Dentists' Knowledge, Attitude and Practices Regarding Dental Care for Children with Special Healthcare Needs in Saudi Arabia

ULLAL ANAND NAYAK¹, RUBA BASSEM HIJJI², MASAHEAR AWAD ALJUHANI³, LAMA ABDULJALEEL ALJUHANI⁴, REEM NAIR ALMARWANI⁵, PRATHIBHA ANAND NAYAK[®] ______

(CC) BY-NC-ND

ABSTRACT

Introduction: Despite advancements in dentistry, children with special needs continue to have poor oral health, with a higher prevalence of untreated dental caries and periodontal disease. Many treating dentists and the parents of these children encounter difficulty managing these children and the quality of their oral health will be determined by this. Hence, identifying and overcoming the barriers of managing children with Special Healthcare Needs (SHCN) can be assessed as important step in addressing their treatment needs.

Aim: The study investigated the perceptions of general and paediatric dentists in Saudi Arabia, regarding the treatment needs and challenges posed while providing dental care to children with special needs.

Materials and Methods: A cross-sectional, questionnairebased study was conducted among 447 general dentists and 76 paediatric dentists in Saudi Arabia during five month period between 15th October 2021 to 15th March 2022. A prevalidated questionnaire consisting of 18 close-ended questions assessing the knowledge, attitude and practices of the dentists related to children with SHCN was emailed to each dentist. The data was analysed using the IBM Statistical Package for Social Sciences (SPSS) version 22.0 (IBM, Chicago, USA). The threshold for significance was established at 5%. The significance of study variables was determined utilising Chi-square test.

Results: Most paediatric dentists and general dentists were of the opinion that mental/behavioural/cognitive disability was the most difficult to manage (p<0.001). Out of the total, 66.2% of the dentists were aware of the dental home concept in managing children with SHCN. The knowledge related factors that were significantly associated, included type of impairment most difficult to manage (p<0.001) and awareness of the dental home concept (p<0.001). Regarding attitude, both general and paediatric dentists agreed that providing oral care is as important as providing medical care and that they were confident in treating these children (p<0.001). The practices related factors that were significantly associated included supporting staff's comfort in treating these children (p=0.004), accessibility of clinic (p<0.001), the availability of equipment to treat (p=0.02), and the techniques most commonly used for managing the behaviour of SHCN children (p<0.001).

Conclusion: The two most significant challenges to a SHCN child receiving dental care were a lack of access to a dentist who can provide oral care and limitations in the child's cooperation during the procedure. The unmet treatment needs of these children can be considerably reduced by improving parental awareness, facilitating approaches that enhance patient compliance and providing convenient access to dental care.

Keywords: Barriers for dental treatment, Special child, Unmet treatment needs

INTRODUCTION

The higher prevalence of caries and deprived periodontal health among children with special needs as a result of unmet challenges in maintaining proper oral hygiene has become a growing concern among their parents as well as treating dentists worldwide and in Saudi Arabia [1-4]. Although, there is contradictory data reported in the literature regarding the increased prevalence of caries among these children, sufficient data suggests a higher prevalence and severity of periodontal disease among these children [1,5,6].

Poor oral hygiene is common among children with disabilities, either as a result of their limited physical dexterity or as a side effect of the medications they consume [7]. The focus, however, has been to establish a comprehensive treatment plan that meets the dental, behavioural and medical needs of the patient during their lifetime. Parents' difficulty in carrying out routine oral hygiene and dentists' expertise, skill and attitude in treating these children will determine their quality of oral health. Many dentists express their difficulties in managing these children, citing inadequate professional training, ergonomic limitations, the lack of special consulting room facilities that require special equipment, a lack of scientific knowledge and feelings of insecurity [8].

Untreated dental problems can result in poor oral health due to caregivers' inability to assess the child's oral condition, the child's

incapacity to verbalise pain or discomfort and more relevantly, the lack of access to dental treatment. So, identifying and overcoming these barriers can be an important step in addressing treatment needs among these children for treating dentists [2]. Furthermore, no study till date evaluated and compared the perceptions of the treating general dentists and paediatric dentists regarding the challenges they posed while managing these children. Bridging the gap between them is essential to ensure that early, comprehensive and effective treatment is rendered to these children. Hence, the present study was planned to investigate the perceptions of general dental practitioners and paediatric dentists in Saudi Arabia, regarding the treatment needs and challenges posed in providing dental care to children with special needs.

MATERIALS AND METHODS

A cross-sectional questionnaire-based study was conducted in Saudi Arabia among general dentists and paediatric dentists during five month period between 15th October 2021 to 15th March 2022. The ethical clearance [No: IRRB-02-17102021] from the Institutional Review Board was obtained. A convenient sampling technique was adopted for the study.

