Dental Traumatology

Dental Traumatology 2011; **27**: 113–116; doi: 10.1111/j.1600-9657.2010.00961.x

Prevalence of dental trauma in individuals with special needs

Maria Cristina Duarte Ferreira[1], Renata Oliveira Guare[2], Igor Prokopowitsch[3], Maria Teresa Botti Rodrigues Santos[4]

[1]Discipline of Dentistry, Persons with Disabilities Division, Universidade Paulista, Sao Paulo, Brazil; [2]Discipline of Dentistry, Persons with Disabilities Division, Universidade Cruzeiro do Sul, Sao Paulo, Brazil; [3]Universidade Cruzeiro do Sul, Sao Paulo, Brazil; [4]Discipline of Dentistry, Persons with Disabilities Division, Universidade Cruzeiro do Sul, Sao Paulo, Brazil

Correspondence to: Maria Cristina Duarte Ferreira, Rua Cancioneiro de Évora 24, 04708-010 São Paulo, Brazil
Tel.:/Fax: +55 11 51835453
e-mail: duarteferreira@uol.com.br

Accepted 28 October, 2010

Abstract – *Background*: Individuals with special needs exist throughout the world. The last demographic census (IBGE, 2002) in Brazil indicated that 14.5% of the total population (24.5 million) present some type of impairment. This study aimed to evaluate the prevalence of dental trauma (DT) in individuals with special needs and the first attendance by a dental surgeon of patients admitted to the special care clinic of the School of Dentistry of Universidade Paulista (UNIP), Brazil, between 2001 and 2005. *Material and Methods*: The sample included 544 individuals with special needs aged 1–20 years old (mean 10.7 ± SD 5.3). Patient medical records were reviewed for demographic and clinical data, including medical diagnosis, gender, age, presence of DT and whether the attendance provided was the first time the patient had sought dental treatment. *Results*: The individuals were distributed into 11 subgroups according to medical diagnosis. The DT prevalence determined was 9.2% ($n = 50$), with no difference in relation to gender. The majority (78.3%) of the individuals were seeking dental treatment for the first time at an advanced age. *Conclusions*: The present data suggest that DT prevalence in individuals presenting special needs is more common in permanent dentition and that the first attendance by a dental surgeon is delayed.

Individuals with special needs exist in all countries of the world. In Brazil, the last demographic census (1) indicated that 14.5% of the total population (24.5 million) present some type of impairment. Of this total, 4.3% of the children were less than 14-years old distributed among the following types of impairment: 8.3% with mental retardation, 4.1% physical impairment, 22.9% motor, 48% visual and 16.7% hearing impairment (1).

Dental trauma (DT) in children and adolescents is a common problem and many authors have reported it in non-disabled individuals (2, 3). Studies regarding DT prevalence have described it as variable, from 7.3% (4), through 10.9% (5) 11.7% (6), 15.4% (7), 20.4% (8) 23.3% (9) 33.2% (3) to 58.6% (10).

Fewer studies in literature describe DT prevalence in individuals with special needs. Nunn and Murray (11) described a prevalence of 28.8% in the handicapped and Ohito et al. (12) reported a DT of 18%. For individuals with cerebral palsy, a prevalence of 57% was determined by Holan et al. (13), 10.6% by Costa et al. (14) and 20% by dos Santos & Souza (15) among individuals attending rehabilitation treatment in a reference center for those with severe physical impairment. For individuals with sensory impairment, Al Sarheed et al. (16) verified DT prevalence for the visually impaired of 9% and hearing impaired of 11.4%. Shyama et al. (17) evaluated 818 disabled individuals and the DT prevalence reported was 16.9% among visual, hearing and physical handicaps and developmental disorders.

Dental trauma can frequently lead to tooth lesions, affecting both supporting dental structures and hard tissues (18). Besides these local injuries, DT can directly or indirectly influence people's lives, affecting their appearance, speech, and teeth position, reinforcing the assertion that traumatic dental injuries may cause functional, esthetic, psychological (19) and social problems (20).

Therefore, considering the importance of dental trauma in individuals presenting special needs, this study aimed to evaluate the prevalence of dental trauma in patients with special needs and their first attendance by a dental surgeon.

Materials and methods

The Ethics Committee of the Universidade Paulista (UNIP), in São Paulo, Brazil, approved this study and written informed consent for participation and publication was obtained from the adult responsible for each child/individual who participated in the study.

