness of Fit Test

Question	Responses	n	%	χ^2 value	p-value
What are the pre-treatment preparations required for a visually/hearing impaired child during his/her visit to your dental practise?	Thorough medical, dental and travel history	9	2.2%	1066.438	<0.001*
	Informing staff members beforehand to avoid any frustration for the patients and caregivers.	4	1.0%		
	Reducing the waiting time and ensuring proper sanitization, thermal scanning.	5	1.2%		
	All of the above	384	95.5%		
What changes are you aware of that can be adapted during this pandemic to reduce the additional barriers in the treatment of hearing-impaired children?	Clear face masks to enable lip reading for them	9	2.2%	1058.975	<0.001*
	Demonstrative/educational videos explaining procedures of various treatment modalities	7	1.7%		
	Use of speech to text applications on smartphones	3	0.7%		
	A combination of two or more of the above-mentioned methods	383	95.3%		
What changes are you aware of that can be adapted during this pandemic to reduce the additional barriers before the treatment of visually impaired children?	Reducing background noise	5	1.2%	1051.473	<0.001*
	Reducing the strong smell of disinfectant	5	1.2%		
	Familiarizing them with different sounds/noises of instruments	10	2.5%		
	A combination of two or more of the above-mentioned method	382	95.0%		
What methods should be adopted for non-emergency cases to control the spread of virus?	Deferral of the treatment	17	4.2%	419.592	<0.001*
	Teleconsultation/ Use of sign language for online consultation	101	25.1%		
	Use of non-aerosol procedures	16	4.0%		
	Any of the above	268	66.7%		

* - One Significant

DISCUSSION

People with special needs have the same rights as any other citizen of this country to have good oral health. Oral health is part of general health and well being. In spite of this, owing to their condition and lack of awareness towards oral health, these children often go undiagnosed with dental diseases, resulting in an increased unmet demand for dental care.⁴

Although the advances in dentistry have made it easier for dentists to deliver dental care to children with special needs, the majority of them still find the job challenging. Adyanthaya et al concluded in their

study that the lack of training and experience of the professionals led to the difficulty in managing disabled children.¹¹ This was in contrast with our study, where 63.9% of MDS and 21.8% of the BDS graduates were trained in treating the hearing and visually impaired children. It was also found that the general awareness among the practitioners was quite good and 98% practitioners acknowledged the fact that visually and hearing impaired children face problems in dental treatment and dental health education. Although the impact of COVID-19 on the quality of dental care for the hearing and visually

impaired population still has to be investigated and established at a larger scale, however, 87.6% practitioners agreed that COVID-19 has affected their dental experience and 47.3% had treated them in a COVID-19 setting. Whereas, 80.3% confirmed that the pandemic has reduced the dental appointments of hearing and visually impaired. The reason of this decreased appointment was described as a combination of apprehension about disinfection, lack of presence of interpreter/parents at the appointment and neglect of dental treatment by 42.8% practitioners. Data concluded from a study by Asbury et al suggests that COVID-19 has affected the mental health of parents of special children, often leading to an increase in anxiety and fear.¹² 81.1% agreed to this notion that the pandemic has increased their anxiety as well as apprehension level regarding dental treatment. To combat this issue, 95.5% practitioners agreed to the pre-appointment preparation requirements including thorough medical, dental and travel history, staffs being informed beforehand, reduced waiting time and simultaneously ensuring proper sanitization.

In developing social competence, hearing impaired children often require visual confirmation of a positive affirmation since they are learning under compromised stimulus input and need access to models of communication and visual cues to maximize their learning. Due to ongoing changes such as the increase of opaque masks and face shields, communication has been hampered to a notable extent.¹³ Hence, 86.8% practitioners in our study used a combination of sign language, lip reading by patient and help of the interpreter accompanying the patient as communication modality in pre COVID setting. However, 95.3% now recommend use of combination of clear face mask, demonstrative/educational videos and use of speech to text applications on smartphones.

Obtaining care that is safe, effective, timely, and patient-centred is particularly challenging for visually impaired individuals due to barriers such as communication barriers, information barriers, and receiving written materials in inaccessible formats (e.g., not in Braille, large print, or audiotape).¹⁴ 82.1% practitioners in our study were aware of braille script, talking loudly and slowly and use of demonstrative videos as communication modalities for visually impaired. Moreover, 95% of them recommended reducing background sound, strong smell of disinfectant and first familiarizing them with different sounds/noises to make them comfortable.

The global health care crisis that has erupted due to the COVID-19 pandemic necessitates asking how dental services can be maintained at an adequate level despite the displacement of routine clinical care. About 25% of the respondents suggested the use of

teleconsultation to overcome the challenges. It is the remote facilitating of dental treatment, guidance, education via the use of information technology and can offer a novel solution to resume dental practice.¹⁵ Whereas, 66.7% respondents recommended either teleconsultation, use of non-aerosol procedures or deferral of the treatment.

Assessing the many aspects considered in this study, it can be summed up that by providing safe dental care with the use of dedicated special measures, and redefining our role, special dental services are committed to meeting the oral hygiene needs of the most endangered people.

CONCLUSION

Oral health care and dental management of children with special health care needs require pre-treatment planning and proper assessment, including scheduling appointments at appropriate times and performing thorough medical, dental and social histories in consultation with physicians, caretakers and appropriate patient communication. The entire dental team should be educated on how best to care for special needs children. The effective and rapid adaptation of health services to the current new reality of pandemic, based on an empathetic approach and recent guidelines, will allow for adequate and safe care provision.

LIMITATION

A limitation of this study was that the sample size was less. Thus, further studies have to be conducted to identify the barriers to dental care for children with special needs during the pandemic which helps pediatric dentists in improving their diagnostic and treatment skills.

ABBREVIATIONS

PPE- Personal Protective Equipment

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Nil

CONFLICT OF INTEREST

Nil

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