

Giovanna Elisa Gabriel Coclete

Estimativa de ingestão de flúor pela
escovação com dentifrícios fluoretados
em crianças

Araçatuba

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Orientador: Prof. Dr. Juliano Pelim Pessan

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Epígrafe

É preciso amor
Pra poder pulsar
É preciso paz pra poder sorrir
É preciso a chuva para florir

Todo mundo ama um dia
Todo mundo chora
Um dia a gente chega
E no outro vai embora

Cada um de nós compõe a sua história
Cada ser em si
Carrega o dom de ser capaz
E ser feliz

(Almir Sater)

Resumo Geral

COCLETE, G.E.G. **Estimativa de ingestão de flúor pela escovação com dentifrícios fluoretados em crianças**. 2018. 64f. Dissertação (Mestrado em Ciência Odontológica, área de Saúde Bucal da Criança) - Faculdade de Odontologia de Araçatuba, Universidade Estadual Paulista, Araçatuba 2018.

O objetivo do presente estudo foi avaliar a influência da escolaridade do entrevistado e da idade da criança sobre o uso de dentifrício e hábitos de escovação por crianças. Para tanto, o estudo foi realizado em duas fases distintas. Na fase 1, a influência do conhecimento dos pais e da idade das crianças sobre o uso de dentifrícios fluoretados por crianças de 0 a 7 anos de idade foi avaliada por meio de um questionário estruturado. As entrevistas (n=704) foram realizadas em três centros de vacinação na cidade de Araçatuba, Brasil. O questionário compreendeu itens relacionados à educação dos entrevistados, idade da criança, sexo, dados sobre hábitos de escovação e uso de dentifrício fluoretado, além de questões sobre os efeitos preventivos e adversos do flúor. Os resultados foram submetidos aos testes de Mann Whitney, Kruskal Wallis e Dunn, e analisados pelo coeficiente de correlação de Spearman ($p<0,05$). A escolaridade dos entrevistados esteve diretamente relacionada ao seu conhecimento sobre os efeitos preventivos e adversos do flúor e inversamente relacionada à quantidade de dentifrício usada pela criança. Além disso, a idade da criança esteve inversamente relacionada à ingestão de dentifrício (durante a escovação e diretamente do tubo). A escolha do tipo de creme dental também foi influenciada pela idade da criança e pela escolaridade do entrevistado. Na fase 2, a quantidade de dentifrício colocada na escova de dentes pelos pais/responsáveis foi avaliada, adotando descrições tipicamente recomendadas pelas sociedades científicas. O mesmo questionário utilizado na Fase 1 foi empregado em entrevistas com pais/responsáveis (n=306) de crianças de 0 a 7 anos que frequentavam centros de vacinação na cidade de Araçatuba, Brasil. A quantidade de dentifrício utilizada foi determinada em uma balança portátil, solicitando ao entrevistado que colocasse o creme dental em 8 escovas de dentes iguais, variando aleatoriamente a quantidade de “borrão” para “cerdas cheias”, além da quantidade utilizada em casa. Os resultados foram submetidos aos testes de Mann Whitney, Kruskal-Wallis e Friedman, e analisados pelo coeficiente de correlação de Spearman ($p<0,05$). A idade da criança esteve significativamente correlacionada com a quantidade de dentifrício colocada na

escova de dentes ($r=0,324$, $p<0,001$). Além disso, o uso de creme dental sem flúor foi significativamente relacionado a crianças mais jovens e a indivíduos que ingeriram maiores quantidades de dentifrício durante a escovação. De forma geral, a quantidade de dentifrício colocada na escova aumentou de acordo com o que seria esperado a partir das descrições, embora grandes variações tenham sido observadas para cada descrição. Concluiu-se que o conhecimento dos pais e a idade das crianças influenciam significativamente no uso de dentifrícios fluoretados pelas crianças, apontando para a necessidade de instruir os pais e cuidadores sobre o uso correto destes produtos. Além disso, considerando as variações na quantidade de dentifrício aplicada pelos participantes para cada descrição, concluiu-se que as instruções verbais isoladamente podem não ser uma estratégia eficaz para instruir os pais e cuidadores sobre a quantidade de dentifrícios a ser usada pelas crianças para se maximizar os efeitos preventivos, minimizando os efeitos colaterais.

Palavras-chave: dentifrício fluoretado; fluorose dental; crianças; educação em saúde.

General Abstract

COCLETE, G.E.G. **Estimation of fluoride intake by toothbrushing with fluoridated dentifrices in children.** 2018. 64f. Dissertação (Mestrado em Ciência Odontológica, área de Saúde Bucal da Criança) - Faculdade de Odontologia de Araçatuba, Universidade Estadual Paulista, Araçatuba 2018.

The aim of this study was to assess influence of parental schooling and children's age on the use of toothpaste and brushing habits by children. For this purpose, the study was conducted in two separate phases. In phase 1, the influence of parental knowledge and children's age on the use of fluoridated toothpastes by 0-7 year-old children was evaluated using a structured questionnaire. Interviews (n=704) were conducted in three vaccination centers in the city of Araçatuba, Brazil. The questionnaire comprised items related to interviewees' education, child's age, gender, data on brushing habits and use of fluoridated toothpaste, as well as questions on preventive and adverse effects of fluoride. The results were submitted to Mann Whitney, Kruskal Wallis and Dunn's tests, and Spearman's correlation coefficient ($p < 0.05$). The interviewees' schooling was directly related to their knowledge on preventive and adverse effects of fluoride, and inversely related to the amount of toothpaste used by the child. Also, child's age was inversely related to toothpaste ingestion (during toothbrushing and from the tube). Furthermore, the type of toothpaste was also influenced by child's age and interviewee's schooling. In phase two, the amount of toothpaste loaded on the toothbrush by their parents/guardians was assessed, adopting descriptions typically recommended by scientific societies. The same questionnaire used in Phase 1 was employed in interviews of parents/guardians (n=306) of 0-7 year-old children attending vaccination centers in the city of Araçatuba, Brazil. The amount of toothpaste used at home was determined using a portable scale, by asking the interviewee to load the toothpaste on 8 equal toothbrushes randomly varying the amount from "smear" to "full bristles", besides the amount used at home. The results were submitted to Mann Whitney, Kruskal-Wallis and Friedman's tests, and Spearman's correlation coefficient ($p < 0.05$). Child's age was significantly correlated with the amount of toothpaste placed on the toothbrush ($r = 0.324$, $p < 0.001$). Furthermore, the use of fluoride-free toothpaste was significantly related to younger children and with individuals who ingested higher amounts of toothpaste during toothbrushing. Overall, the amount of toothpaste placed on the toothbrush increased according to what would be