Inclusion and Exclusion criteria: The study included general dentists and paediatric dentists practicing in Saudi Arabia who willingly

participated and completed the questionnaire. Questionnaires that were not completely filled out were excluded.

Sample size calculation: Considering the number of general dentists and paediatric dentists in Saudi Arabia to be 20000 and 500 respectively [9], a minimal sample size determined was 377 and 64 respectively at a confidence interval of 95%, assuming the frequency of knowledge regarding SHCN in the study population is 50% for general dentists and 90% for paediatric dentists, respectively.

Questionnaire

A prevalidated questionnaire from the published study of Adyanthaya A et al., was used for the study [10]. After consultation with the subject experts, minor modifications to the questions were made to match them for the health professionals. Cronbach's alpha was assessed (0.89) to determine the reliability of the questionnaire. The close-ended multiple choice questionnaire consisted of 18 questions to assess their knowledge (5), attitude (5) and practices (8) about oral health and the treatment of special needs children. The questionnaire was mailed to the dentists and they were informed that their response was considered as their willingness to participate in the study. Demographic information about the type and duration of practice was gathered. To maintain confidentiality, the participants were assured that their responses would not be disclosed.

STATISTICAL ANALYSIS

The data received from the duly filled questionnaires was subjected to statistical analysis using the IBM SPSS version 22.0 (IBM, Chicago, USA). The threshold for significance was established at 5%. Chi-square test was used to compare the data between general dentists and peadiatric dentists.

RESULTS

The present study included 447 general dentists and 76 paediatric dentists, majority of them were having less than 10 years of experience, i.e., 36.5% with less than five years and 30.8% with 6-10 years of experience. The [Table/Fig-1] describes the demographic status of the study population describing their type of practice and years of experience of the enrolled dentists. The [Table/Fig-2-4] illustrate general dentists' and paediatric dentists' knowledge, attitudes and practices regarding the management of SHCN, respectively. Most paediatric dentists and general dentists were of the opinion that mental/behavioural/cognitive disability was the most difficult to manage (p<0.001). Out of the total, 66.2% of the dentists were aware of the dental home concept in managing children with SHCN.

Demographic data	of the dentists	Number	Percentage (%)			
Type of practice	General dentist	447	85.5			
	Paediatric dentist	76	14.5			
Years of	0-5	191	36.5			
experience	6-10	161	30.8			
	11-15	104	19.9			
	16-20	45	8.6			
	>20	22	4.2			
[Table/Fig-1]: Demographics of the study population.						

		n (%)		Total	Chi-square	
Question	Responses	General dentist	Paediatric dentist	n (%)	value	p-value
Disability that is the most	Physical	79 (17.7)	12 (15.8)	91 (17.4)		
difficult to manage in a	Developmental	172 (38.5)	13 (17.1)	185 (35.4)	15.961	<0.001
dental clinic	Mental/behavioural/cognitive	196 (43.8) 51 (67.1) 247 (47.2)				
Awareness about dental	Yes	279 (62.4)	67 (88.2)	346 (66.2)	10.004	-0.001
home	No	168 (37.6)	9 (11.8)	177 (33.8)	19.224	<0.001
	Early establishment of a dental home	138 (30.9)	42 (55.3)	180 (34.4)		0.002
	Obtaining detailed histories	112 (25.1)	12 (15.8)	124 (23.7)		
Important strategies to prevent oral disease	Providing a conducive environment for dental care	70 (15.7)	6 (7.9)	76 (14.5)	17.563	
	Rendering oral health education to child and caregiver55 (12.3)7 (9.2)62 (11.9)Providing preventive and therapeutic services72 (16.1)9 (11.8)81 (15.5)					
						Lack of awareness and knowledge among parents
Factor that hinders a child from seeking preventive	Lack of awareness and knowledge among physicians	103 (23)	13 (17.1)	116 (22.2)	4,454	
dental care	Greater level of anxiety about dental care among children with SHCN	102 (22.8)	12 (15.8)	114 (21.8)		
	Access to a dentist providing care	121 (27.1)	14 (18.4)	135 (25.8)		
	Limitations in the child's cooperation	119 (26.6)	25 (32.9)	144 (27.5)		
Barrier to receive dental	Dentists' experience and expertise 54 (12.1)		14 (18.4)	68 (13)	0.000	0.070
treatment	Inadequately motivated parents/caretakers	86 (19.2)	11 (14.5)	97 (18.5)	9.896	0.078
	Time constraint	38 (8.5)	3 (3.9)	41 (7.8)		
	Financial constraints	29 (6.5)	9 (11.8)	38 (7.3)		

