Dental Needs and Management of Children With Special Health Care Needs According to Type of Disability

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ABSTRACT

Purpose: The purpose of this study was to investigate the dental needs and management of special health care needs children in Rio de Janeiro, Brazil, according to the type of disability.

Methods: Records of 428 0- to 19-year-old patients who received dental treatment at the Patients Special Care Needs Clinic (Department of Pediatric Dentistry and Orthodontics, School of Dentistry, Universidade Federal do Rio de Janeiro) from 1996-2009 were analyzed. Information about the type of disability, use of medication, dental exam findings, management during treatment, dental treatment performed, and follow-up examinations were collected. Children were divided into 2 groups: those with medical conditions and those with intellectual disability.

Results: Patients with medical conditions used more medications and were older than those with intellectual disability. The most common dental treatments received were dental restorations (63%) and extractions (47%). There was no association between the type of disability and dental treatment needed. Children with intellectual disability were 3 times more likely to need general anesthesia and 7 times more likely to need physical restraint for dental care than the other group.

Conclusions: Children with intellectual disability have a greater chance of requiring advanced management techniques during dental treatment. The development of effective oral health programs is recommended as well as a specific education program for their parents. (J Dent Child 2012;79(3):165-9)

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Children with special health care needs (**SHCN**) refers to children with any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that require differentiated medical management, special health care intervention, and/or use of specialized services or programs.[1,2] They make up 12% to 18% of children worldwide.[1,2]

Studies have reported that such children tend to have poorer oral hygiene than their normal counterparts.[3-7] An increased risk of dental problems and sig-

nificant unmet needs for medical and dental care have also been reported in this population.[8,9] Some factors can contribute to these conditions such as impaired manual dexterity and physical challenges, intellectual disability (**ID**) resulting in reduced cooperation with treatment, xerostomia caused by drugs, radiation, therapy and/or the disease itself, and lack of financial resources and access to routine preventive dental services.[2,10-12]

Different strategies are used in dentistry for SHCN children. Although the management for the dental treatment itself is similar to that of healthy patients, advanced behavioral guidance techniques are more frequently used, such as physical immobilization, conscious sedation, and general anesthesia. To our knowledge, there are no studies in the literature on the association between dental management techniques and type of disability.

We hypothesized that children with ID have extensive dental treatment needs that require specific services such as the use of advanced behavior management techniques. Therefore, the purpose of this study was to investigate the dental needs and compare the management techniques used for dental treatment of Brazilian children with special health care needs.

METHODS

This cross-sectional study was conducted using the dental records of children and adolescents who were treated in the Patients with Special Care Needs Clinic at the Universidade Federal do Rio de Janeiro, Brazil, between January 1996 and September 2009. Patients requiring care at our clinic are those with a medical condition, a disability or activity restriction that may affect their oral health. In order to be included in this study, the patient's dental records had to contain the following information: type of disability, dental exam findings, and dental treatment performed. Incomplete dental records were excluded. This study was approved by the Ethics Committee of the Institute of Public Health Studies at the Universidade Federal do Rio de Janeiro.

The following data were collected: patient's age at the first dental examination, gender, type of disability, use of medication, dental treatment performed, use of physi cal immobilization, conscious sedation, or general anesthesia, and treatment status. The subjects were divided into 2 groups according to the type of disability: (1) those with medical conditions (MC; eg, chronic kidney disease, sickle cell anemia, HIV infection); and (2) those with ID (eg, intellectual disability by itself or in asso-

