

Perceptions of educators and students about using fluoridated mouthwashes

Percepção de educadores e alunos sobre a realização de bochechos fluorados

Abstract

Purpose: The objective of this study was to assess the perceptions and opinions of public school teachers and students in the city of Araçatuba, SP, Brazil, on the importance of using fluoridated mouthwashes, the difficulties of the method and the procedure in general.

Methods: Students from grades 5 through 8 in schools with and without dental services were asked about their opinion on the use of fluoridated mouthwashes. The educators answered questions about the importance of preventive methods in oral health and the difficulties in performing those methods at school. Data were collected using a faces scale, a categorization method, and a Likert scale with five levels of responses to check the level of agreement with the questions.

Results: The sample consisted of 264 (40.3%) teachers and 5,788 (73.6%) students. A total of 254 (96.2%) and 72 (27.3%) teachers responded favorably to the first and second questions, respectively. A total of 1,128 (19.5%) students had negative feelings about the fluoridated mouthwash.

Conclusion: The majority of the teachers supported the use of fluoridated mouthwashes; however, a large number of teachers believed that the practice disrupts the class routine. Most of the students had a positive opinion about the use of fluoridated mouthwash, although they highlighted some negative aspects, which were overcome by the benefits that the method provides.

Key words: Dental caries; primary prevention; sodium fluoride

Resumo

Objetivo: O objetivo deste trabalho foi avaliar a percepção de educadores e alunos das escolas públicas de Araçatuba, SP, Brasil, sobre a importância da prática, dificuldades e sentimentos em relação aos bochechos fluorados.

Metodologia: Selecionaram-se as escolas sem e com atenção de saúde bucal por cirurgião-dentista. Os alunos de 5^o a 8^o séries responderam perguntas sobre o sentimento em relação ao bochecho. Utilizou-se a escala de faces de Andrews, que é uma escala intervalar de sete pontos composta por faces estilizadas e a metodologia da temática simples para análise das questões. Os educadores responderam a perguntas sobre a importância do método preventivo e dificuldades na sua realização. Utilizou-se a Escala de Likert com o formato típico de cinco níveis de respostas para verificar o nível de concordância com as perguntas.

Resultados: A amostra consistiu de 264 (40,3%) educadores e 5.788 (73,6%) alunos, que responderam o questionário. Do total, 254 (96,2%) dos educadores responderam favoravelmente à primeira questão e 72 (27,3%), à segunda questão. Um total de 1.128 (19,5%) alunos mostrou sentimento negativo em relação ao bochecho.

Conclusão: A maioria dos educadores foi favorável à realização dos bochechos, entretanto grande parte acredita atrapalhar o bom andamento da escola. A maior parte dos alunos apresentou um sentimento positivo em relação ao bochecho, inclusive relevando aspectos considerados ruins pela percepção do benefício que o método proporciona.

Palavras-chave: Cárie dentária; prevenção primária; fluoreto de sódio

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Introduction

Recently, a decline in the incidence of dental caries has been seen in almost all developed countries and in some poor and developing countries. This decline has been accompanied by the “polarization” phenomenon, which is the concentration of a large number of decayed, missing and restored teeth in small groups of people and an increasing percentage of caries-free children (1-3). In Brazil, the national data show a similar pattern of caries decline, as does much of the data collected separately in several states and cities (2,4-9). The actual causes of this national decline are not clear, but they can be attributed to the addition of fluoride to toothpastes, the fluoridation of the public water supply, the decentralization of the Brazilian public health system and the reorganization of public dental practice with greater emphasis on health promotion activities (5,7). However, despite the existence of effective prevention and control methods, dental caries still represent the main oral health problem in Brazil (10).

To control diseases in oral health through preventive and educational activities, the State Health Secretariat of São Paulo passed resolution SS-159, May 23, 2007, which established the Collective Actions and Activities in Dental Health in the services of the Unified Health System (SUS/SP). Among the actions and activities suggested, it was recommended that fluoridated mouthwashes be used frequently, totaling at least 25 applications per year (11,12). Interrupting the program causes the preventive effects to disappear gradually (10,13).

The mouthwash formulations for wider use are neutral solutions containing 225 ppm F (0.05% NaF) for daily use and 900 ppm F (NaF 0.2%) for weekly use. To maintain safety and to reduce the risk of fluorosis (chronic poisoning), 0.2% solutions are typically used. This method is recommended for children 6 years of age and older because there is a low risk of accidental ingestion in this age group (12).