This study involved medical records of patients with special needs admitted to the special care clinic of the School of Dentistry of Universidade Paulista (UNIP), Brazil, between 2001 and 2005. Patient medical records were reviewed for demographic and clinical data, including medical diagnosis, gender, age, dental trauma presence and whether the attendance provided at the time was the first time that the patient had sought dental treatment.

A total of 544 medical records were assessed. For data related to DT, this was recorded during clinical examinations in a dental chair. The age range for the group studied varied from 1 to 20 years old (mean age 10.7 ± 5.3 years old). DT was recorded only for teeth present during examination (deciduous or permanent). Previous DT in deciduous teeth was not recorded in the presence of permanent teeth. For statistical analyses, the chi-square test was used to verify differences regarding the presence/absence of dental trauma among the different groups of disabilities and for gender and mean age, with the level of significance set at $P < 0.05$.

Results

The total sample of 544 medical records consisted of 76 medical records of individuals with Down syndrome, 64 with cerebral palsy, 75 with mental retardation, 154 with no final diagnosis identified, 11 with autism, 78 with multiple alterations, 11 with Martin–Bell syndrome, 40 with hearing deficiency, 13 with epilepsy, 13 with visual deficiency and nine with psychiatric impairment. The results concerning the descriptive characteristics of individuals with special needs are shown in Table 1.

Table 2 presents the distribution of individuals with special needs according to medical diagnosis with dental trauma, gender and mean age. The dental trauma prevalence determined was 9.2% ($n = 50$). Comparison between genders showed no significant difference ($P = 0.732$). The chi-squared test demonstrated that the only significant association among the groups was autism and cerebral palsy ($P = 0.0353$), with autism presenting higher percentages (27.3%) of trauma. The mean age of individuals with special needs presenting DT was 12.7-years old.

Observation of the total sample (544) revealed that 426 (78.3%) individuals were seeking dental treatment for the first time and 46% of these were aged 8- to 11-years old, of whom 34 (7.9%) presented dental trauma.

Discussion

The present study determined a prevalence of 9.2% for dental trauma in individuals with special needs. Fewer studies in literature have focused on DT in the special needs population. The majority described DT prevalence in CP (13–15) and there was a lack of studies identifying DT in the most representative groups of individuals with special needs.

For the CP group, this study identified a similar prevalence to that reported by Costa et al. (14) and dos Santos & Souza (15). All three studies involve Brazilian populations with CP and show important differences when compared with the results reported by Holan et al. (13). Comparisons between studies should be interpreted with caution due to the lack of uniformity in sample selection, examination procedures, diagnostic criteria and age groups.

For sensory impairment individuals, this study determined a higher prevalence of DT among the visually impaired compared to other studies described in the literature (16, 17). It should be highlighted that social inclusion policies that require the placement of it should be highlighted that social inclusion policies that require the laying of tactile or studded paving on sidewalks and in public places has only recently been introduced in Brazil. For the hearing impaired, DT was similar to the literature (16, 17).

The results reported by Nunn & Murray (11) and Ohito (12) were higher than this study. It is important to

Table 2. Dental trauma prevalence determined in individuals with special needs evaluated according to medical diagnosis

Diagnosis	Trauma		Trauma and gender		Trauma and mean age
	Presence *n* (%)	Absence *n* (%)	Female	Male	
Down syndrome	4 (5.2)[c]	72 (94.8)	2	2	9.5
Cerebral palsy	8 (12.5)[a]	56 (87.5)	1	7	12.6
Mental retardation	8 (10.7)[c]	67 (89.3)	3	5	13.3
Diagnosis not specified	11 (7.2)[c]	143 (92.8)	6	5	11.8
Autism	3 (27.3)[b]	8 (72.7)	0	3	8.1
Multiple alterations	5 (6.4)[c]	73 (93.6)	4	1	12.8
Martin Bell syndrome	0 (0.0)[c]	11 (100)	0	0	0
Hearing deficiency	5 (12.5)[c]	35 (87.5)	2	3	10.3
Epilepsy	2 (15.4)[c]	11 (84.6)	1	1	18.5
Visual deficiency	3 (23.1)[c]	10 (76.9)	2	1	10.8
Psychiatric impairment	1 (11.1)[c]	8 (88.9)	0	1	19
Total	50 (9.2)	494	21	29	12.7

n = sample. Chi-squared test, different letters mean significant differences ($P < 0.05$).