Table 1. Characteristics of the Study Subjects

	Total patients	Medical conditions (N=159)	Intellectual disability (N=233)	*P*-value*
Mean age (±SD)	6.85±3.03	7.56±3.05	6.37±2.93	NA
Gender (%)				
Female	169 (43)	79 (49)	90 (39)	
Male	223 (57)	80 (51)	143 (61)	.02
Use of medications (%)				
Yes	134 (50)	95 (60)	102 (44)	
No	261 (50)	64 (40)	131 (56)	.00
Medication (most frequently used) (%)				
Anticonvulsant	62 (16)	15 (16)	47 (49)	NA
Folic acid	31 (8)	25 (27)	6 (3)	NA
Antibiotic	16 (4)	12 (13)	4(2)	NA
Anxiolytic	11 (3)	3 (2)	8 (3)	NA
Antidepressant	10 (3)	2 (1)	8 (3)	NA
Initial reason for consultation (%)				
Caries	108 (28)	42(26)	66 (28)	.67
Prevention	102 (26)	40 (25)	62 (27)	.74
Pediatrician referral	112 (29)	52 (33)	61 (26)	.16
Others†	73 (18)	25 (16)	44 (19)	.41
Most common disabilities (%)				
Down syndrome	60 (15)	-	60 (26)	NA
Cerebral palsy	42 (11)	-	42 (18)	NA
Encephalopathy	39 (10)	-	39 (17)	NA
Sickle cell anemia	27 (7)	27 (17)	-	NA
Chronic kidney disease	14 (4)	14 (9)	-	NA
HIV-positive infection	11 (3)	11 (7)	-	NA

** χ^2 (Chi-square Test).*

ciation with other conditions such as Down syndrome, cerebral palsy, etc).

Patients in the MC group had a limitation of activity and restricted social participation because of a health condition that requires extensive medical care. ID group patients had reduced intellectual functioning that interfered negatively in their adaptive behavior. Cerebral palsy patients with normal intelligence were excluded from this group.

The type of dental treatment needs was grouped as follows: operative dentistry, endodontics, oral surgery, orthodontics, and periodontics. Patients who only needed preventive care were included in the group with no dental treatment needs. The status of treatment was divided into 3 categories: treatment successfully concluded; patient in treatment; or treatment incomplete (ie, patients who did not show up for treatment altogether). All dental care was done by pediatric dental graduate students at the Universidade Federal do Rio de Janeiro, under the supervision of an attending faculty. Behavior guidance techniques used during treatment included voice control, distraction, and physical restraint (protective stabilization) using a medical immobilization device or an adult holding the patient down. The latter was always carried out with the caregiver's consent.

The data were analyzed using SPSS 16.0 software (SPSS Inc, Chicago, Ill., USA) as absolute and relative frequencies. Chi-square test was used for comparisons between categorical variables between the 2 groups with a significance level of 95% ($P \leq .05$). *t* test was used to compare means of numerical variables of both groups ($P \leq .05$). Odds ratio (**OR**) calculations and the confidence interval (**CI**) were also applied.

RESULTS

A total of 428 dental records of 0- to 19-year-old patients were analyzed. Thirty-six dental records with incomplete data were excluded, yielding a final study sample of 392 patients with a mean age of 6.85 (±3.03). The total sample consisted of 223 males and 169 females, with the majority having ID (N=233; $P=.02$).

Compared to the ID group (N=233), MC group patients (N=159) used more medication ($P=.00$) and were older than ID group patients ($P=.00$). The most common medication used was anticonvulsants (16%). Dental caries, prevention, and referrals from pediatricians were the main reasons for the initial consultations. Table 1 summarizes the data regarding sample characteristics, according to the type of disability.

Most children and adolescents had a dental need (79%), the most common being dental restorations (63%), extractions (47%), and endodontics (9%). The needs were similar in both groups ($P>.05$), with the ID group needing more restorations ($P=.00$) and the MC group needing more orthodontic treatment ($P=.00$; Table 2).

Table 2. Dental Treatment Needs and Management for Patients with Disabilities

	Medical conditions (%)	Intellectual disability (%)	Odds ratio (95% confidence interval)	*P*-value*
Dental treatment needs				
Yes	124 (78)	184 (79.0)	0.94 (0.5-1.5)	.81
No	35 (22)	49 (21.0)		
Type of treatment needs				
Dental restorations	95 (60)	153 (66)	0.48 (0.2-0.7)	.00
Endodontics	19 (12)	16 (7)	1.83 (0.8-3.8)	.08
Extractions	73 (46)	113 (49)	0.93 (0.6-1.4)	.74
Orthodontics	16 (10)	8 (3)	3.15 (1.2-8.2)	.00
Periodontics	13 (8)	19 (8)	1.00 (0.4-2.2)	.99
Management during treatment				
Conscious sedation				
Yes	7 (4)	13 (6)	1.28 (0.5-3.2)	.60
No	152 (96)	220 (94)		
Physical restraint				
Yes	10 (6)	78 (34)	7.4 (3.7-15.0)	.00
No	149 (94)	155 (67)		
General anesthesia				
Yes	13 (8)	59 (25)	3.80 (2.0-7.2)	.00
No	146 (92)	174 (75)		
Status of treatment				
Concluded	93 (59)	140 (60)	0.94 (0.6-1.4)	.75
In treatment	9 (6)	19 (8)	0.68 (0.2-1.6)	.34
Incomplete	56 (35)	74 (32)	1.14 (0.7-1.7)	.55