In the municipality of Araçatuba, the use of mouthwash began in 1993 in conjunction with other preventive and educational activities, and the use of mouthwash is the only activity that has persisted until the present without interruption. SUS/SP recommends that the level of exposure to fluoride products should be set according to the criteria of caries risk. According to these criteria, the use of fluoridated mouthwashes is recommended for all classes of risk where there is no access to fluoridated water. The use of fluoridated mouthwashes is recommended even with access

to fluoridated water when the CPOD index value is greater than 3, when individuals are 12 years old, or if the proportion of individuals that are 12 years old with zero CPOD index is less than 30% (11,12).

The objective of this study was to verify the perceptions of managers, coordinators, teachers and students of municipal schools of the city of Araçatuba, SP, Brazil, on the use of fluoridated mouthwashes.

Methodology

The research design was a cross-sectional, descriptive study with a quantitative approach. Initially, we contacted the authority responsible for the local schools to inform them about the purpose of the study and about the subsequent use of the data collected, with the intention of gaining support for the research. Later, we assessed the clarity of the questions and the understanding of the data collection tools through a pilot project in schools that did not participate in the actual study.

The research subjects consisted of all principals, coordinators, teachers and 5th to 8th grade students of public schools with and without dental services in the municipality of Araçatuba-SP. These schools were chosen intentionally because they had more resistance on the part of respondents to the use of fluoridated mouthwashes.

Students answered the following questions: “Which of the expressions best represents what you think of mouthwash?” and “According to the given expression, write your feeling about the mouthwash.” For the first question, we used Andrews’s Faces Scale (14), which is a seven-point interval scale consisting of stylized faces. Each picture consists of a circle with eyes that do not change and a mouth that ranges from a smiling half-circle to a similar half-circle facedown that represents the feeling of sadness (Fig. 1).

The three positive states were considered to represent a positive feeling about mouthwash, and the three states that were more negative were considered to represent negative feelings. The face whose mouth was formed by a horizontal line represented indifference. The second question was open and was categorized following the methodology of the simple theme proposed by Bardin (15). Categorization is an operation of classification of grouped elements according to common characteristics of these elements, and the classification criteria can be semantic, syntactic, lexical or expressive.

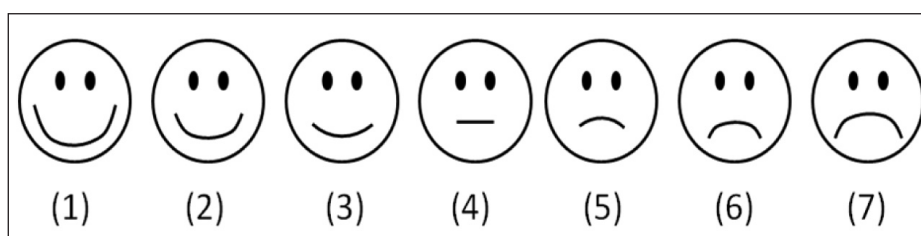


Fig. 1. Faces Scale of Andrews. Source: Diagram adapted from Lorish and Maisiak, 1986.

As for educators, they answered two questions: “What do you think of using fluoride mouthwash in school?” and “Does the use of mouthwash hinder the smooth running of the school?”. We used the Likert scale with the typical format of five levels of responses (5. I fully agree, 4. I agree, 3. Indifferent, 2. I disagree and 1. I strongly disagree) to check the level of agreement or disagreement. The responses were summed to create a result for each group of items (favorable responses - levels 4 and 5; unfavorable responses – levels 1 and 2). Indifferent responses (level 3) were not considered (16).

The data were presented as absolute frequencies and percentages for the descriptive statistics. Data were analyzed using Epi Info 2000 software, version 3.2, with the Fisher Exact test and chi-square test with Yates correction.

Results

The total study population was composed of 21 schools with 655 educators (principals, coordinators and teachers) and 7,864 students. The sample consisted of 264 (40.3%) educators and 5,788 (73.6%) students who answered the questions.