expected from the descriptions, although wide variations were observed within each description. It was concluded that parental knowledge and children's age significantly influence the use of fluoridated toothpastes by children, pointing out to the need for instructing parents and caregivers on the correct use of these products. In addition, considering the variations in the amount of toothpaste applied by the participants for each description, it was concluded that verbal instructions alone might not be an effective strategy for instructing parents and caregivers regarding the amount of toothpaste to be used by children in order to achieve the highest preventive effect with minimum unwanted side-effects.

Keywords: fluoride toothpaste; dental fluorosis; children; education in health.

Sumário

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Introdução Geral

1 INTRODUÇÃO GERAL

O consumo de água fluoretada e uso regular de dentifrícios fluoretados têm sido considerados como as principais razões para o declínio da cárie dentária nas últimas décadas em todo o mundo^{1,2}. Considerando os métodos de auto aplicação de flúor (F), a escovação com dentifrício fluoretado pode ser considerada como o melhor método de utilização de F, uma vez que combina a remoção ou desorganização mecânica do biofilme dental com os efeitos terapêuticos do F sobre os processos de desmineralização e remineralização dentária^{3,4}. Tais efeitos incluem a redução da solubilidade do esmalte em meio ácido, a inibição da obtenção e utilização da glicose por bactérias acidogênicas, a promoção da remineralização do esmalte e, possivelmente, efeitos bacteriostáticos e bactericidas^{5,6}.

Apesar dos efeitos preventivos e terapêuticos supracitados, o uso indiscriminado desses dentifrícios por crianças abaixo de 6 anos de idade tem sido associado ao aumento da prevalência de fluorose dentária, visto que grande parte das crianças ingere o produto durante a escovação^{7,8,9}. Em geral, a quantidade de F ingerido durante a escovação é diretamente proporcional à quantidade de dentifrício colocada na escova e inversamente proporcional à idade⁸. A ingestão inadvertida de dentifrício pode ser ainda maior quando não há acompanhamento da criança por parte de seus responsáveis durante a escovação, o que deve ser feito até a criança dominar seus reflexos de deglutição e expectoração. Apesar das fortes evidências a respeito da influência do conhecimento dos pais em relação à diversas variáveis, sendo elas a

¹ Marinho VC. Cochrane reviews of randomized trials of fluoride therapies for preventing dental caries. Eur Arch Paediatr Dent 2009;10:183-91.

² Clarkson J, Watt RG, Rugg-Gunn AJ, et al. Proceedings: 9th World Congress on Preventive Dentistry (WCPD): "Community Participation and Global Alliances for Lifelong Oral Health for All," Phuket, Thailand, September 7-10, 2009. Adv Dent Res. 2010; 22(1):2-30.

³ Pessan JP, Sicca CM, de Souza TS, da Silva SM, Whitford GM, Buzalaf MA. Fluoride concentrations in dental plaque and saliva after the use of a fluoride dentifrice preceded by a calcium lactate rinse. Eur J Oral Sci 2006;114:489-93.

⁴ Pessan JP, Toubma KJ, Buzalaf MA: Topical use of fluorides for caries control. Monogr. Oral Sci 2011;22:115-32.

⁵ Koulourides, T. Summary of session II: Fluoride and the caries process. J Dent Res 1990;69:558.

⁶ Hamilton IR. Biochemical effects of fluoride on oral bacteria. J Dent Res 1990;69:660-7.

⁷ de Almeida BS, da Silva Cardoso VE, Buzalaf MAR. Fluoride ingestion from toothpaste and diet in 1- to 3-year-old Brazilian children. Community Dent Oral Epidemiol 2007;35:53-63.

⁸ Kobayashi CAN, Belini MR, Italiani FM, Pauleto AR, de Araújo JJ, Tessaroli V, Grizzo LT, Pessan JP, Machado MAAM, Buzalaf MAR. Factors influencing fluoride ingestion from dentifrice by children. Community Dentistry and Oral Epidemiology 2011;39:426-32.

⁹ Amaral JG1, Freire IR, Valle-Neto EF, Cunha RF, Martinhon CC, Delbem AC. Longitudinal evaluation of fluoride levels in nails of 18-30-month-old children that were using toothpastes with 500 and 1100 µg F/g. Community Dent Oral Epidemiol. 2014;42:412-9

escolaridade do entrevistado e a idade da criança relacionadas à saúde bucal das crianças, a literatura é escassa acerca de informações sobre a influência do conhecimento dos pais sobre os efeitos do flúor e o uso de dentifrícios fluoretados por seus filhos.