[lable/Fig-2]: Knowledge of the general dentists and paediatric dentists regarding management of children with SHCN. Chi-square test

p-value ≤0.05 is considered significant

	n (%)		%)	Total	Chi-square	D-
Question	Responses	General dentist	Paediatric dentist	n (%)	value	value
Whether providing oral care is as	Yes	305 (68.2)	68 (89.5)	373 (71.3)	14.000	<0.001
important as providing medical care	No	142 (31.8)	8 (10.5)	150 (28.7)	14.328	
	Excellent	119 (26.6)	19 (25)	138 (26.4)		
Level to which undergraduate dental	Good	179 (40)	32 (42.1)	211 (40.3)	0.040	0.014
children with SHCN	Fair	103 (23)	15 (19.7)	118 (22.6)	0.946	0.814
	Poor	46 (10.3)	10 (13.2)	56 (10.7)		

Ullal Anand Nayak et al., Dental Care for Children with Special Healthcare Needs in Saudi Arabia

Confidence to treat a shild with CLICN	Yes	Yes 257 (57.5) 64 (84.2) 321 (61.4)		10 557	-0.001		
Confidence to treat a child with SHCN	No	190 (42.5) 12 (15.8)		202 (38.6)	19.007 <	<0.001	
	Theoretical training	160 (35.8)	15 (19.7)	175 (33.5)			
Level at which special care dentistry	Clinical observation	156 (34.9)	24 (31.6)	180 (34.4)	12.806	0.002	
undergraduate course	Various levels of treatment and assistance in special care dentistry	131 (29.3)	37 (48.7)	168 (32.1)			
Frequency of updating knowledge	Once a year	247 (55.3)	41 (53.9)	288 (55.1)			
through continuing dental educations,	Once in two years 152 (34) 32 (42.1) 184 (35.2)		4.304	0.116			
conterences, etc.	Never till date	48 (10.7)	3 (3.9)	51 (9.8)			
[Table/Fig-3]: Attitude of the general dentists and paediatric dentists regarding management of children with SHCN.							

p-value <0.05 is considered significant

		n (%)		Total	Chi-square	D -
Question	Responses	General dentist	Paediatric dentist	n (%)	value	value
Supporting staff's comfort in	Yes	310 (69.4)	65 (85.5)	375 (71.7)		0.004
managing children with SHCN	No	137 (30.6)	11 (14.5)	148 (28.3)	8.376 L	0.004
	Yes	275 (61.5)	63 (82.9)	338 (64.6)	10,000	10.001
Accessibility of clinic	No	172 (38.5)	n (%) al dentist Paediatric dentist 0 (69.4) 65 (85.5) 2 (30.6) 111 (14.5) 5 (61.5) 63 (82.9) 2 (38.5) 13 (17.1) 5 (52.8) 51 (67.1) (47.2) 25 (32.9) 3 (27.5) 14 (18.4) 6 (26) 17 (22.4) (20.1) 24 (31.6) 6 (26.2) 38 (50) 7 (26.2) 38 (50) 6 (35.8) 43 (56.6) 6 (36.9) 47 (61.8) 6 (36.9) 47 (61.8) 6 (42.3) 45 (59.2) 0 (42.3) 45 (59.2) 0 (42.3) 29 (38.2) 0 (42.3) 29 (38.2) 0 (42.3) 29 (38.2) 1 (20.3) 29 (38.2) 1 (20.3) 29 (38.2) 1 (31 (40.8) 3 (32.7) 3 (37.1) 42 (55.3)	185 (35.4)	12.980	<0.001
Clinic equipped to treat SHCN	Yes	236 (52.8)	51 (67.1)	287 (54.9)	E 071	0.000
children	No	211 (47.2)	25 (32.9)	236 (45.1)	5.371	0.020
	Less than 1 year	123 (27.5)	14 (18.4)	137 (26.2)		
	1 to less than 3 years	118 (26.4)	21 (27.6)	139 (26.6)	0.000	0.007
Age at which children report	3 to less than 6 years	116 (26)	17 (22.4)	133 (25.4)	6.320	0.097
	Above 6 years	90 (20.1)	24 (31.6)	114 (21.8)		
Technique most commonly	Using behaviour management techniques such a voice control, Tell-show-do, distraction, contingency management	196 (43.8)	21 (27.6)	217 (41.5)		
followed for managing child	Conscious sedation	134 (30)	17 (22.4)	151 (28.9)	17.861	<0.001
	aviour General anaesthesia	117 (26.2)	38 (50)	155 (29.6)		
	Hearing loss	160 (35.8)	43 (56.6)	203 (38.8)		0.085
Type of disability that is	Visual impairment	165 (36.9)	47 (61.8)	212 (40.5)	6.6022	
comfortable to manage	Mental disability	159 (35.5)	24 (31.6)	183 (34.9)		
	Physically disabled	182 (40.7)	50 (65.8)	232 (44.4)		
	Heavy calculus with risk for gingivitis and periodontitis	189 (42.3)	45 (59.2)	234 (44.7)		
	Dental caries/enamel hypoplasia	200 (44.7)	50 (65.8)	250 (47.8)	3.666	0.598
Oral health condition (s)	Malocclusion	137 (30.6)	39 (51.3)	176 (33.6)		
commonly encountered	Anomalies in tooth development	114 (25.5)	35 (46.1)	149 (28.5)		
	Bruxism and wear facets	91 (20.3)	29 (38.2)	120 (22.9)		
	Fracture of teeth or trauma	85 (19.01)	31 (40.8)	116 (22.2)		
	Comprehensive full mouth treatment	146 (32.7)	44 (57.9)	190 (36.3)		
	Emergency dental treatment	166 (37.1)	42 (55.3)	208 (39.7)		
Treatment that can be comfortably performed	Simple extractions	130 (29.1)	44 (57.9)	174 (33.3)	1.7614	0.779
connorcasily portormou	Restorative treatment	105 (23.5)	35 (46.1)	140 (26.7)		
	Preventive dental treatment like sealants, fluorides etc.	141 (31.5)	44 (57.9)	185 (35.4)		
[Table/Fig-4]: Practices of the	general dentists and paediatric dentists regarding management	of children with SH	ICN.			·