In this study, we found that, in schools without dental surgeon, 1,884 (64.9%) students showed a positive feeling, and 553 (19.1%) showed a negative feeling about the use of mouthwash (first question). However, 1,425 (49.1%) reported bad characteristics of the mouthwash (second question), and of these students, 1,216 (85.3%) claimed to think that it tastes bad, 179 (12.6%) claimed to suffer from nausea, and 30 (2.1%) claimed that the solution smelled bad,

that the use of mouthwash hindered classes or that they did not use the mouthwash because of the possibility of contact of the oiler tube with the mouths of other students. In schools with a dentist, 1,712 (59.3%) students showed a positive feeling and 575 (19.9%) showed a negative feeling about the use of mouthwash. However, 1,336 (46.3%) reported bad characteristics of the mouthwash (second question), and of these students, 1,149 (86.0%) claimed to find the taste bad, 135 (10.1%) claimed to have nausea, and 52 (3.9%) claimed that the mouthwash gave him or her a headache, hindered the class, or smelled bad (Table 1).

In schools with no dentist, 139 (95.9%) educators from schools responded favorably and 4 (2.7%) unfavorably to the first question, averaging 4.6643 (SD=0.6914). Forty (27.6%) responded favorably and 88 (60.7%) unfavorably to the second question, averaging 2.4687 (SD=1.5107). In schools with a dentist, 115 (96.6%) educators responded favorably and 2 (1.7%) unfavorably to the first question, averaging 4.7068 (SD=0.5110). Thirty-two (26.9%) responded favorably and 75 (63.0%) unfavorably to the second question, averaging 2.3611 (SD=1.4039) (Table 2). According to the Chi-square with Yates correction =3.76 and $P=0.052$, there was no statistically significant relationship, between the perception of the use of mouthwash according to the faces chosen by the students and the absence or presence of a dentist in school (Table 3). No statistically significant relationship among the responses indicated by educators for the first and second questions and the absence or presence of the dentist in the school was found using the Fisher Exact Test ($P=0.693$) and the Chi-square test with Yates correction ($P=0.935$) (Table 4).

Table 1. Numbers and percentages of students in schools with and without a dentist according to the face indicated.

Faces	Schools without a dentist		Schools with a dentist	
	Number	Percentage	Number	Percentage
1	1,170	40.3	986	34.1
2	342	11.8	331	11.5
3	372	12.8	395	13.7
4	463	16.0	601	20.8
5	103	3.6	129	4.5
6	46	1.6	66	2.3
7	404	13.9	380	13.1
Total	2,900	100	2,888	100

Table 2. Number and percentage of educators in schools with and without a dentist as the response indicated.

Answers	1st question				2nd question			
	Schools without a dentist		Schools with a dentist		Schools without a dentist		Schools with a dentist	
	Number	%	Number	%	Number	%	Number	%
5. Strongly Agree	105	72.4	84	70.6	23	15.9	12	10.1
4. Agree	34	23.4	31	26.0	17	11.7	20	16.8
3. Indifferent	2	1.4	2	1.7	17	11.7	12	10.1
2. Disagree	2	1.4	2	1.7	45	31.0	38	31.9
1. Strongly Disagree	2	1.4	0	0	43	29.7	37	31.1
Total	145	100	119	100	145	100	119	100

Table 3. Relationship between the perception of mouth-washing according to the face chosen by the students and the absence or presence of the dentist in school.

Faces	School without a dentist	School with a dentist	Total
Positive feeling	1,884	1,712	3,596
Negative feeling	553	575	1,128

Chi-square (Yates): $P=0.052$.

Table 4. Relationship between the responses indicated by educators in the first and second question and the absence or presence of the dentist in school.

Reply	* 1st question		** 2nd question	
	Favorable	Unfavorable	Favorable	Unfavorable
School without a dentist	139	4	40	88
School with a dentist	115	2	32	75
Total	254	6	72	163

* Fisher's exact test: $P=0.693$; ** Chi-square (Yates): $P=0.935$.

Discussion

School is an important venue for the development of programs in health and oral hygiene because it brings together children in age groups prone to assimilation and the adoption of educational and preventive measures (17). Healthcare habits should begin to form during childhood so that educational activities implemented later can be based on the strengthening of already established routines (18). To incorporate or change of health habits, it is necessary to reinforce the ideas and repeat the required behaviors continuously in school environments whenever possible (17,19). In this study, it was found that children assimilated the idea of the importance of using the mouthwash to make the teeth "stronger," although the students also emphasized the negative aspects, such as "the bad taste of the solution".