Para se minimizar a quantidade de F ingerida durante a escovação, uma possibilidade seria o uso de dentifrícios com concentração reduzida de F (500-550 ppm F). Entretanto, considerando-se a escassez de dados acerca da efetividade clínica destes produtos no controle da cárie dentária, profissionais e autoridades de saúde pública têm recomendado o uso de dentifrícios com concentrações acima de 1000 ppm F, mas aplicados em quantidades pequenas quando usados por crianças^{10,11}, pressupondo-se que tal medida minimizaria a exposição sistêmica ao F (pela ingestão do produto) sem comprometer a eficácia clínica do produto. Entretanto grandes variações são relatadas na literatura quanto a terminologia relacionada à quantidade de dentifrício considerada como uma "pequena quantidade" prescrita para crianças, as quais incluem descrições como borrão, grão de arroz, tamanho de ervilha, tamanho de uma lentilha e pequena quantidade¹². Assim, é possível que a diversidade na terminologia empregada possa gerar diferentes interpretações pelos pais/responsáveis, o que poderia ter impacto tanto no efeito preventivo de F quanto na ingestão de F durante a escovação, caso quantidades inadequadas sejam utilizadas.

Considerando que o conhecimento de pais e crianças sobre saúde bucal parece estar associado ao comportamento destas quanto à sua saúde bucal¹³, e visto que a prática de higiene bucal e a atitude de mães em relação ao atendimento odontológico estão relacionadas aos hábitos de escovação das crianças¹⁴, torna-se evidente que o conhecimento dos pais desempenha uma parte fundamental no sucesso das estratégias preventivas dirigidas às crianças. Nesse sentido, a avaliação do conhecimento dos pais sobre os efeitos do flúor e a relação à escolaridade do entrevistado e a idade da criança relacionadas ao

¹⁰ European Academy of Paediatric Dentistry. Guidelines on the use of fluoride in children: an EAPD policy document. Eur Arch Paediatr Dent. 2009;10:129-35.

¹¹ American Academy of Pediatric Dentistry, Policy on use of fluoride, Pediatr Dent 2016;38:45-46.

¹² de Oliveira BH, Grisolia BM, Dos Santos AP. Children's Toothbrushing Practices Recommended on the Internet by Pediatric Dentistry Associations. Pediatr Dent. 2016 Nov 15;38(7):484-488.

¹³ Poutanen R, Lahti S, Tolvanen M, Hausen H. Parental influence on children's oral health-related behavior. Acta Odontol Scand 2006;64:286-92.

¹⁴ Kino S, Bernabé E, Sabbah W, Aukett J. Relationship between family characteristics and children's regular toothbrushing with fluoride toothpaste. Community Dent Health. 2015;32:132-6.

uso de dentifrício fluoretado por seus filhos poderia ser valiosa para orientar clínicos e autoridades científicas na determinação de estratégias para garantir benefícios máximos com mínimos efeitos colaterais.

Para abordar o tema proposto, a presente dissertação foi desenvolvida em 2 capítulos, conforme descrito abaixo:

- Capítulo 1: **Parental knowledge and children's age influence the use of fluoridated toothpastes by children** (formatado de acordo com as normas do periódico *Pediatric Dentistry*)
- Capítulo 2: **Use of fluoridated dentifrices by children: factors affecting brushing habits and amount applied on the brush** (formatado de acordo com as normas do periódico *Pediatric Dentistry*).

Capítulo 1

ed

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Short title: Use of toothpaste by children

Key-words: Fluoride toothpaste. Dental fluorosis. Children. Education in health.

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Parental knowledge and children's age influence the use of fluoridated toothpastes by children

2.1 ABSTRACT

The aim of the present study was to assess the influence of parental knowledge and children's age on the use of fluoridated toothpastes by 0-7 year-old children. Interviews ($n=704$) were conducted in three vaccination centers in the city of Araçatuba, Brazil, using a structured questionnaire comprising items related to interviewees' education, child's age, gender, data on brushing habits and use of fluoridated toothpaste, as well as questions on preventive and adverse effects of fluoride. The results were submitted to Mann Whitney, Kruskal Wallis and Dunn's tests, and Spearman's correlation coefficient ($p<0.05$). The interviewees' schooling was directly related to their knowledge on preventive and adverse effects of fluoride, and inversely related to the amount of toothpaste used by the child. The child's age was inversely related to toothpaste ingestion (during toothbrushing and from the tube). Furthermore, the type of toothpaste was also influenced by child's age and interviewee's schooling. It was concluded that parental knowledge and children's age influence the use of fluoridated toothpastes by children, pointing out to the need for instructing parents and caregivers on the correct use of fluoride toothpaste, in order to achieve the highest preventive effect with minimum unwanted side-effects.

Keywords: fluoride toothpaste; dental fluorosis; children; education in health.

2.2 INTRODUCTION

The decline in caries prevalence over the last decades can be largely attributed to the widespread availability of fluoride, especially fluoridated toothpastes, as they combine the mechanical disorganization of the dental biofilm with the therapeutic effects of fluoride (Marinho et al., 2009). However, the use of fluoridated toothpastes has been associated with an increase in the prevalence of dental fluorosis (Wong et al., 2010), since the swallowing of toothpaste during toothbrushing was inversely related to the age of the child (Kobayashi et al., 2011).

Despite the strong body of evidence on the influence of parental knowledge on several variables related to children's oral health, the literature is scarce on information about the influence of the knowledge of parents on the effects of fluoride and the use of fluoridated toothpastes by their children. A recent survey found that the choice of a fluoride toothpaste for New Zealander preschoolers was significantly affected by the order of birth, previous visit to the dentist, and by marketing strategies adopted by manufacturers (Li et al., 2016). Furthermore, a study conducted with parents of 4-6 year-old Irish children found limited parental knowledge on their children's oral health, pointing out to the need for improved education for parents, particularly in toothbrushing behaviour and use of toothpaste (ElKarmi et al., 2015). In line with the aforementioned data, a more recent study conducted with parents of 3-6 year-old Serbian children found that the awareness on fluoride and its role in caries prevention was low, and that little is translated into practice (Djordjevic, 2018).