p-value ≤0.05 was considered significant

The knowledge factors that showed a statistically significant association among general dentists and paediatric dentists regarding the management of children with SHCN were the type of impairment most difficult to manage (p<0.001), awareness of the dental home concept (p<0.001), and important strategies adopted to prevent oral disease (p=0.002).

Regarding attitude, most general and paediatric dentists agreed that providing oral care is as important as providing medical care to a child with SHCN (p<0.001) and that they were confident in treating these children (p<0.001). There was a significant difference (p=0.002) in the perception between general dentists and paediatric dentists regarding the level that special care dentistry needs to be taught during the undergraduate course, which can affect the quality of care for children with SHCN. Most general dentists believed that training should be theoretical or clinical observation-based, whereas paediatric dentists believed that various levels of treatment and assistance in special care dentistry, in addition to clinical observation, were required.

The factors related to practices that showed a statistically significant association among general dentists and paediatric dentists regarding the management of children with SHCN included supporting staff's comfort in treating these children (p=0.004), accessibility of clinic (p<0.001), the availability of equipment to treat (p=0.02), and the techniques most commonly used for managing the behaviour of SHCN children (p<0.001).

DISCUSSION

According to the findings of the present study, among all types of special children, dentists were least comfortable treating those with mental disabilities because it is more difficult to manage their behaviour. They may exhibit resistive behaviour as a result of dental fear or a lack of knowledge about dental care which can jeopardise the delivery of safe dental care [11]. Most patients with physical and developmental disabilities can be managed in the dental office with the help of their parents or caregivers. In patients with mental disability for whom typical behaviour management strategies are ineffective, protective stabilisation can be beneficial [11]. Children with SHCN may display anxiety during dental treatment, which can affect the frequency of dental appointments and, as a result, can affect the oral health. Assessing anxiety or dental fear can be difficult, thus a parent or caregiver narrative can be beneficial in some circumstances [12]. The patients' cognitive, motor and sensory elements can be overcome in these patients under general anaesthesia, allowing the dentists to complete the diagnosis and perform dental treatments with less difficulty and higher quality [13]. Furthermore, evidence from the studies by Mallineni SK and Yiu CKY suggests that parental satisfaction with GA-assisted dental care has been steadily growing in recent years, and that it is currently preferred over conventional behavioural management strategies performed in the dental clinic [14]. However, American Academy of Paediatric Dentistry (AAPD) recommends that sedation or general anaesthesia are the behavioural guidance tools that may be used as the last resort when protective stabilisation is not possible [15].

The age at which these children report for their first dental visit would also determine the level of difficulty in managing these children [16]. In the present study, only 26.2% of dentists stated that children with SHCN visited to the dentist for the first time below the age of one year and 25.4% parents reported for first dental visit of their child between three to six years which is similar to the findings of Nayak UA et al., in Saudi Arabia [17].

Children with SHCN are considered high risk and should undergo a dental check-up by the age of one year, as per the recommendations of American Academy of Paediatrics [16,18]. Depending on risk factors, these children need to see a paediatric dentist for professional preventive care every three months. Any child who presents with caries, gingivitis, or eruption abnormalities should see a paediatric dentist right away [17]. The dentists in the present study firmly believed that early establishment of dental home would help these children get early interventions in these children. These findings are in accordance with the recommendations of AAPD which suggests that SHCN children utilising dental home facilities are also more likely to receive tailored preventive and regular oral care, lowering the risk of preventable dental and oral diseases [19].

