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Evaluation of periodontal index of gingival and plaque with dental crowding in development of gingivits in children and adolescents

Avaliação do índice gengival e de placa com apinhamento dentário no desenvolvimento de gengivites em crianças e adolescentes

Maria Dalva de Souza SCHROEDER*
Gerson Luis Ulema RIBEIRO**

Correspondence:
Maria Dalva de Souza Schroeder
Odontology Department – Campus Universitário – Bom Retiro
CEP 89201-972 – Joinville – SC
E-mail: mdalvas@bol.com.br

*Professor at UNIVILLE – Universidade da Região de Joinville (Brazil). M.Sc. of Health and Environment.
**Adjunct Professor at UFSC – Universidade Federal de Santa Catarina (Brazil). M.Sc. and Doctor of Orthodontics.

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gingivitis; dental crowding; dental plaque.

Abstract

The aim of this study was to evaluate the correlation between dental crowding and the periodontal index of gingival and plaque in development of gingivits in children and adolescents in the age group of 7 to 15 years old, as a mean to prevent the periodontal disease that according to literature, begins precociously during childhood and develops during adult age. After verification of the conditions through utilization of those indexes, it was possible to conclude that gingivitis was present in practically 100% of the examined individuals. There is a positive correlation between the presence of dental plaque and gum inflammation stages, it was not possible to establish a definite correlation between dental crowding and gingivitis.

Palavras-chave:
gengivite; apinhamento dentário; placa dentária.

Resumo

O objetivo deste estudo foi avaliar a correlação existente entre o apinhamento dentário com o índice gengival e o índice de placa no desenvolvimento de gengivites em crianças e adolescentes na faixa etária de 7 a 15 anos como uma forma de prevenir a doença periodontal, que de acordo com a literatura começa precocemente durante a infância e se desenvolve durante a idade adulta. Após a verificação dessa condição por intermédio da utilização de índices, foi possível concluir que a gengivite estava presente em praticamente 100% dos indivíduos examinados. Há uma correlação positiva entre a presença de placa bacteriana e os estágios inflamatórios da gengivite e não foi estabelecida uma correlação definitiva entre o apinhamento dentário e gengivites.

Introduction

Although adult population is the most affected by periodontal disease, it's known that either infantile or adolescent population are very liable to the development of the disease [21, 25]. The amount of oral hygiene on prevention of gingivitis and plaque control are the main claims to prevent periodontal diseases [16]. Needs to gingival treatment on childhood has been noted by Ainamo & Ainamo [3, 24]. Although dental caries and periodontal disease wouldn't put in risk the patient's life, they are problems of importance in public health, not only because of high prevalence but for the influence among the individuals, related with pain, discomfort, social and function limitations, affecting the hole life of these people [7]. Several studies have showed that occlusion disorders, dental crowdings are answerable for many periodontal problems, and dental crowding is considerated as a main problem on prevention of periodontal disease [12, 13, 14, 27].

Material and methods

For this study a random sample with one hundred and third-three individuals of both sexes, in the group ages of seven to fifteen years old was examined. The individuals were all students from "Colégio de Aplicação da Univille", with similar social and economical situations and hadn't received orthodontic treatments. They were clinically examined by the same professional, using periodontal index of plaque (IP), gingival bleeding (GB), using a calibrated periodontal probe (PCP, Hu-friedy). The records of dental crowding were obtained by using the subjective criterion of scores, considerating 0 to absence of dental crowding and 1 to presence of dental crowding.

The obtained data in this study were submitted to statistical analysis, using the computer program SPSS for Windows (Statistical Package for the Social Sciences), 10.0 version.

Results

Table 1 shows the percentage of distribution on variable dental crowding. There is observed that 42,1% of the examined individuals did not have dental crowding and 57,9% had dental crowding.

Table 1 – Distribution of frequency on variable dental crowding

	Frequency	Percentage	Valid percentage	Cumulative percentage
Valid 0 = absence of dental crowding	56	42,1	42,1	42,1
1= presence of dental crowding	77	57,9	57,9	100,0

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Table 2 displays that eight individuals from a 133 showed light presence of plaque, 111 showed moderate presence of plaque and 14 severe presence of plaque.