Given that oral health-related knowledge of children and their parents seems to be associated with children's oral health-related behavior (Poutanen et al., 2006), and considering that maternal oral hygiene practice and attitude towards dentists are related to children's toothbrushing habits (Kino et al., 2015), it becomes evident that parental knowledge plays a key role on the success of preventive strategies targeted to children. In this sense, the assessment of parent's knowledge on the effects of fluoride and the relationship with variables related to the use of fluoridated toothpaste by their children could be valuable for guiding clinicians and policy makers in determining strategies to ensure maximum benefits with minimum side-effects related to the use of toothpastes.

Based on the above, the aim of the present study was to assess the knowledge of parents/guardians of children considered within the risk range for the development of dental fluorosis on the preventive and adverse effects of fluoride, as well as the relationship with variables related with use of fluoridated toothpastes by their children.

2.3 MATERIAL AND METHODS

This study was reviewed and approved by the ethics committee of Araçatuba Dental School-UNESP, Brazil (CAAE: 69012817.0.0000.5420). The study population comprised parents or legal guardians of 0-7 year old children attending three public vaccination stations in the city of Araçatuba, State of São Paulo, Brazil ($n=704$). Informed, written consent was obtained from each participant prior to the beginning of the study. The vaccination stations were located in three different areas of the city, including the downtown area and two suburban areas, in order to minimize location bias.

The approach of parents/guardians of the children was done through the use of a structured questionnaire, which involved questions about (1) schooling of the interviewees; (2) date of birth and gender of the child; (3) area of the city in where they lived and time of residence; (4) child's brushing habits (frequency and type of toothpaste used); (5) ingestion of toothpaste by the child (during brushing and/or directly from the tube); and (6) knowledge of the effects of fluoride (preventive and adverse).

To evaluate toothpaste intake, two different questions were asked: whether the child had a habit of eating toothpaste directly from the tube (possible answers: yes/no) and whether the child swallowed the toothpaste during brushing (possible answers: no ingestion/partial ingestion/total ingestion of the toothpaste placed on the brush). In addition, the frequency of toothbrushing and the commercial brand of toothpaste used were also asked. In cases in which the interviewee did not remember the brand of toothpaste used, a box containing the most commonly toothpastes found in supermarkets of the city was shown, which included products for adult and child use. If the child used a toothpaste different

from the ones presented and the parent/guardian did not recall the name of the product used at home, the information was recorded as "other".

As for the interviewee's knowledge on the preventive and adverse effects of fluoride, an open question was asked on the effect of fluoridated toothpastes. The interviewee was also asked whether he/she knew about any possible adverse effects of fluoride (possible answers: yes/no). For respondents answering "yes", they were asked about the name or a description of such effect (open question). Finally, the question "what is fluorosis" (open question) was asked to all interviewees. All open questions were subsequently dichotomized into "correct/incorrect"

At the end of the questionnaires, an explanatory leaflet was provided to the participants, containing information on the use of fluoridated toothpastes by children. The content of the leaflet was discussed with the interviewee, emphasizing the need to (1) supervise the child's brushing; (2) encourage the child to spit out the toothpaste after brushing; (3) put small amount of toothpaste in the brush; (4) be vigilant towards the child ingesting toothpaste directly from the tube.

Data were analyzed using descriptive statistics, using absolute and relative values. In addition, the data were analyzed using Mann-Whitney and Kruskal-Wallis tests, followed by Dunn's test for multiple comparisons. The relationship between quantitative variables was also analyzed by the Spearman correlation coefficient. The SigmaPlot program, version 12.0 was used, adopting a significance level of 5%.

2.4 RESULTS

A total of 704 parents/guardians were interviewed, with the majority of the interviewees being one of the parents (82.2%), followed by one of grandparents (13.4%) and "other" (4.4%, usually another family member). The level of schooling ranged from illiterate (1.4%) to postgraduate (3.1%), mostly comprising individuals who completed high school (44.4%) and primary school (27.8%) education. Also, the proportion of boys (50.3%) and girls (49.7%) was balanced. The age of the children reported by the interviewees was also relatively well

distributed in the population (ranging from 10.2 to 15.2% for children aged 13-24, 25-36, 37-48, 49-60 and 61-72 months old). The lowest (8.2%) and highest (26.0%) contribution was from 7-year-olds and children under 1 year of age, respectively.

A large proportion of the children ($n=201$, 28.6%) were reported not to brush their teeth, among which ~52% were under 6 months of age. The interviewee's schooling was shown to significantly influence children's brushing habit (yes/no) considering children aged 6 months or older ($p=0.043$, $n=595$) or those between 6 and 24 months old ($p=0.021$, $n=165$), but not when all children were analyzed together ($p=0.109$, $n=704$). Moreover, the age (median; interquartile range) of children who brushed their teeth (49; 31-64) was significantly higher than those who did not (5; 2-10) ($p < 0.001$).

Considering the total number of interviewees ($n=704$), schooling presented a significant relationship with the variables "knowledge about the effects of fluoride" (Figure 1A), "knowledge about any harmful effect of fluoride" (Figure 1B), "what harmful effect may be associated with fluoride" (Figure 1C) and "What is dental fluorosis?" (Figure 1D). Overall, interviewees with higher level of schooling presented a higher proportion of correct answers.

Considering only children who reportedly brushed their teeth ($n=503$), children's age was shown to significantly influence several variables related to the use of toothpastes (Figure 2). In general, older children did not ingest toothpaste directly from the tube (median 53 months) or during toothbrushing (median 59 months), and brushed more frequently (median 54 months) compared to younger ones (medians 35, 31.5, and 42 months, respectively). A moderate, inverse correlation was observed between toothpaste swallowing during toothbrushing and children's age ($r = -0.41$, $p < 0.001$). Furthermore, toothpastes with special packaging/flavoring were used more often by younger children. Regarding the interviewee's schooling, this variable did not significantly influence toothpaste ingestion directly from the tube (Mann-Whitney's test, $p = 0.944$) or swallowing during toothbrushing (Kruskal-Wallis test, $p = 0.711$). However, higher schooling was observed for higher brushing frequency and use of fluoride-free and low-fluoride toothpastes (Figure 3).

