Assessing the oral condition of visually impaired individuals attending the Paraíba Institute of the Blind

Avaliação da condição bucal e da ocorrência de manifestações orais em deficientes visuais assistidos no Instituto dos Cegos da Paraíba

Miliani do Amaral Souza Maciel [a]
Priscila Monteiro Cordeiro [a]
Sérgio d'Ávila [b]
Gustavo Pina Godoy [b]
Rubiane Diógenes Alves [c]
Ruthinéia Diógenes Alves Uchôa Lins [b]

[a] Curso de Odontologia, Universidade Estadual da Paraíba, Campina Grande, PB, Brazil
[b] Universidade Estadual da Paraíba, Campina Grande, PB, Brazil
[c] Programa de Mestrado em Odontologia Preventiva e Social, Universidade Federal do Rio Grande do Norte, Natal, RN, Brazil

Abstract

Purpose: To evaluate oral conditions in visually impaired individuals at the Paraíba Institute of the Blind.

Methods: This observational and transversal study analyzed 80 users of the institute. Participants were given a clinical evaluation encompassing DMFT (index of decayed, missing and filled teeth), SOHI (Simplified Oral Hygiene Index) and SPR (Simplified Periodontal Registry) and the occurrence of oral manifestations.

Results: The DMFT index showed that the group is large and more expressive in adult age. The Oral Hygiene Index indicated a deficiency in this group. The most frequent periodontal finding was gingivitis, but children exhibited a healthy periodontium. Oral manifestations and a significant number of injuries to the anterior teeth were also observed, including gingival hyperplasia, severe dental crowding, aphthous ulcerations, bottle caries, fistula, fissured tongue, dental erosion and marked gum recession.

Conclusion: The studied population seems to show an increase in the DMFT index with age. Poor oral hygiene may be present due to the lack of visualization of the act of brushing. Gingivitis is the most prevalent periodontal condition, indicating the need for programs to encourage the promotion of oral health.

Key words: Individuals with visual impairments; diagnosis; clinical pathology

Resumo

Objetivo: Avaliar a condição bucal e a ocorrência de manifestações orais em deficientes visuais assistidos no Instituto dos Cegos da Paraíba, Brazil, uma vez que estes usualmente associam a cavidade bucal apenas ao seu aspecto funcional.

Metodologia: Estudo observacional e transversal. A amostra foi constituída por 80 usuários do referido instituto, os quais foram examinados clinicamente, avaliando-se os índices CPOD, SOHI (Índice de Higiene Oral), SPR bem como a ocorrência de manifestações bucais.

Resultados: O índice CPOD mostrou-se elevado e mais expressivo na faixa etária adulta. O SOHI apresentou-se deficiente. A condição periodontal mais frequentemente encontrada foi a gengivite, porém as crianças exibiram um periodonto saudável. Quanto às manifestações orais, além de um número expressivo de traumatismos em dentes anteriores, também foram observados: hiperplasia gengival, apinhamento dentário severo, ulcerações aftosas, cáries de mamadeira, fistula, língua fissurada, desgastes dentários acentuados e recessão gengival.

Conclusão: A população em estudo parece exibir um caráter cumulativo associando-se o índice CPOD ao fator idade; higiene oral deficiente, podendo esta ser justificada pela falta de visualização do ato de escovação; e gengivite como condição periodontal mais frequente, indicando a necessidade de programas de incentivo à promoção de saúde bucal.

Palavras-chave: Indivíduos com deficiência visual; diagnóstico; patologia clínica.

Correspondence:
Miliani Maciel
Rua Aprígio Ferreira Leite 250. Catolé.
Campina Grande, PB – Brazil
581000-000
E-mail: miliani_maciel@hotmail.com

Received: April 12, 2009
Accepted: September 22, 2009

Introduction

According to the OMS, there are approximately 180 million visually impaired individuals worldwide, 50 million of whom are classified as blind. It was estimated in 2000 that 8 million new cases of blindness will be diagnosed every year, but this number could increase significantly in the coming years as identification of blind individuals improves with, for example, intensification of public health programs (1).