Educators, based on their knowledge of methodological techniques and their psychological relationship with the students, act as multipliers of information and opinion formers (17,19). Moreover, these professionals interact daily with the children; after the immediate family, they have the greatest amount contact with children, and they can thus establish links with not only students but also with their relatives (20). In this study, we observed that educators favor using preventive methods, a fact that may also have helped in the assimilation by the students of the importance of using the mouthwash, because of the influence of these educators on the children.

One of the advantages of the use of fluoride mouthwash is the minimal interference with the school routine, requiring little time for implementation (13). However, we found that most educators believe that the use of mouthwash hinders the smooth running of school activities. The presence of a dentist in the school had no influence either on the students' opinions about the mouthwash or the perceptions of educators of the importance of preventive practices and the difficulties in implementing the method.

In Brazil, the use of 0.2% fluoride mouthwash is the most common method at the population level for the prevention of dental caries after the fluoridation of the public water supply (21). Factors related to the use of mouthwash at school have been pointed out as reasons for not obtaining

its optimal effectiveness, including frequent interruptions in the school calendar that prevent students from using the mouthwash at the recommended frequency; difficulties in developing proper technique; difficulties ensuring continuity at home of promotional health actions; and the development of municipal health services according to a predominantly surgical-restorer care model, which gives little value to collective action related to oral health and preventive action taken by the individual (22).

Indeed, with the declining prevalence and severity of caries, we found, as before, large reductions in rates of caries using this method (22), which question the cost-effectiveness of mouth-washing programs (21). However, this fact is not exclusive to this preventive method. Today, we have the increasing cost-effectiveness of the fluoridation of the public water supply, where current data point to differences on the order of only 17% in the prevalence of caries compared to non-fluoridated areas. Various international institutions have recommended that public water supplies be fluoridated in countries that still have high caries rates and low access to services, such as Brazil (10). Studies in Brazil, which often characterize socioeconomic status by type of school system attended by students, show obvious disadvantages for public school pupils with respect to indicators of access to dental services and exposure to preventive methods (23).

In a comparison between the cost of a program with three mouthwash uses per month and another for health education and promotion of self-care, with the distribution of a tube of fluoride toothpaste and a toothbrush for each child in the same period, Iwakura and Morita (21) came to the conclusion that the latter is more economically viable. However, it must be remembered that the mere distribution of kits for the prevention of oral health and activities of supervised toothbrushing might not promote the desired effect because the assimilation of new habits requires continuous reinforcement (17,19).

Efforts should be made so that fluoridated mouthwash can be incorporated into the curriculum content for the brushing period, mainly due to the long time that children stay in school. In addition, the use of fluoridated mouthwashes in the city should be developed according to the criteria of caries risk, enabling better cost-effectiveness.

Conclusions

Although the population studied might not represent the feelings of all educators and students, the study suggests the following:

Most of the educators support the use of mouthwashes; however, a large number of them believe that the use

of mouthwash disrupts the smooth running of the school.

Most of the students had positive feelings about the mouthwash, although they highlighted negative aspects of the use of the mouthwash, which were overcome by the benefits that the method provides.