Table 1. Descriptive characteristics of individuals with special needs evaluated according to medical diagnosis (n = sample)

Variable	Down syndrome	Cerebral palsy	Mental retardation	Diagnosis not specified	Autism	Multiple alterations	Martin Bell syndrome	Hearing deficiency	Epilepsy	Visual deficiency	Psychiatric impairment
n (%)	76 (14.0)	64 (11.8)	75 (13.8)	154 (28.3)	11 (2.0)	78 (14.3)	11 (2.0)	40 (7.4)	13 (2.4)	13 (2.4)	9 (1.7)
Gender											
Female	33 (43.4)	26 (40.6)	22 (29.4)	76 (49.4)	4 (36.3)	27 (34.6)	1 (9.0)	22 (55.0)	6 (46.1)	5 (38.5)	0
Male	43 (56.6)	38 (59.4)	53 (70.6)	78 (50.6)	7 (63.4)	51 (65.4)	10 (91.0)	18 (45.0)	7 (53.9)	8 (61.5)	9 (100.00)
Age range											
0–3	9 (11.8)	1 (1.5)	1 (1.3)	4 (2.6)	0 (0.0)	6 (7.7)	0 (0.0)	0 (0.0)	0 (0.0)	1 (7.7)	0 (0.0)
4–7	27 (35.6)	25 (39.0)	19 (25.3)	41 (26.6)	3 (27.3)	17 (21.8)	2 (18.2)	12 (30.0)	5 (38.5)	5 (38.5)	0 (0.0)
8–11	24 (31.6)	24 (37.6)	35 (46.7)	68 (44.2)	5 (45.5)	44 (56.4)	6 (54.5)	14 (35.0)	3 (23.1)	5 (38.5)	1 (11.1)
12–16	14 (18.4)	11 (17.2)	16 (21.3)	35 (22.7)	2 (18.2)	11 (14.1)	3 (27.3)	11 (27.5)	3 (23.1)	2 (15.4)	1 (11.1)
17–20	2 (2.6)	3 (4.7)	4 (5.3)	6 (3.8)	1 (9.1)	0 (0.0)	0 (0.0)	3 (7.5)	2 (15.4)	0 (0.0)	7 (77.8)

emphasize that two decades have passed since these results were published and greater attention has been provided for these populations over time.

Despite the in-depth review of the literature, our group was unable to find specific data regarding DT in special needs populations with mental retardation, autism, Martin–Bell syndrome, psychiatric impairment, Down syndrome and multiple alterations; consequently it was not possible to compare the results of this study with the current literature.

Of the 50 individuals with special needs who presented trauma, 58% were male and 42% were female. Dental trauma in individuals with special needs can result from mental retardation, poor and/or uncontrolled motor coordination, the presence of unwanted and/or involuntary physical movements, oral pathological reflexes, such as the biting reflex during feeding, spasticity in masticatory muscles, or a slower response to surrounding obstacles. Such conditions are similarly common for both genders among disabled individuals (15).

Regarding medical conditions for the CP group, a higher DT prevalence was observed for males. This result might reflect the fact that the prevalence of CP among males was significantly higher compared to females (21, 22).

The mean age of DT prevalence observed in this study demonstrated the involvement of permanent teeth. This can be explained by the delay in physical motor acquisition and neuropsychomotor maturation observed in these individuals (15).

An important factor observed in this study was that almost 80% of the patients were being attended by a dental surgeon for the first time. Regarding dental treatment for individuals with special needs, some points should be raised regarding the possible causes for receiving less treatment. Multiple and complex treatment needs, the level of dependence on caregivers, the need to be accompanied, problems with transportation, building access (entry and exit), negative attitudes of the general public, the cost of dental care, the presence of comorbidities and negative attitudes to dental care, including fear and resistance from prior early painful experiences (23, 24), or simply the fact that these individuals did not seek treatment. The use of physical restraints, nitrous oxide and general anesthesia is described as barriers to dental treatment in autistic patients. Additionally, communication with special needs populations is a problem and an obstacle to dental care for 75% of dental surgeons (24).

Gizani et al. (23) also reported that the second most difficult experience for dental practitioners was resolving dental trauma for special needs patients, determined as 53.6%.

Concerning the postponement of odontological treatment for individuals with special needs, based on the obstacles mentioned above, the development of an aggressive preventive program is fundamental, including educational measures related to oral health for the caregivers, continuous motivation programs with regular preventive professional care for parents and children/adolescents with special needs. The need to integrate oral health care into the day to day life of these individuals must be emphasized (24).

Conclusions

The present data suggest that the prevalence of dental trauma in individuals presenting special needs is more common in permanent dentition and that the first attendance by a dental surgeon is delayed.