According to Bautista (2), the visually impaired may be classified in two groups: those of subnormal vision or low vision (individuals who have residual vision that allows reading and writing as usual, as well as the successful completion of certain tasks), and the blind or visually impaired (people who have no visual capacity or can only perceive light vs. dark). Visual impairment may be congenital, *i.e.*, present at birth, or acquired as the patient ages (3).

The visually impaired have oral health problems similar to those seen in the general population. However, it is necessary to emphasize the importance of oral care for these individuals, providing guidance in the elimination and/or reduction of dental biofilm and promoting health, functionality and the conservation of dental elements and aesthetics, although aesthetics are not a high priority for these individuals.

According to Coelho et al. (4), the oral health of disabled patients has been poorly studied and reliable data are scarce in Brazil. This may be because about 20% of the population (approximately 20 million individuals) are poor and only receive occasional dental care.

This study aimed to assess the oral cavities and determine the degree of oral hygiene in visually impaired individuals.

Methodology

This cross-sectional study examined a population of 80 users of the Paraíba Institute of the Blind, Brazil. Examinations included an evaluation based on the DMFT index, SOHI, SPR and the occurrence of oral manifestations.

This research was approved by the Research Ethics Committee of UEPB, CAAE No 0172.0.133.000-07, following the precepts of Resolution CNS 196/96. The mirror and mouthpiece of a WHO periodontal probe were used to record the SPR (Simplified Periodontal Registry). Oral manifestations were identified through inspection and palpation of all intra-oral tissues including teeth, gums, hard palate, soft palate, judgment mucosa, tongue and floor of mouth. The following tests were also conducted: DMFT (index of decayed, missing and filled teeth), SOHI (Simplified Oral Hygiene Index) and SPR (Simplified Periodontal Registry). All data were recorded on a previously developed clinical sheet and then coded, grouped and processed.

The following descriptive statistics were collected: absolute distributions, mean, median, standard deviation, minimum and maximum values. The Fisher's Exact test, F test (ANOVA) with Tukey or Tamhane's T2 and Student t-test with equal or unequal variances were used to analyze the data. The Tukey test was performed to verify the hypothesis of equal variances. Tamhane's T2 was used when the assumption of equal variances was rejected. The assumption of equal variances was tested using the Levene's F test. Statistical calculations were performed with SPSS v.13. The accepted significance level was 5.0%.

Results

The research population included 80 patients of both sexes, ranging in age from 5 to 80 years (mean: 22.8, standard deviation: 16.0, median: 20). Table 1 displays the results of the following variables: age, sex, smoking status, IOHS classification, SPR classification and average, standard deviation, median, minimum and maximum values for DMFT and IOHS. Table 2 shows an analysis of the possible association between sex and smoking status. Table 3 describes the association between age and periodontal condition (SPR), and Table 4 shows how DMFT score is related to the other variables in the study. Figure 1 displays the relative frequency of oral manifestations in the sample.

Table 1 highlights the fact that young individuals were more prevalent in the study population, with 35 to 50-year-olds and individuals over 51 years of age representing 12.5% and 10.0% of the study group, respectively. The majority (62.5%) were male. Approximately 3/4 of the population (76.2%) had never smoked, and the remainder was smoking (12.5%) or ex-smokers (11.3%). Slightly more than half (53.8%) were classified as having regular hygiene by IOHS, followed by 31.2% with poor hygiene. Nearly the same proportion of patients had healthy SPR (46.2%) and gingivitis (42.5%), with the remaining 11.3% diagnosed with possible periodontitis.

Table 2 indicates that the percentage of smokers was approximately equal between the sexes, while the percentage of former smokers was higher in males than in females (16.0% vs. 3.3% respectively). The percentage of those who had never smoked was higher in females (83.3% vs. 72.0%), but there was no significant association between sex and smoking status ($P > 0.05$).

Table 3 shows that the percentage of individuals with a healthy periodontium was the lowest among the 35- to 50-year-old group (20%), highest in individuals 51 years or older (62.5%) and ranged from 41.2% to 52.2% in the other three age groups. The percentage of surveyed individuals with gingivitis was lowest in those 51 years or older (12.5%), highest in the 35- to 50-year-old group (70%) and ranged from 30.4% to 50% in other age groups. The percentage of surveyed individuals with periodontitis was zero among 5- to 10-year-olds, highest in those 51 years or older (25%) and ranged from 10% to 17.4% in other age ranges. No significant association between age and periodontal condition was found ($P > .05$).