References

1. Sales-Peres SHC, Bastos JRM. Perfil epidemiológico de cárie dentária em crianças de 12 anos de idade, residentes em cidades fluoretadas e não fluoretadas, na Região Centro-Oeste do Estado de São Paulo, Brasil. *Cad Saúde Pública* 2002;18:1281-8.
2. Narvai PC, Castellanos RA, Frazão P. Prevalência de cárie em dentes permanentes de escolares do município de São Paulo, SP, 1970-1996. *Rev Saúde Pública* 2000;34:196-200.
3. Narvai PC, Forni TIB, Junqueira SR, Cury JA, Castellanos RA, Soares MC. Uso de produtos fluorados conforme o risco de cárie dentária: uma revisão crítica. [Accessed on 2005 Jan 19]. Available at http://www.apcd.org.br/Biblioteca/Revista/2002/mar_abr/101.asp
4. Bastos RS, Bijella VT, Bastos JRM, Buzalaf MAR. Declínio de cárie dentária e incremento no percentual de escolares, de 12 anos de idade, livres da doença, em Bauru, São Paulo, entre 1976 e 1995. *Rev Fac Odontol Bauru* 2002;10:75-80.
5. Roncalli AG. Perfil epidemiológico de saúde bucal no Brasil 1986-1996. [Accessed on 2005 Jan 20]. Available at http://www.unb.br/fs/sbc/documentos/epidemiologia/epi_bra.pdf
6. Freysleben GR, Peres MAA, Marcenes W. Prevalência de cárie e CPO-D médio em escolares de doze a treze anos de idade nos anos de 1971 e 1997, região Sul, Brasil. *Rev Saúde Pública* 2000;34:304-8.
7. Narvai PC, Frazão P, Castellanos RA. Declínio na experiência de cárie em dentes permanentes de escolares brasileiros no final do século XX. *Odontologia e Sociedade* 1999;1:25-9.
8. Bastos JLD, Nomura LH, Peres MA. Tendência de cárie dentária em escolares de 12 e 13 anos de idade de uma mesma escola no período de 1971 a 2002, em Florianópolis, Santa Catarina, Brasil. *Cad Saúde Pública* 2004;20:117-22.
9. Martins RJ, Garbin CAS, Garbin AJI, Moimaz SAS, Saliba O. Declínio da cárie em um município da região noroeste do Estado de São Paulo, Brasil, no período de 1998 a 2004. *Cad Saúde Pública* 2006;22:1035-41.
10. Universidade Federal do Rio Grande do Norte. Departamento de Odontologia. *Odontologia preventiva e social: textos selecionados*. Natal: EDUFRN; 1997.
11. Diário Oficial do Estado de São Paulo. Resolução SS-159 de 23-5-2007. Estabelece rotinas de monitoramento das Ações Coletivas e das Atividades Coletivas em Saúde Bucal nos serviços integrantes do SUS/SP. [Accessed on 2009 Sept 10]. Available at http://www.saude.sp.gov.br/resources/gestor/destaques/saude_bucal/resolucao_159_doe_24_05_2007_saude_bucal.pdf
12. Secretaria de Estado de Saúde de São Paulo. Recomendações sobre uso de produtos fluoretados no âmbito do SUS/SP em função do risco de cárie dentária. [Accessed on 2009 Sept 10]. Available at http://www.saude.sp.gov.br/resources/profissional/destaques/saude_bucal/recomendacoes_sobre_uso_produtos_fluorados_sus-sp/recomendacoes_uso_do_fluor.pdf
13. Pinto VG. *Saúde bucal coletiva*. 5.ed. São Paulo: Ed. Santos; 2008.
14. Lorish CD, Maisiak R. The face scale: a brief, nonverbal method for assessing patient mood. *Arthritis & Rheumatism* 1986;29:906-9.
15. Bardin L. *Análise de conteúdo*. Lisboa: Edições 70; 2004.
16. Oliveira TMV. Escalas de mensuração de atitudes: Thurstone, Osgood, Stapel, Likert, Guttman, Alpert. *Administração online* [online] 2001;2(2). Disponível em http://www.fecap.br/adm_online/art22/tania.htm
17. Vasconcelos R, Matta ML, Pordeus IA, Paiva SM. Escola: um espaço importante de informação em saúde para população infantil. *PGR – Pós-Grad Rev Fac Odontol* 2001;4:43-51.
18. Franchin V, Basting RT, Mussi AA, Flório FM. A importância do professor como agente multiplicador de saúde bucal. *Rev ABENO* 2006;6:102-8.
19. Campos JADB, Garcia PPNS. Comparação do conhecimento sobre cárie dental e higiene bucal entre professores de escolas de ensino fundamental. *Cienc Odontol Bras* 2004;7:58-65.
20. Medeiros MID, Medeiros LADM, Almeida RVD, Padilha WWN. Conhecimentos e atitudes de professores de ensino fundamental sobre saúde bucal: um estudo qualitativo. *Pesq Bras Odontoped Cli Integr* 2004;4:131-6.
21. Iwakura MLH, Morita MC. Prevenção de cárie dentária por bochechos com flúor em município com água fluoretada. *Rev Panam Salud Publica* 2004;15:256-61.
22. Cangussu MCT, Costa MCN. O flúor tópico na redução da cárie dental em adolescentes de Salvador-BA, 1996. *Pesqui Odontol Bras* 2001;15:348-53.
23. Rihs LB, Gushi LL, Sousa MLR, Wada RS. Cárie dentária segundo o nível socioeconômico em Itapetinga-SP. *Rev odonto ciênc* 2005;20:367-71.