2.5 DISCUSSION

The widespread availability of toothpastes for individual of all ages, along with the scarcity of information about the relationship of parental knowledge of the effects of fluoride and the use of toothpastes by their children suggest that the choice of the product to be used by children may not be an easy task. This decision is further complicated by marketing strategies of manufacturers, so that children's choice regarding packaging/flavoring may also play a role on parental's purchase of toothpaste (Li et al., 2016).

In the present study, parents/guardians with higher level of schooling presented a higher proportion of correct answers regarding the preventive and adverse effects of fluoride toothpastes, and reported that their children brushed their teeth more frequently when compared with lower schooling. Such trend is in line with previous data reporting that parental counselling on the proper amount of fluoridated toothpaste used by 0-3 year-old children lead to lower prevalence of dental fluorosis in the permanent dentition (Moura et al., 2013), and that a significantly higher preventive effect is observed for children brushing twice/day in comparison with once/day (Pessan et al., 2011). All the above taken together emphasize the need for oral health educational programs targeted to disadvantaged populations, whose educational level implies in greater vulnerability regarding health-related issues.

Children's age was shown to be directly related to brushing frequency, and inversely related to toothpaste ingestion, either directly from the tube or during toothbrushing. An inverse relationship between toothpaste ingestion during toothbrushing and children's age has been demonstrated in a comprehensive study assessing the influence of age, toothpaste flavor and amount of toothpaste used (Kobayashi et al., 2011), thus confirming the usefulness of the present protocol in assessing variables related with the use of toothpaste. Moreover, the percentage of toothpaste ingested by 1-3 year-old children during toothbrushing has been reported to be around 60-80% (Lima and Cury, 2001; Paiva et al., 2003; Almeida et al., 2007), emphasizing the need for close monitoring young children regarding the appropriate use of fluoridated toothpastes, especially those under 3 years of age due to the increased risk of fluorosis in the permanent incisors (Denbesten and Li, 2011). As for brushing

frequency, ~20% of the children was reported to brush their teeth only once per day. In this sense, parents should be encouraged to brush their children's teeth at least twice per day, in order to achieve a higher caries-protective effect (Marinho et al., 2003).

As for the type of toothpaste used by the children, this variable was influenced by both the interviewing's schooling and the children's age. Regarding schooling, the use of fluoride-free and low-fluoride toothpastes was more frequent in children whose parents/guardians had a higher educational level, what seems to be related with more access to information *per se* (including health-related), since higher level of schooling was also related with higher rates of correct answers on the preventive and adverse effects of fluoride. Furthermore, although the present data do not include information on the families' income, it is reasonable to assume that respondents with higher schooling are usually those with higher income, what would enable them to purchase more expensive oral-health products for their children. In this sense, it is noteworthy that products with special packaging and flavouring agents (as in the case of fluoride-free and low-fluoride toothpastes) are usually more costly than regular products. Concerning these toothpastes, the proportion of children brushing with fluoride-free toothpastes was quite high (~11%), with only 0.4% under 12 months of age, implying that over 10% of the children assessed might not be receiving adequate exposure to fluoride to promote caries-protective effects. As for low-fluoride toothpastes, the proportion of children brushing with these formulations was much lower (~5%), of which 40% were children under 36 months of age (*i.e.*, critical period for the development of dental fluorosis in the permanent incisors), what may be adequate for children with low caries activity (Lima et al., 2008), especially living in a fluoridated area (Pessan et al., 2011). Finally, the majority (~48%) of the children used children's toothpaste (regular strength), what is adequate considering the best scientific evidence available (Walsh et al., 2009), but may also be associated with increased fluoride intake due to the pleasant flavor (Moraes et al., 2007; Kobayashi et al., 2011).

With respect with the influence of children's age on the type of toothpaste used, this is a critical aspect considering that: (1) the toothpaste flavor is known to significantly influence the ingestion of the product by children during

toothbrushing (Kobayashi et al., 2011; Moraes et al., 2007); (2) fluoride levels in these products may vary from 0 (fluoride-free) to 1100 ppm F (conventional strength); (3) parents/guardians are not usually aware of the fluoride content in the formulation. All the above may have important implications both in caries prevention and in systemic fluoride intake from the product.

Assuming the eruption of the first primary tooth around 6 months of age, it was surprising that a large number of the children with at least one erupted tooth ($n=96$; 13.6%) was reported not to brush their teeth with any type of toothpaste. Several reasons could explain the results obtained, including child's refusal to toothbrushing, fear of hurting the child, and the popular view on the temporary nature of the primary teeth. Although the questionnaire applied did not comprise questions to support the aforementioned assumptions, the latter is plausible considering that parental schooling (and consequently access to information) was directly related with the children's habit of brushing their teeth. Regardless of the reasons, the above-mentioned scenario is critical considering that strong evidence supporting that brushing with a fluoridated toothpaste is an effective method for caries prevention (Marinho et al., 2003), and that dental caries may have serious consequences for oral and systemic health, with impact in the individual's quality of life (Kassebaum et al., 2017).

2.6 CONCLUSION

It was concluded that parental knowledge and children's age influence the use of fluoridated toothpastes by children, pointing out to the need for instructing parents and caregivers on the correct use of fluoride toothpaste, in order to achieve the highest preventive effect with minimum unwanted side-effects.