Table 1. Sample characteristics.

Variable	n	%
• Age (years)		
5 to 10	22	27.5
11 to 19	17	21.2
20 to 34	23	28.8
35 to 50	10	12.5
51 or more	8	10.0
• Gender		
Male	50	62.5
Female	30	37.5
• Smoking habit		
Smoker	10	12.5
Non-smoker	9	11.3
Never smoked	61	76.2
• Oral hygiene condition		
Adequate oral hygiene	12	15.0
Regular oral hygiene	43	53.8
Poor oral hygiene	25	31.2
• Periodontal condition (SPR) (Simplified Periodontal Registry)		
Healthy peridodontium	37	46.2
Suggestive of gingivitis	34	42.5
Suggestive of periodontitis	9	11.3
• DMFT (index of decayed, missing and filled teeth)		
Mean ± SD (Median: Minimum; Maximum)	10.26 ± 6.59 (11.00: 0; 26)	
• SOHI (Simplified Oral Hygiene Index)		
Mean ± SD (Median: Minimum; Maximum)	1.72 ± 0.64 (1.73: 0; 3.0)	

Table 2. Association between gender and smoking habit.

Gender	Smoking habit						Total		Fisher's exact test
	Smoker		Non-smoker		Never smoked				
	n	%	n	%	n	%	n	%	
Male	6	12.0	8	16.0	36	72.0	50	100.0	$P = 0.238$
Female	4	13.3	1	3.3	25	83.3	30	100.0	

Table 3. Association between age and periodontal condition (SPR – Simplified Periodontal Registry).

Age (years)	Periodontal condition (SPR)						Total		Fisher's exact test
	Healthy		With gingivitis		With periodontitis				
	n	%	n	%	n	%	n	%	
5 to 10	11	50.0	11	50.0	–	–	22	100.0	$p^{(1)} = 0.105$
11 to 19	7	41.2	8	47.1	2	11.8	17	100.0	
20 to 34	12	52.2	7	30.4	4	17.4	23	100.0	
35 to 50	2	20.0	7	70.0	1	10.0	10	100.0	
51 or more	5	62.5	1	12.5	2	25.0	8	100.0	

As shown in Table 4, the average DMFT score increased with age, with the lowest score (4.73) seen in 5- to 10-year-olds. Multiple comparison tests showed significant differences between the 5-10 year group and the 20-34 year and 35-50 year group. The average score was 0.90 units higher in males than in females (10.60 vs. 9.70), but the difference between sexes was not significant ($P > 0.05$). DMFT scores were higher among smokers (14.70) and lowest among those who never smoked (9.43), but again there was no evidence of a significant difference ($P > 0.05$). DMFT scores were lower among patients with satisfactory IOHS (6.83) and higher among those with poor IOHS (12.16), though this difference was not significant ($P > 0.05$). DMFT scores were lower among those who had healthy gingiva as determined by SPR (8.78), intermediate in individuals with gingivitis (10.47) and highest among those who had periodontitis (15.78); these differences were significant ($P < 0.05$). Tukey tests also showed significant differences between those classified with periodontitis, those who had healthy periodontium and those classified with gingivitis.

Table 4. DMFT values by age, gender, smoking habit, oral hygiene, and periodontal condition.

Variable	Mean*	Median	Sd	Minimum	Maximum	P-Value†
• Age (years)						
5 to 10 (n = 22)	4.73 (A)	4.00	4.32	0	16	< 0.001
11 to 19 (n = 17)	10.59 (AB)	11.00	6.94	0	26	
20 to 34 (n = 23)	12.00 (B)	12.00	4.30	0	19	
35 to 50 (n = 10)	16.30 (B)	17.50	3.59	11	21	
51 or more (n = 8)	12.25 (AB)	15.00	9.27	0	22	
• Gender						
Male (n = 50)	10.60	11.50	6.73	0	26	0.557
Female (n = 30)	9.70	9.00	6.42	0	20	
• Smoking habit						
Smoker (n = 10)	14.70	14.50	3.92	9	22	0.058
Non-smoker (n = 9)	11.00	12.00	7.25	0	21	
Never (n=61)	9.43	8.00	6.61	0	26	
• Oral hygiene (IOHS)						
Adequate (n = 12)	6.83	4.00	7.85	0	20	0.067
Regular (n = 43)	10.12	11.00	6.59	0	22	
Defficient (n = 25)	12.16	11.00	5.38	4	26	
• Periodontal condition (SPR)						
Healthy (n = 37)	8.73 (A)	8.00	6.67	0	22	0.014
Gengivitis (n = 34)	10.47 (A)	12.00	6.21	0	20	
Periodontitis (n = 9)	15.78 (B)	15.00	4.87	11	26	