Lack of awareness and knowledge among parents had been cited by the dentists of the present study as the most important reason that hinders a child with SHCN from seeking preventive dental care. When a child with SHCN has a family member who has a chronic emotional, behavioural, or developmental disorder, the rate of unmet need is greater [20]. Untreated dental problems may lead to a child's general oral health being impaired owing to a parent's failure to evaluate the child's oral health, the child's inability to articulate pain or discomfort, or a lack of access to dental treatment [21]. A strong positive association was identified in a study by Bernabé E et al., in 2011, between the carers' level of education and the frequency of visits to the dentist, which is consistent with present study. This observation may be linked to their financial situation. Highly educated caregivers are more likely to live in better socioeconomic and social environment, which contributes to higher utilisation dental services [22].

The dentists of the present study were of the opinion that the access to a dentist providing care and the limitations in the child's cooperation are the two most barriers that can hinder the SHCN child from receiving dental care. According to Skinner AC et al., rural children with SHCN had more unmet dental care needs than urban children. This is attributed to difficulties in obtaining care and their

parents' failure to recognise a need [23]. Furthermore, due to the child's pre-existing medical condition, dental treatment may become more challenging. The financial strain on parents is exacerbated by multiple trips and pricey dental care [24].

A dentist's lack of knowledge and practical experience can also make it difficult to provide dental treatment to these special children [17]. The level at which special care dentistry is taught during undergraduate course can impact the level of knowledge and skills a dentist can acquire. The present study throws more light to the fact that the paediatric dentists display better knowledge and skills in managing these children in the dental office when compared to the general dentists because they receive more comprehensive practical training and where is the general dentists' training is limited to theory and or clinical observation. Only a small percentage of general dentists receive professional training in treating these children. Hence, positive outcomes require effective care coordination and communication between dentists, parents/guardians and other providers. Our current dental healthcare system has fallen short of meeting the needs of people with SHCN [25].

Non financial barriers include language, emotional, structural and cultural inhibitions among children with SHCN. Oral health views, caregiver accountability norms and the caregiver's previous dental experience are all psychosocial hurdles. Transportation, school absence policies and difficulties finding medicaid accepting providers are examples of structural hurdles [26]. The present study suggested that the paediatric dentist have an edge over general dentist and their technique is well equipped to treat these children. They were also involved in training their supporting staff to better manage a special child patient in dental clinic.

The technique most commonly followed for managing behaviour of these children had been significantly different between the paediatric dentists and the general dentists of the present study (p<0.001). The general dentists used more conservative approaches using behaviour management techniques such a voice control, Tell-show-do, distraction, contingency management, whereas the paediatric dentists preferred to use gender anaesthesia to manage the behaviour of these children. The paediatric dentists also followed more comprehensive approach in treating these children when compared to the general dentists.

Children with pre-existing medical illnesses reportedly consume more drugs and were older than those with intellectual disabilities. Dental restorations (63%) and extractions (47%) were the most common dental treatments [27]. However, there was no link between the type of disability and the requirement for dental therapy. Children with intellectual disabilities were three times more likely than the other group to require general anaesthesia and seven times more likely to require physical restraint for dental care [28]. It is imperative to improve the compliance of paediatric dental patients with preventive dental visits after treatment under GA, regardless of health status. Caregivers must be better educated in order to implement change, and care barriers must be investigated regularly [28]. Frequently updating knowledge through continuing dental educations, conferences, etc. would aid the practicing dentist in delivering evidence based dental care to these needy children.

The following are some of the benefits of a family centered approach to building a strong parent provider relationship. To begin with, parents must be recognised as the primary supervisors of their children's healthcare. Second, consider flexibility when arranging appointments, since they may have many healthcare visits for various therapies, as well as avoid no-show or canceled appointments. Third, if necessary, facilitate any necessary referrals. Fourth, provide information about community-based options and advocate for the utilisation of appropriate services, such as hospitals and, most importantly, involve families in child care decisions [29]. The [Table/ Fig-5] summarises the studies regarding barriers of treatment among children with SHCN [10,30-33].