Table 2 – Observed cases of plaque index, gather according to four levels of severity

	Absence of Plaque (0,00)	Light Presence of Plaque (0,01-1,00)	Moderate Presence of Plaque (1,01-2,00)	Severe Presence of Plaq (2,01-3,00)
N Valid	0	8	111	14
Absent	133	125	22	119

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On table 3 is verified that from the total of cases observed, all cases showed some plaque: 6,0% showing light presence, 83,5% showing moderate presence and 10,5% severe presence of plaque.

Table 3 – Distribuction of frequency of plaque index, according to levels of severity established

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Light Presence of Plaque	8	6,0	6,0	6,0
Moderate Presence of Plaque	111	83,5	83,5	89,5
Severe Plaque	14	10,5	10,5	100,0
Total	133	100,0	100,0	

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According to table 4, no cases of absence of inflammation or severe inflammation were observed. 66 individuals showed light inflammation and 67 showed moderate inflammation.

Table 4 – Observed cases in relation to development of gingivitis, gather according to four levels of severity established

	Absence of Inflammation (0,00)	Light inflammation (0,01-1,00)	Moderate Inflammation (1,01-2,00)	Severe Inflammation (2,01-3,00)
N Valid	zero	66	67	zero
Absent	133	66	67	133

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On table 5 is observed that 49,6% showed light inflammation and 50,4% moderate inflammation according to gingival bleeding index.

Table 5 – Distribution of frequency of development of gingivitis, according to levels of severity established

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Light inflammation (0,01-1,00)	66	49,6	49,6	49,6
Moderated inflamation	67	50,4	50,4	100,0
Total	133	100,0	100,0	

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Discussion

The results of the study suggest that bacterial plaque was the primary etiologic agent of gingival disease which has involvement of oral hygiene. On this condition, the most efficient step to prevent gingivitis or relapse of periodontal disease after treatment, is the control of plaque organization by means of oral hygiene [7, 19, 23]. According to LÖE [16], periodontal disease is not so severe in patients that care with plaque control, although a strong correlation with deficient oral hygiene prevails, allowing microbial proliferation and periodontal disease. Addy [2] showed the existence of several factors that affect the distribution of bacterial plaque and gingivitis, and the latter can be affected by the number, surface, and dental alignment. Unbalanced secretion of hormones in adolescents can be a factor that promotes gingivitis on puberty [18, 25].

The results achieved on this search in relation to gum inflammation (50,4% showing moderated inflammation and 49,6% light inflammation) were similar to results achieved by other authors in their studies, because they detected the presence of gum inflammation and abundant plaque in children and adolescents around 99,37% [9, 17, 26].

Daruge [4, 10] showed in their studies similar results about gum inflammation, also achieved predominance of moderate inflammation against light inflammation, examinating school children and adolescent.

Several researchers had as the object of their studies malocclusion and its relation with periodontal disease. Nowadays the correlation of periodontal disease with oral hygiene and bacterial plaque has been the purpose of many studies Bakdash [5]. The close relation between periodontic and orthodontics, when relating to occlusion abnormalities and periodontal disease, is very strong, and that is proved by the fact that this two specialities work together [14, 22]. The amount of an equilibrated occlusion and harmony of periodontal tissues was pointed by Neustadt [6, 11, 15, 20].

This study proved a direct relation between bacterial plaque and gum inflammation, and only one of the factors, oral hygiene, has influence in the results, and the dental crowding did not contributed to the development of gingivitis when the individual had good oral hygiene. Ramfjord *et al.* [22] related that the irregularity of the teeth do not have relation with periodontal disease. For these authors, irregular teeth do not have a great meaning when an individual has a good oral hygiene, because there is not a straight relation between malocclusion and periodontal disease severity. Beagrie *et al.* [6] related that the relation between dental crowding and periodontal health has great amount clinically, but there is not a meaning relation between periodontal disease and dental irregularities [6].

Clerehugh [8] found out that periodontal disease is one of the most prevalent diseases and it can start its development during childhood, progress on puberty and adult ages, and several systemic and local factors can be involved.

This study suggests that, because of the influence of the oral hygiene on organization of bacterial plaque, the clinicians should have a fit control of their patients, since childhood until adult age, not depending on the level of risk to periodontal diseases, once the advice from A.D.A. [1] to determine a break to return according to the patient's risk.

Conclusions

Considerating the limitations of the methodology, the conclusions are:

a) There is a straight relation between bacterial plaque and gum inflammation conditions.
b) Dental crowding on the individuals examined was not a determinating factor of gingivitis.
c) Periodontal indexes of plaque and gingival bleeding showed a linear correlation from moderate to high with gingivitis.

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