* Mean followed by different letters are statistically different at the 0.05 level of significance.
† Statistical tests: for Age – ANOVA and Tamhane's T2 test for multiple comparisons; for Gender – Student's t-test; for Smoking habit and Oral hygiene – ANOVA; and for Periodontal condition – ANOVA and Tukey's test for multiple comparisons.

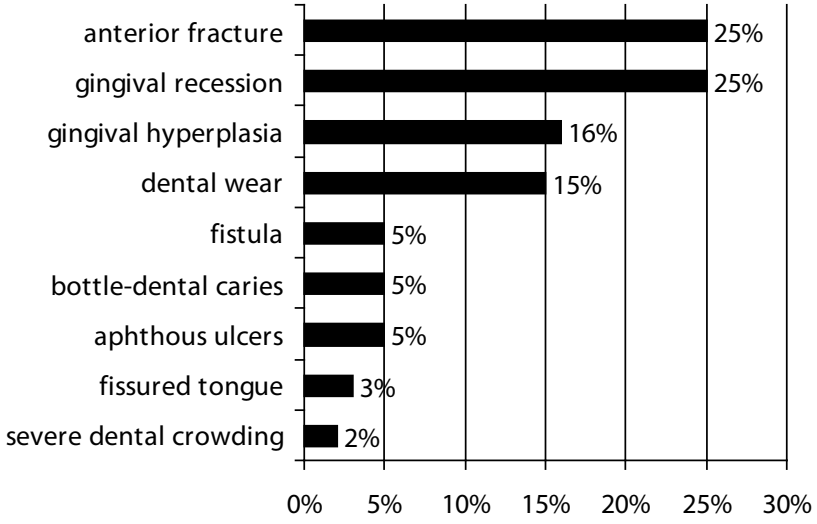

Figura 1. Relative frequency (%) of several oral manifestations in the sample.

Discussion

Motivating individuals with visual impairments to have good oral hygiene is a major challenge for dental surgeons, because the typical techniques used to show the dental biofilm may not be used. However, visually impaired children are able to learn good techniques of brushing when oriented properly (5).

It should be noted that only three subjects had DMFT scores of zero, indicating a lack of oral hygiene and the need for programs that specifically promote oral health. The assistance system in Brazil is not sufficient to meet the demand for primary dental care, and tooth extractions are common as they are considered the most practical and economical alternative to primary care. However, according to Braga et al. (6), individuals who lose their teeth are often

unable to restore the losses by means of prostheses, mainly because prostheses are prohibitively expensive.

The DMFT index exhibited an increase according to age and significant differences ($P < 0.05$) were observed between the age 5-10 group and the age 20-34 and 35-50 groups; DMFT was also higher in males and in smokers. These results indicate that children and adolescents are the main groups affected by dental caries because they are the groups with the greatest number of teeth. Tooth loss is a serious problem in the elderly and is likely associated with low or irrelevant DMFT, which is clearly justified by the high incidence of dental prosthesis use.

In a study of the control of dental biofilm in visually impaired individuals, Cericato and Fernandes (7) found that 68.75% of participants had lost at least one tooth. This study and data from the SB Brazil 2003 indicate that more than 28% of Brazilian adults have lost all teeth in one arch.

In this study, the high rates of DMFT in children and adolescents, and especially in young adults, are consistent with recent data from SB Brazil 2003 indicating that 70% of Brazilian children at 12 years of age and about 90% of adolescents aged 15 to 19 have at least one tooth with caries. These data corroborate the results of this research, which show an increase in the prevalence of dental caries according to age.