S. No.	Authors name and year	Place of study	Number of subjects	Parameters assessed	Conclusion
1.	Lai B et al., 2012 [30]	North Carolina	555 families of children with SHCN	Unmet treatment needs of children with SHCN: • Children had unmet dental needs (12%) • Children who had been to a dentist (93%)	The main barriers were child's behaviour, cost and lack of insurance.
2.	Sharifa AM, 2014 [31]	Saudi Arabia	250 caregivers of children with SHCN	 Barriers of treatment suggested by caregivers included: Difficulty in obtaining dental care in their community (46.2%) Fear of the dentist (52.1%), Cost (48.7%), Being unable to sit in the dental chair (28.2%), Transportation difficulties (26.9%), distance to the dental clinic (18.5%), Dentist's unwillingness to treat those with disabilities (16.8%) 	Barrier is that around half of caregivers of disabled children had trouble finding dental care, and 85% visited to the dentist only for emergency treatment.
3.	Williams JJ et al., 2015 [32]	Oakland County, Michigan	385 students	 Barriers of treatment reported by students included: Finding a dentist to treat (34.2%) Finances (17.6%) Waiting time (14.4%) Distance (12.4%) Transportation (1.9%) 	Low medicaid reimbursement levels, a lack of general dentists who are comfortable and willing to treat special needs patients, a lack of community recognition of the importance of dental care, and a lack of resource sharing by schools, families, and medical professionals to assist the special needs population all contribute to this barrier to oral healthcare.
4.	Adyanthaya A et al., 2017 [10]	Kerala, India	149 dentists	The barriers of treatment suggested by dentists were: • Lack of training and experience (32.6%) • Inadequately motivated caretakers (20.8%) • Low confidence in providing treatment for children (43%)	Financial, time, attitude and educational constraints, as well as physical barriers to visiting a dental clinic, which may be worsened by under motivated primary caregivers, all affect the dentist's decision to provide care for children with SHCN.
5.	Lim MA et al., 2021 [33]	Western Australia	27 clinicians participated working across four different government- funded dental services	 The main barriers of treatment reported by clinicains included: Dentists' perceived lack of training and expertise in managing children with SHCN [70%]. The other barriers include: Public dentistry system's under resourcing, Lack of attention and awareness regarding oral health 	It is required to improve training and experience among the general dentists as well as improve funding to procure equipment and facilities, to facilitate clinicians to deliver quality care in these patients.
6.	Present study 2022	Saudi Arabia	447 general dentists 76 paediatric dentists	The barriers of treatment suggested by dentists were: • Access to a dentist providing care (25.8%) • Limitations in the child's cooperation (27.5%) • Dentists' experience and expertise (13%) • Inadequately motivated parents/caretakers (18.5%) • Time constraint (7.8%) • Financial constraints (7.3%)	The unmet treatment needs of these children can be significantly reduced by increasing parental awareness and education, supporting patient compliance-enhancing measures, and offering easy access to dental care, all of which would help them lead a better life.
Tab	e/Fig-51: Studies	regarding barriers	of treatment amor	na children with SHCN [10 30-33]	

Limitation(s)

One limitation of the present study could be addressed by assessing the role of specific barriers to treatment among the parents and children too. These studies would provide a panoramic view regarding improving the unmet treatment needs of these children. Hence, it is recommended to conduct region-based studies to overcome the barriers for treatment among the parents of children with SCHN, as well as among their treating dentists.

CONCLUSION(S)

The present study inferred that access to a dentist providing care and the limitations in the child's cooperation are the two most barriers that can hinder the SHCN child from receiving dental care. The paediatric dentists were more confident and had superior knowledge and skills, allowing them to provide comprehensive treatment to children, whereas general dentists provided conservative dental treatment due to their limited knowledge and training. The take-away message from the present study is to identify and eliminate challenges as soon as possible in order to deliver the best possible healthcare to these individuals. These children's unmet treatment needs can be considerably lowered by improving parental awareness and education, supporting patient compliance-enhancing strategies and providing convenient access to dental care through early dental home utilisation, all of which will help them live a better life.

REFERENCES

- Purohit BM, Acharya S, Bhat M. Oral health status and treatment needs of children attending special schools in South India: A comparative study. Spec Care Dentist. 2010;30(6):235-41. Doi: https://doi.org/10.1111/j.1754-4505.2010.00160.x. PMID: 21044103.
- [2] Bagramian RA, Garcia-Godoy F, Volpe AR. The global increase in dental caries. A pending public health crisis. Am J Dent. 2009;22:03-08.
- Journal of Clinical and Diagnostic Research. 2022 Oct, Vol-16(10): ZC11-ZC16