References

1. IBGE. Comentário dos resultados. In: Estatística IBdGe, editor. In ibge tabulação avançada do censo demográfico 2000. Resultados preliminares da amostra. Rio de Janeiro: Editora IBGE; 2002. p. 45–8.
2. Oliveira LB, Marcenes W, Ardenghi TM, Sheiham A, Bonecker M. Traumatic dental injuries and associated factors among brazilian preschool children. Dent Traumatol 2007;23:76–81.
3. Marcenes W, al Beiruti N, Tayfour D, Issa S. Epidemiology of traumatic injuries to the permanent incisors of 9-12-year-old schoolchildren in damascus, syria. Endod Dental Traumatol 1999;15:117–23.
4. Zerman N, Cavalleri G. Traumatic injuries to permanent incisors. Endod Dental Traumatol 1993;9:61–4.
5. Otuyemi OD. Traumatic anterior dental injuries related to incisor overjet and lip competence in 12-year-old Nigerian children. Int J Paediatr Dent/Br Paedod Soc Int Assoc Dent Children 1994;4:81–5.
6. Josefsson E, Karlander EL. Traumatic injuries to permanent teeth among swedish school children living in a rural area. Swedish Dent J 1994;18:87–94.
7. Hargreaves JA, Matejka JM, Cleaton-Jones PE, Williams S. Anterior tooth trauma in eleven-year-old south african children. ASDC J Dent Child 1995;62:353–5.
8. Nicolau B, Marcenes W, Sheiham A. Prevalence, causes and correlates of traumatic dental injuries among 13-year-olds in Brazil. Dent Traumatol 2001;17:213–7.
9. Soriano EP, Caldas AF Jr, Goes PS. Risk factors related to traumatic dental injuries in brazilian schoolchildren. Dent Traumatol 2004;20:246–50.
10. Marcenes W, Zabot NE, Traebert J. Socio-economic correlates of traumatic injuries to the permanent incisors in schoolchildren aged 12 years in Blumenau, Brazil. Dent Traumatol 2001;17:222–6.
11. Nunn JH, Murray JJ. The dental health of handicapped children in newcastle and northumberland. Br Dent J 1987;162:9–14.
12. Ohito FA, Opinya GN, Wang'ombe J. Traumatic dental injuries in normal and handicapped children in Nairobi, Kenya. East Afr Med J 1992;69:680–2.
13. Holan G, Peretz B, Efrat J, Shapira Y. Traumatic injuries to the teeth in young individuals with cerebral palsy. Dent Traumatol 2005;21:65–9.
14. Costa MM, Afonso RL, Ruviere DB, Aguiar SM. Prevalence of dental trauma in patients with cerebral palsy. Spec Care Dentist 2008;28:61–4.
15. dos Santos MT, Souza CB. Traumatic dental injuries in individuals with cerebral palsy. Dent Traumatol 2009;25:290–4.
16. AlSarheed M, Bedi R, Hunt NP. Traumatised permanent teeth in 11-16-year-old Saudi Arabian children with a sensory impairment attending special schools. Dent Traumatol 2003;19:123–5.
17. Shyama M, Al-Mutawa SA, Morris RE, Sugathan T, Honkala E. Dental caries experience of disabled children and young adults in Kuwait. Commun Dent Health 2001;18:181–6.
18. Andreasen JO. Etiology and pathogenesis of traumatic dental injuries. A clinical study of 1,298 cases. Scand J Dent Res 1970;78:329–42.
19. Rajab LD. Traumatic dental injuries in children presenting for treatment at the department of pediatric dentistry, faculty of

dentistry, University of Jordan, 1997–2000. Dent Traumatol 2003;19:6–11.
20. Rocha MJ, Cardoso M. Traumatized permanent teeth in Brazilian children assisted at the federal university of Santa Catarina, brazil. Dent Traumatol 2001;17:245–9.
21. Murphy CC, Yeargin-Allsopp M, Decouflé P, Drews CD. Prevalence of cerebral palsy among ten-year-old children in metropolitan Atlanta, 1985 through 198. J Pediatr 1993;123: S13–S20.
22. Bax M, Tydeman C, Flodmark O. Clinical and MRI correlates of cerebral palsy: the European Cerebral Palsy Study. JAMA 2006;296:1602–8.
23. Gizani S, Declerck D, Vinckier F, Martens L, Marks L, Goffin G. Oral health condition of 12-year-old handicapped children in Flanders (Belgium). Community Dent Oral Epidemiol 1997;25:352–7.
24. de Jongh A, van Houtem C, van der Schoof M, Resida G, Broers D. Oral healthstatus, treatment needs, and obstacles to dental care among noninstitutionalized children with severe mental disabilities in The Netherlands. Spec Care Dentist 2008;28:111–5.