The data from the SB Brazil 2003 (8) show that children under 12 years of age and youths between 15 and 19 years of age have on average DMFT = 2.8 and 6.2, respectively. In adults, the average CPODs were 20.1 (35- to 44-year-olds), and 27.8 (65- to 74-year-olds). These data show that untreated cavities are the most common problem in children and adolescents, results that are consistent with the findings of this study.

Nogueira (9) conducted a study to evaluate the DMFT index of the population in El Salvador. That study reported similarly high values for men and women (8.20 and 8.45, respectively). The average reported for the group does not differ significantly from the average observed in this study.

In accordance with Vargas and Goulart (10), visually impaired patients do express concerns about the oral cavity, particularly its functional aspect. This suggests that even though they cannot see it, these individuals understand the functional importance of the teeth and mouth, citing the pain as the main factor in seeking care. The aesthetic aspect of oral hygiene is infrequently mentioned and seems to have less relevance to these individuals.

In this study, the DMFT was lower among patients with satisfactory or better IOHS and also among those who had extremely poor condition. DMFT was lowest among those with a healthy periodontal condition and highest among those with periodontitis. Thus, it is clear that there is a real need for educational practices to improve the prevention and maintenance of oral health in the study population. These observations are consistent with the results of Cericato and Fernandes (7), who visually examined 48 patients and found that only 35% of the sample held the toothbrush adequately, reaffirming the need to develop new methods of teaching that are effective in motivating and training individuals to achieve a high quality of oral hygiene.

The percentage of surveyed individuals with a healthy periodontium was lower among those who were 35 to 50 years old (20%) and higher in those over 51 years old (62.5%). The percentage of individuals with gingivitis was lowest in the 51 or older group (12.5%) and highest among those between 35 and 50 years old (70%). The percentage of those surveyed with periodontitis was zero in the 5- to 10 year-old group and highest in the 51 or older group (25%). The latter group also presents with a lower tooth loss, but their SOHI results can be explained by a real lack of attention to oral hygiene in these patients. This may be linked to visual impairment, since viewing the act of toothbrushing and flossing makes it easier to achieve adequate oral hygiene.

These data are consistent with those found in current literature. Lindhe et al. (13) and Tarzia (14) report that periodontal disease is more prevalent in adulthood and infrequent in childhood. These same authors showed that periodontal disease is often found in the very elderly, a fact that was also observed in the study population.

Nogueira et al. (9) agree that the control of dental biofilm should be the main technique for the prevention of caries and gingivitis, as dental biofilm is the primary agent in the development of caries and periodontal diseases. In addition, Faustino-Silva (11) argues that the control of dental biofilm is crucial for the prevention of caries and gingivitis in children, and that prioritizing education geared to early childhood will help avoid early tooth loss and encourage the promotion of oral health from the first years of life. Accordingly, Mendonça (12) states that the absence of visual stimuli prevents rapid learning, representing a challenge for surgeons and dentists in motivating these individuals to have appropriate oral hygiene. However, it is also argued that blind children are able to learn satisfactory brushing techniques when well trained, thus maintaining healthy oral conditions.

Grace (15) studied individuals without periodontal probing and in need of dentures, obtaining results similar to those found in this study, i.e. 83.85% of SPR patients with codes 1 and/or 2, indicative of gingivitis in need of some type of periodontal intervention. Of the patients examined, 32% had an index suggestive of gingivitis and 51% were suggestive of periodontitis, indicating that half the population investigated needed more specialized periodontal treatment. The data also revealed a deficiency in the general direction, prevention and appropriate treatment of the study population, especially in the early stages of periodontal disease. The results are consistent with those presented here, however the need for guidance in oral hygiene for all individuals is clear: blind individuals are hampered by their lack of vision, yet the periodontal problems they encounter do not differ from those observed in subjects with normal vision.

Smoking is able to interfere in the formation of dental biofilm, contributing to a greater accumulation of and/or allowing the establishment of periodontopathogenic microorganisms that

undermine the system of local defense. In this study, most individuals had never smoked (76.2%), particularly females, suggesting that this risk factor for periodontal disease is not especially important in this group.