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Figures

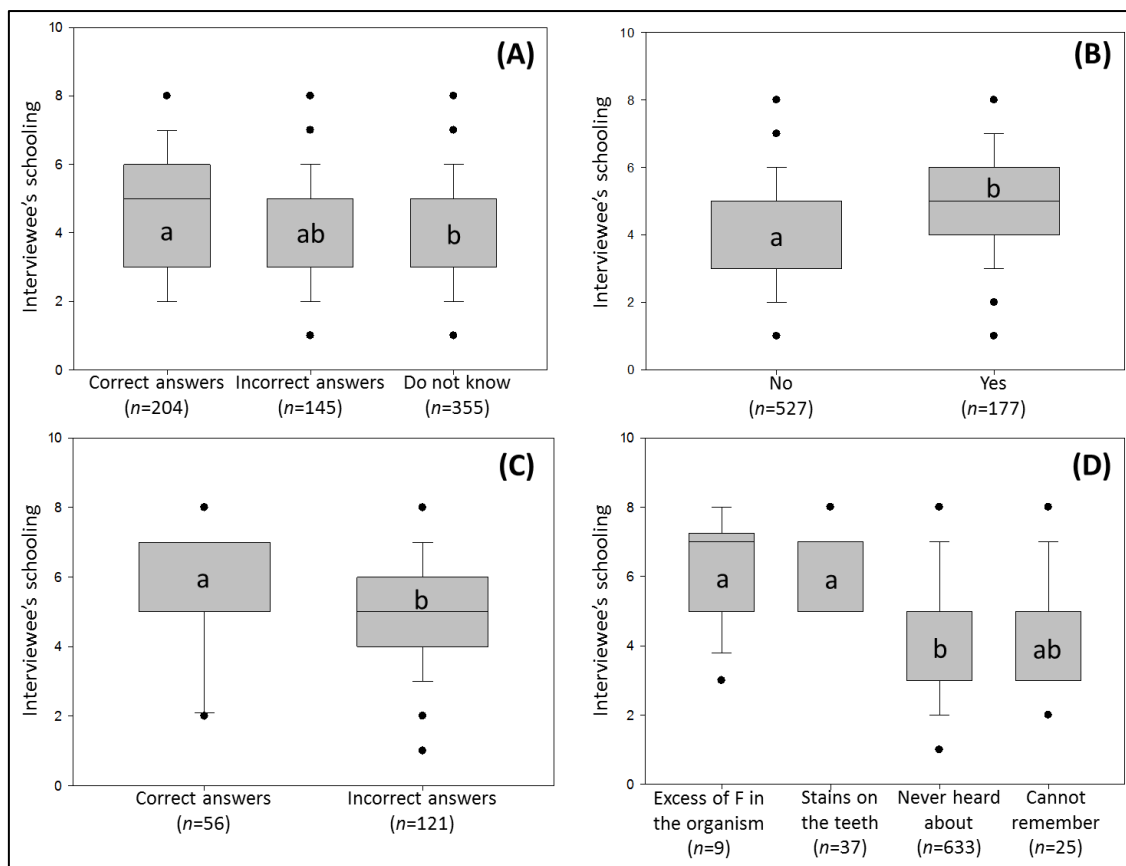


Figure 1. Relationship between the interviewee's schooling and (A) knowledge about the effects of fluoride; (B) knowledge about any possible harmful effect of fluoride; (C) what harmful effect may be associated with fluoride; and (D) definition of dental fluorosis. Different lower-case letters indicate significant difference between/among the variables. Kruskal-Wallis and Dunn's tests (A and D) and Mann-Whitney test (B and C), $p < 0.05$.