*χ^2 (Chi-square Test)

Considering the association between dental needs and the initial reason for consultation, patients who practiced dental prevention had a lower need for dental treatment (OR=0.42; CI=0.25-0.69) and patients for whom the initial reason for consultation was dental caries were 4 times more likely to need restorative dentistry (OR=4.80; CI=2.9-7.9).

During dental treatment, physical immobilization was necessary for 88 patients (22%). ID children were 3 times more likely to need general anesthesia and 7 times more likely to need immobilization for dental care than the other group (Table 2).

DISCUSSION

Our findings identified extensive dental treatment needs in SHCN children, regardless of the type of disability and despite exposure to fluoridated drinking water and dentifrice. All children in this study were dependent on the public medical and dental health service, and the extensive dental needs observed could be associated with poor oral hygiene and unmet preventive dental care.

A recent U.S. study reported that SHCN children attended preventive medical and dental visits as frequently as or more frequently than other children without SHCN.[11] On the other hand, a study in India demonstrated that institutionalized young people with impaired hearing had a high prevalence of untreated dental caries, possibly due to barriers in communication about their own health education and poor oral hygiene habits.[6]

Our findings revealed a situation similar to the Indian study, since the majority of our patients (79%) required some dental treatment. Possible explanations for low priority to oral health care include difficulties in accessing services and the lack of financial resources for their families. In addition to that, lack of knowledge about oral hygiene and cariogenic diets could be a reason for this pattern. Moreover, only 29% of our cases were due to pediatrician referrals, even though all these children had already visited a pediatrician at least once in their lifetime.

Another relevant finding was the relationship between the initial reason for consultation and the treatment need. When parents or caregivers sought treatment for dental caries, the need for a restoration was confirmed by the dentist in most cases, revealing a statistically significant association (OR=4.80; CI=2.9-7.9). Only a small number of parents and caregivers reported to be seeking preventive dental care (26%). It is possible that, due to severe and complex health care needs, SHCN children and their caregivers make oral health a low priority. When the parents and caregivers were seeking dental prevention, however, there was a low need for invasive dental treatment.

Our results demonstrate that ID patients were much more likely to need physical immobilization and general anesthesia for dental treatment. In most cases, the public health service does not provide specialized dental care for this population, hindering access to preventive care and to dental treatment. As this kind of treatment is expensive and most of the population seeking specialized care in dental school clinics in Brazil generally belongs to a low socio-economic bracket, stronger preventive strategies are necessary for this group. If pediatricians referred patients around 1 year of age or when the first tooth appeared, a huge impact on this population's long-term oral health would probably be seen.

A considerable percentage of individuals failed to complete their treatment in both groups (35.2%, MC group; 31.8% ID group). Dental anxiety and behavior management problems are frequently observed in children with extensive treatment needs. In addition to that, SHCN children present a reduced ability to cooperate in complex situations such as dental treatment. Furthermore, the low socio-economic status of the families attending our clinic makes it difficult for them to bring their children for appointments given transportation costs and time away from work.

The ID group presented extensive restorative needs. Their diminished ability to cooperate, along with severe activity limitations and dependence on others for feeding and oral hygiene, may have led to an increased caries rate. Another interesting and surprising result was in relation to orthodontic treatment needs, which was significantly higher in the MC group. A higher rate of malocclusion was expected in the ID group, which included patients with cerebral palsy and Down syndrome who tend to present this type of problem.

Our study is limited in terms of group comparisons, as there was no control group with healthy patients. Therefore, any comparison to our results must be made with caution and should be evaluated according to the population studied.

CONCLUSIONS

Based on this study the following conclusions can be made:

1. Children with SHCN have extensive dental treatment needs.
2. Children with ID needed physical immobilization during dental treatment more often than other patients.

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