Nascimento et al. (16) conducted an epidemiological study of smoking among adolescents showing that 6.7% of the population regularly used tobacco at the age of 12 years, and 16.7% had used it at 16 years. It was found that 20% of 12-year-olds, 51.7% of 16-year-olds and 40% of 20-year-olds had smoked a cigarette at least once. Leite and Filho (17) observed that 16.7% of congenitally blind individuals either smoke or have smoked, while 56.3% of individuals with acquired blindness were smokers. Interestingly, these observations suggest that the habit of smoking is an act of visual imitation.

The oral manifestations found in this study were: gingival hyperplasia caused by poorly adapted prostheses in individuals with advanced ages, severe dental crowding, aphthous ulcers, fissured tongue, cavities, sinuses and dental wear and tightening. These manifestations were similar to those found by Abreu (18), who also identified cases of macroglossia and sialorrhea. These studies showed no significant relationship between visual impairment and the occurrence of oral manifestations, since these can also be observed in individuals without such disabilities. A late diagnosis of oral manifestations may be more prevalent in visually impaired patients.

Fractures in anterior teeth were observed in 25% of visually impaired individuals in this study, mostly due to accidents or falls (often caused by the visual impairment). These patients also showed little interest in restoring the tooth anatomy. Dental surgeons are seen only as people who can solve toothaches, since for these individuals the absence of painful symptoms is synonymous with oral health. These observations corroborate the sentiments of Goulart (10), who indicated that visually impaired patients associate the oral cavity only with its functional aspect, and very rarely with its aesthetic appearance. This suggests that even if the mouth cannot be seen, the individual places importance only upon functional teeth and mouth, and reports pain as the main factor in seeking oral care.

The data presented in this study emphasize the need for an educational process that will promote changes in behavior to achieve adequate oral health. Cericato and Fernandes (7) note that more accessible language must be adopted for oral health education programs for the targeted group, since much of the population has little schooling. Other work has demonstrated methods for adapting educational materials, such as the use of Braille and tactile materials, to better deliver the message (5,10,19).

Consistent with this view, Pretty and Pretto (20) state that health education should be thought of as a process that increases awareness of the root causes of medical problems and also creates a readiness to change, even in those with disabilities.

The efficiency of education and motivation for oral hygiene in these patients was confirmed in studies by Aguiar et al. (21), who reported a marked reduction in rates of dental biofilm, mainly due to the assimilation of techniques appropriate achieving oral hygiene and therefore the acquisition of healthy habits and routines.

Conclusions

Based on these results, we can infer that the examined population of visually impaired individuals exhibits sub-optimal oral conditions:

- The DMFT index showed a cumulative increase with age and older individuals showed more pronounced tooth loss;
- The oral hygiene in most patients was classified as poor according to the SOHI index, demonstrating the lack of interest hygiene in this group. This is likely due to a reduced ability to carry out hygiene tasks and/or a lack of the information required to implement proper oral hygiene habits.
- The most frequently observed periodontal conditions were gingivitis and periodontitis, especially in young adults. However, considering that there is lower tooth loss in this group, this framework can be justified by an actual lack of care and oral hygiene, possibly associated with their disability since, normally viewing the act of oral hygiene yields better results.
- Oral manifestations do not appear to differ significantly from those found in individuals without visual disabilities. One exception is the high rate of fractures in anterior teeth, which is easily attributed to the disability. It is suggested that the diagnosis and, consequently, the treatment of oral manifestations may be delayed in this group because aesthetic deficiencies do not prompt these individuals to seek treatment, while this is a motivating factor in other groups.

References

1. Doenças do olho e anexos (H00-H59). In: Organização Mundial da Saúde. CID 10: classificação estatística internacional de doenças e problemas relacionados à saúde. 10. ed. São Paulo: EDUSP, 2004.
2. Batista R. Necessidades Educativas Especiais. Lisboa: Dinalivro; 1997.
3. Munster MA, Almeida JJ. Atividade física e deficiência visual. In: Gorgatti MG, Costa RF, organizadores. Atividade física adaptada: qualidade de vida para pessoas com necessidades especiais. São Paulo: Manole; 2005. p.590.
4. Coelho B, Pereira C, Fuziama C, Duarte F, Guedes F, Martins N, et al. Detalhes arquitetônicos para o atendimento ontológico

a deficientes físicos: medidas simples que conquistam espaço no mercado de trabalho. Robrac: Rev Odontol Bras Central 2005;14:47-51.