- [3] Brown A. Caries prevalence and treatment needs of healthy and medically compromised children at a tertiary care institution in Saudi Arabia. East Mediterr Health J. 2009;15:378-86. Doi: https://doi.org/10.26719/2009.15.2.378. PMID:19554985.
- [4] Solanki N, Kumar A, Awasthi N, Kundu A, Mathur S, Bidhumadhav S. Assessment of oral status in pediatric patients with special health care needs receiving dental rehabilitation procedures under general anesthesia: A retrospective analysis. J Contemp Dent Pract. 2016;17(6):476-79. Doi: https://doi.org/10.5005/jpjournals-10024-1875. PMID: 27484601.
- [5] Al-Hammad NS, Hakeem LA, Salama FS. Oral health status of children with obstructive sleep apnea and snoring. Pediatr Dent. 2015;37:35-39.
- [6] Brown LF, Ford PJ, Symons AL. Periodontal disease and the special needs patient. Periodontol 2000. 2017;74(1):182-93. Doi: https://doi.org/10.1111/ prd.12198. PMID: 28429476.
- [7] Charles JM. Dental care in children with developmental disabilities: Attention deficit disorder, intellectual disabilities, and autism. J Dent Child (Chic). 2010;77(2):84-91.
- [8] American Academy of Pediatric Dentistry. Definition of special health care needs. The Reference Manual of Pediatric Dentistry. Chicago, III.: Am Acad Pediatr Dent. 2020:19.
- [9] Al Baker AA, Al-Ruthia YSH, Al Shehri M, Alshuwairikh S. The characteristics and distribution of dentist workforce in Saudi Arabia: A descriptive cross-sectional study. Saudi Pharm J. 2017;25(8):1208-16. Doi: https://doi.org/10.1016/j. jsps.2017.09.005. PMID: 29204070.
- [10] Adyanthaya A, Sreelakshmi N, Ismail S, Raheema M. Barriers to dental care for children with special needs: General dentists' perception in Kerala, India. J Indian Soc Pedod Prev Dent. 2017;35(3):216. Doi: https://doi.org/10.4103/JISPPD. JISPPD_152_16. PMID: 28762347.
- [11] Townsend JA. Protective stabilization in the dental setting. In: Nelson TM, Webb JR, editors. Dental care for children with special needs: A clinical guide. Cham: Springer International Publishing; 2019;247-67. Doi: https://doi. org/10.1007/978-3-030-10483-2_11.
- [12] Townsend JA, Wells MH. Behavior guidance of the pediatric dental patient. In: In Nowak AJ, Christensen JR, Mabry, TR, Townsend JA, Wells MH, eds. Pediatric Dentistry: Infancy through Adolescence. 6th ed, St. Louis, MO.: Elsevier; 2019:352-70. Doi: https://doi.org/10.1016/B978-0-323-60826-8.00024-9.
- [13] Blumer S, Costa L, Peretz B. Success of dental treatments under behavior management, sedation and general anesthesia. J Clin Pediatr Dent. 2019:43:413-16. Doi: https://doi.org/10.17796/1053-4625-43.6.9. PMID: 31657986.
- [14] Mallineni SK, Yiu CKY. A Retrospective audit of dental treatment provided to special needs patients under general anesthesia during a ten-year period. J Clin Pediatr Dent. 2018;42:155-60. Doi: https://doi.org/10.17796/1053-4628-42.2.13. PMID: 29087800.

Ullal Anand Nayak et al., Dental Care for Children with Special Healthcare Needs in Saudi Arabia

- [15] American Academy of Pediatric Dentistry. Guideline on behavior guidance for the pediatric dental patient. Pediatr Dent. 2016;38(special issue):185-98.
- [16] Hale KJ. Oral health risk assessment timing and establishment of the dental home. Pediatr. 2003;111:1113-16. Doi: https://doi.org/10.1542/peds.111.5.1113. PMID: 12728101.
- [17] Nayak UA, Al Qahtani AF, Alturkistani RF, Al-Kendi AA, Aljuaid MA. First dental visit of a child-perspectives of parents/guardians and dentists/paediatric dentists in saudi arabia. J Evol Med Dent Sci. 2020;9(42):3086-92. Doi: https://doi. org/10.14260/jemds/2020/678.
- [18] American Academy of Pediatric Dentistry. Reference Manual. Guidelines on management of dental patients with special health care needs. Pediatr Dent 2008;37:166-71.
- [19] American Academy of Pediatric Dentistry. Policy on dental home. Pediatr Dent 2016;38(special issue):25-26.
- [20] Inkelas M, Raghavan R, Larson K, Kuo AA, Ortega AN. Unmet mental health need and access to services for children with special health care needs and their families. Ambul Pediatr. 2007;7(6):431-38. Doi: https://doi.org/10.1016/j. ambp.2007.08.001. PMID: 17996836.
- [21] Smith CS, Ester TV, Inglehart MR. Dental education and care for underserved patients: An analysis of students' intentions and alumni behavior. J Dent Educ 2006;70:398-408. Doi: https://doi.org/10.1002/j.0022-0337.2006.70.4.tb04094.x. PMID: 16595532.
- [22] Bernabé E, Suominen AL, Nordblad A, Vehkalahti MM, Hausen H, Knuuttila M, et al. Education level and oral health in Finnish adults: Evidence from different lifecourse models. J Clin Periodontol. 2011;38(1):25-32. Doi: https://doi. org/10.1111/j.1600-051X.2010.01647.x. PMID: 21058971.
- [23] Skinner AC, Slifkin RT, Mayer ML. The effect of rural residence on dental unmet need for children with special health care needs. J Rural Health. 2006;22(1):36-42. Doi: https://doi.org/10.1111/j.1748-0361.2006.00008.x. PMID: 16441334.
- [24] Lewis CW. Dental care and children with special health care needs: A population-based perspective. Acad Pediatr. 2009;9(6):420-26. Doi: https://doi. org/10.1016/j.acap.2009.09.005. PMID: 19945077.