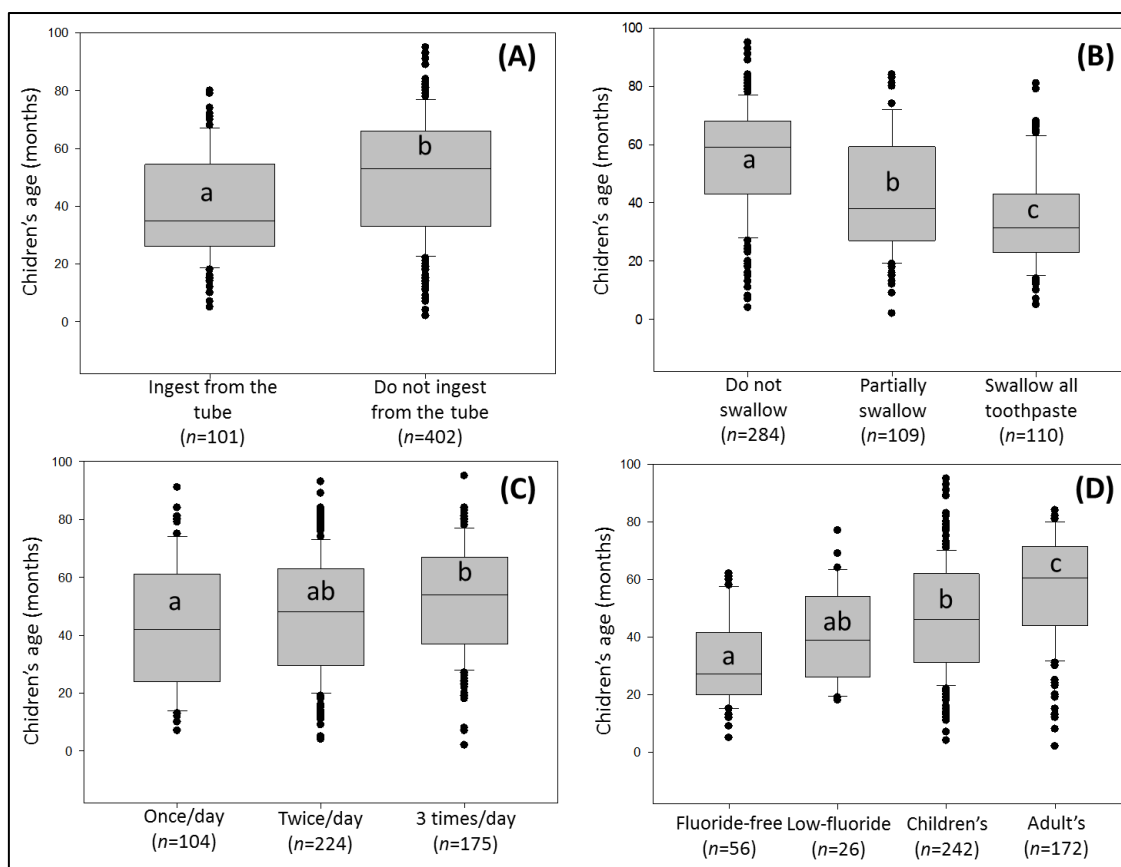


Figure 2. Relationship between children's age and (A) their habit to ingest toothpaste directly from the tube; (B) their habit to swallow toothpaste during toothbrushing; (C) brushing frequency; and (D) type of toothpaste used during toothbrushing. Different lower-case letters indicate significant difference between/among the variables. Kruskal-Wallis and Dunn's tests (B, C and D) and Mann-Whitney test (A), $p < 0.05$. Low-fluoride toothpaste: reduced strength (500 ppm F) with packaging/flavoring appealing to children; Children's toothpaste: regular strength (1100 ppm F) with packaging/flavoring appealing to children; Adult's toothpaste: regular strength (1100-1500 ppm F), with packaging flavoring directed to adults/family consumption.

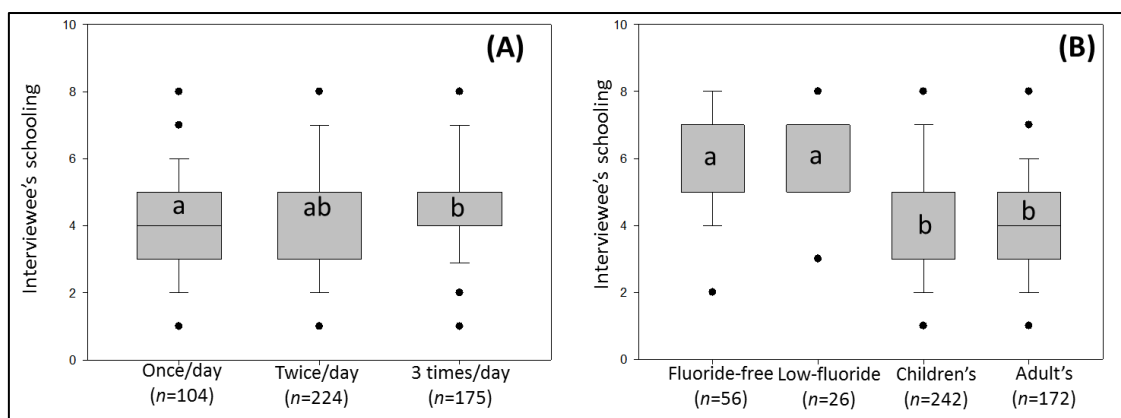


Figure 3. Relationship between the interviewee's schooling and (A) children's brushing frequency; and (B) type of toothpaste used by the children. Different lower-case letters indicate significant difference among the variables. Kruskal-Wallis and Dunn's tests, $p < 0.05$.

Low-fluoride toothpaste: reduced strength (500 ppm F) with packaging/flavoring appealing to children; Children's toothpaste: regular strength (1100 ppm F) with packaging/flavoring appealing to children; Adult's toothpaste: regular strength (1100-1500 ppm F), with packaging flavoring directed to adults/family consumption.

Capítulo 2

**Use of fluoridated dentifrices by children: factors affecting brushing
habits and amount applied on the brush**

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Short title: Use of toothpaste by children

Key-words: Fluoride toothpaste. Children. Education in health.

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Use of fluoridated dentifrices by children: factors affecting brushing habits and amount applied on the brush

3.1 ABSTRACT

This study evaluated the use of fluoridated dentifrices by children, as well as the amount of product loaded on the toothbrush by their parents/guardians according to descriptions typically recommended by scientific societies. A structured questionnaire was used during the interviews of parents/guardians of children ($n=306$) attending vaccination centers in the city of Araçatuba, Brazil, comprising items related to interviewees' education, child's age, gender, data on brushing habits and use of fluoridated dentifrice. The amount of toothpaste used at home was determined using a portable scale, by asking the interviewee to load the toothpaste on 8 equal toothbrushes, randomly varying the amount from "smear" to "full bristles", besides the amount used at home. The results were submitted to Mann Whitney, Kruskal-Wallis and Friedman's tests, and Spearman's correlation coefficient ($p<0.05$). The type of toothpaste and the amount of product used at home were not affected by the respondents' educational level or family income. However, child's age was significantly correlated with the amount of toothpaste placed on the toothbrush ($r=0.324$, $p<0.001$). Furthermore, the use of fluoride-free toothpaste was significantly related to younger children and with individuals who ingested higher amounts of toothpaste during toothbrushing. Overall, the amount of toothpaste placed on the toothbrush increased according to what would be expected from the descriptions, although wide variations were observed within each description. It was concluded that verbal instructions regarding the amount of toothpaste to be used by children might not be an effective strategy for ensuring optimum exposure to fluoride, considering risk and benefits.

Key-words: Fluoride toothpaste. Children. Education in health.

3.2 INTRODUCTION

The reduction in dental caries prevalence over the last decades has been largely attributed to the exposure to fluoride (F) from community-based methods, as well as from vehicles for professional and self-application, used either alone or in association [Pessan et al., 2011]. However, the indiscriminate use of F dentifrices by children under 6 years of age has also been associated with an increased prevalence of dental fluorosis [Wong et al., 2010], since the majority of children ingest part of the product during toothbrushing [Moraes et al., 2007; Sebastian et al., 2016]. Studies have shown that the average F intake of 1-3 year-old children from toothbrushing is close to 80%, with some children ingesting virtually all the toothpaste placed on the brush [Paiva et al., 2003; de Almeida et al., 2007].