5. Rath IB, Bosco VL, Almeida IC, Moreira EA. Atendimento odontológico para crianças portadoras de deficiência visual. Arq Cent Estud Curso Odontol Univ Fed Minas Gerais 2001;37:183-8.
6. Braga SR, Telarolli JR R, Braga AS, Catirse AB. Avaliação das condições e satisfação com as próteses em idosos na região Central do Estado de São Paulo (Brasil). Rev Odontol UNESP 2002;31:39-48.
7. Cericato GO, Fernandes AP. Implicações da deficiência visual na capacidade de controle de placa bacteriana e na perda dental. RFO UPF 2008;13:17-21.
8. Brasil. Ministério da Saúde. Projeto SB 2003: condições de saúde bucal da população brasileira 2002-2003. Brasília: Departamento de Atenção Básica, Secretaria de Atenção à Saúde; 2004. [capturado 2007 Maio 28]. Disponível em: http://www.saude.gov.br
9. Nogueira Filho GR, Toledo S, Cury JA. Avaliação do efeito de um dentifrício contendo triclosan-gantrez-zinco-pirofosfato na gengivite experimental em humanos. Peridontia 1997;6: 20-4.
10. Goulart AC, Vargas AM. A percepção dos deficientes visuais quanto à saúde bucal. Arq Cent Estud Curso Odontol Univ Fed Minas Gerais 1998;34:107-19.
11. Wolf SM. O significado psicológico da perda dos dentes em sujeitos adultos. Rev Assoc Paul Cir Dent 1998;52:307-15.
12. Faustino-Silva DD, Ritter F, Nascimento IM, Fontanive PV, Persici S, Rossoni E. Cuidados em saúde bucal na primeira infância: percepções e conhecimentos de pais ou responsáveis de crianças em um centro de saúde de Porto Alegre, RS. Rev Odonto Cienc 2008;23:375-9.
13. Mendonça A, Miguel C, Neves G, Micaelo M, Reino V. Alunos cegos e com baixa visão: orientações curriculares. Brasília: Ministério da Educação; 2008. [capturado 2009 Fev 18]. Disponível em: http://sitio.dgidc.min-edu.pt/recursos/Lists/Repositrio%20Recursos2/Attachments/769/Alunos_cegos.pdf
14. Lindhe J, Karring T, Lang NP, ed. Tratado de periodontia clínica e implantologia oral. 4. ed. Rio de Janeiro: Guanabara Koogan; 2005.
15. Tárzia O. Halitose por saburra lingual. In. Paiva JS, Almeida RV, coordenadores. Periodontia: a atualização clínica baseada em evidências científicas. São Paulo: Artes Médicas; 2005. p. 543-61.
16. Santos Jr GC, Barnabé W, Rubo JH, Greghi SLA. Avaliação periodontal simplificada (SPR) em pacientes indicados para tratamento protético. Rev Fac Odontol Bauru 2002;10:113-7.
17. Nascimento D, Soares EA, Feitosa S, Colares V. O hábito do tabagismo entre adolescentes na cidade de Recife e os fatores associados. Rev Odonto Cienc 2005;20:348-53.
18. Leite Filho LA. Tabagismo e deficiência visual. Rev Bras Oftalmol 2001;60:165-9.
19. Abreu MH, Castilho LS, Resende VL. Assistência odontológica a indivíduos portadores de deficiências: o caso da Associação Mineira de Reabilitação e Escola Estadual "João Moreira Salles". Arqu Odontol 2001;37:153-62.
20. Silvério F, Santos JF, Cunha VPP, Naressi WG. Ilumine um sorriso: materiais lúdico-pedagógicos para portadores de deficiência visual. Rev EAP/APCD 2001;3:25-8.
21. Prety PC, Pretto SM. Educação e motivação em saúde bucal. In: Associação Brasileira de Odontologia Preventiva. Promoção de saúde bucal. São Paulo: Artes Médicas; 1999. p. 365-70.
22. Aguiar SM, Barbieri CM, Louzada LP, Saitto TE. Eficiência de um programa para a educação e a motivação da higiene buco-dental direcionado a exepcionais com deficiência mental e disfunção motoras. Rev Fac Odontol Lins 2000;12:16-23.