- [25] Devinsky O, Boyce D, Robbins M, Pressler M. Dental health in persons with disability. Epilepsy Behav. 2020;110:107174. Doi: https://doi.org/10.1016/j. yebeh.2020.107174. PMID: 32531727.
- [26] Rouleau T, Harrington A, Brennan M, Hammond F, Hirsch M, Nussbaum M, et al. Receipt of dental care and barriers encountered by persons with disabilities. Spec Care Dent. 2011;31(2):63-67. Doi: https://doi.org/10.1111/j.1754-4505.2011.00178.x. PMID: 21371067.
- [27] Salles PS, Tannure PN, Rosa Oliveira CA, de Souza IP, Portela MB, de Araújo Castro GF. Dental needs and management of children with special health care needs according to type of disability. J Dent Child. 2012;79(3):165-59.
- [28] Rathi MD, Kashani R, Chinn CH, Nandi SS. Compliance of special health care needs and healthy pediatric patients with preventive visits after dental treatment under general anesthesia. J Dent Child. 2021;88(2):74-79.
- [29] Jaya AR, Choudhar K. Management of children with special health care needs in the dental office: A review. Int J Multidiscip Res Growth Eval. 2021;2(2):39-42.
- [30] Lai B, Nilano M, Roberts MW, Hooper SR. Unmet dental needs and barriers to dental care among children with autism spectrum disorders. J Autism Dev Disord. 2012;42(7):1294-303. Doi: https://doi.org/10.1007/s10803-011-1362-2. PMID: 21909827.
- [31] Sharifa AM. Access to dental care for persons with disabilities in Saudi Arabia (Caregivers' perspective). J Disabil Oral Health. 2014;13:51-61.
- [32] Williams JJ, Spangler CC, Yusaf NK. Barriers to dental care access for patients with special needs in an affluent metropolitan community. Spec Care Dentist. 2015;35(4):190-96. Doi: https://doi.org/10.1111/scd.12110. PMID: 25891784.
- [33] Lim MA, Liberali SA, Calache H, Parashos P, Borromeo GL. Perceived barriers encountered by oral health professionals in the Australian public dental system providing dental treatment to individuals with special needs. Spec Care Dentist. 2021;41(3):381-90. Doi: https://doi.org/10.1111/scd.12581. PMID: 33621394.

PARTICULARS OF CONTRIBUTORS:

- 1. Associate Professor, Department of Preventive Dental Sciences, IBN Sina National College for Medical Studies, Jeddah, Makkah, Saudi Arabia.
- 2. Intern, Department of Oral Basic and Clinical Sciences, IBN Sina National College for Medical Studies, Jeddah, Makkah, Saudi Arabia.
- 3. Intern, Department of Oral Basic and Clinical Sciences, IBN Sina National College for Medical Studies, Jeddah, Makkah, Saudi Arabia.
- 4. Intern, Department of Oral Basic and Clinical Sciences, IBN Sina National College for Medical Studies, Jeddah, Makkah, Saudi Arabia.
- 5. Intern, Department of Oral Basic and Clinical Sciences, IBN Sina National College for Medical Studies, Jeddah, Makkah, Saudi Arabia.
- 6. Associate Professor, Department of Oral Basic and Clinical Sciences, IBN Sina National College for Medical Studies, Jeddah, Makkah, Saudi Arabia.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR: Prathibha Anand Nayak,

Associate Professor, Department of Oral Basic and Clinical Sciences, IBN Sina National College for Medical Studies, Jeddah, Saudi Arabia, Jeddah, Makkah, Saudi Arabia.

E-mail: drprathibha_an@yahoo.co.in

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: May 02, 2022
- Manual Googling: Jun 16, 2022
- iThenticate Software: Sep 12, 2022 (7%)

Date of Submission: Apr 27, 2022 Date of Peer Review: May 21, 2022 Date of Acceptance: Jun 18, 2022 Date of Publishing: Oct 01, 2022

ETYMOLOGY: Author Origin