Considering that the amount of F ingested during toothbrushing is directly proportional to the amount applied on the brush and inversely related to the child's age [Kobayashi et al., 2011], it becomes evident the importance of standardizing the amount of toothpaste used during brushing, considering the age of the patient, as well as risks and benefits. Contradictorily, large variations have been reported on the terminology related to the amount of dentifrice considered as a "small amount" prescribed for children by North and South American National Associations of Pediatric Dentistry, which include descriptions such as smear, rice grain, pea-size, lentil-size and small amount. It is possible that the diversity in the terminology employed may generate different interpretations by parents/guardians, which could have an impact either on the preventive effect of F or on the ingestion of F during toothbrushing if inadequate amounts are used. However, to date no information is available in the literature that supports the aforementioned hypothesis.

Furthermore, it has been reported the choice of dentifrice for preschoolers is influenced by several factors, including order of birth, previous visit to the dentist, marketing strategies of the manufacturers (Li et al., 2016). Thus, it would be interesting to evaluate the use of fluoridated dentifrices by children in the age group at risk for developing dental fluorosis, analyzing possible factors related to parents/guardians and children. The results to be obtained could be useful in planning oral health strategies for children, aiming at obtaining the maximum benefit with the lowest possible risk. Based on the above, the objectives of the

present study were: (1) to evaluate the use of fluoridated dentifrices by children and possible variables influencing the observed pattern, and (2) to assess how parents/guardians' understand the descriptions typically recommended by scientific societies regarding the amount of toothpaste to be placed on the brush.

3.3 MATERIAL AND METHODS

This study was approved by the Human Research Ethics Committee of School of Dentistry, Araçatuba - UNESP (CAAE 67074217.7.0000.5420 - ANEXO A). The interviews at the municipal health care centers were authorized by the Department of Health of the city. All participants signed an informed consent form and received written and verbal instructions on the research protocol prior to the start of the study.

Three hundred and five parents or guardians of children aged 0 to 7 years old, living in the city of Araçatuba-SP, Brazil, who attended the two health care centers with the largest flow of patients, in different points of the city, participated in the study. The study employed structured, individual questionnaires applied to parents or guardians of children to be consulted on day. The questionnaires involved questions of demographic and socioeconomic nature, including the neighborhood of residence, family income and schooling of the interviewee, child's gender, weight and date of birth. Questions about toothpaste use included the habit to ingest toothpaste either directly from the tube or during toothbrushing, brushing frequency and brand of toothpaste used by the child. In cases in which the interviewee did not remember the brand of toothpaste used, a box containing the most commonly toothpastes found in supermarkets of the city was shown, which included products for adult and child use. If the child used a toothpaste different from the ones presented and the parent/guardian did not recall the name of the product used at home, the information was recorded as "other". Finally, questions about the interviewee's knowledge on the preventive and adverse effects of fluoride were asked to the respondents (ANEXO B).

After applying the questionnaire, the amount of toothpaste used by the child during toothbrushing at home was assessed using a portable scale (Weighing Scale/ Lb. Precision Scale 0.01-g; Italy; BEL Engineering s.r.l.). A child's toothbrush was provided to the interviewee, along with different dentifrices (the most commonly available in supermarkets of the city), so that the interviewee

could use the product that most resembled the one used at home. Following, the interviewee was instructed to dispense the toothpaste into the brush in an amount usually used at home. The brush was weighed before and after loading the toothpaste, providing the amount of dentifrice applied (final minus initial weight). Following, the interviewee was asked to apply 8 different amounts of toothpaste on 8 equal brushes (random sequence), as follows: smear, rice grain, small amount, bean-size, pea-size, size of child's little fingernail, transverse technique, all bristles (ANEXO C).

At the end of the questionnaires, an explanatory leaflet was provided to the participants, containing information on the use of fluoridated toothpastes by children. The content of the leaflet was discussed with the interviewee, emphasizing the need to (1) supervise the child's brushing; (2) encourage the child to spit out the toothpaste after brushing; (3) put small amount of toothpaste in the brush; (4) be vigilant towards the child ingesting toothpaste directly from the tube (ANEXO D).

Data were analyzed using descriptive statistics, using absolute and relative values. In addition, the data were analyzed using Mann Whitney, Kruskal-Wallis and Friedman's tests, and Spearman's correlation coefficient ($p < 0.05$). The SigmaPlot program, version 12.0 was used, adopting a significance level of 5%.

3.4 RESULTS

A total of 306 interviewees took part in this survey, among which 249 (81.5%) were one of the parents, 45 (14.7) were one of the grandparents and 12 (3.9%) fell into the category "other" (usually another relative). The educational level ranged from illiterate (1.6%) to postgraduate (1.3%), including incomplete primary school (16.3%), complete primary school (9.1%), incomplete high school (22.8%), complete high school (34.5%), incomplete college/university (4.9%), and complete college/university (9.4%). Family income ranged from under 1 to 8 times the Brazilian minimum wage, with the majority of the respondents reporting 1-1.5 (51.3%) and 2-2.5 (29.7%) minimum wage.

One hundred children (32.7% of the total) did not brush their teeth, among which the majority ($n=66$) was under 6 months old, with the remaining children being 6-12 months old ($n=28$) or 13-20 months old ($n=6$). Among the 206 children

who brushed their teeth, the type of toothpaste used by the children was not affected by the respondents' educational level (Kruskal-Wallis test, $p=0.229$) or family income (Kruskal-Wallis test, $p=0.068$). Similarly, these variables were not significantly correlated with the amount of toothpaste used by the child at home (Spearman's correlation, $r=-0.0723/p=0.302$ and $r=-0.0096/p=0.892$, respectively for educational level and family income).

The child's age, on the other hand, was significantly correlated with the amount of toothpaste placed on the toothbrush (Spearman's correlation, $r=0.324$, $p<0.001$), and was shown to significantly influence the choice of toothpaste, with children using fluoride-free toothpaste being significantly younger than those using conventional toothpastes (Figure 1). The amount of toothpaste used during toothbrushing and the habit of swallowing toothpaste during toothbrushing were also influenced by the type of toothpaste used (Figures 2 and 3, respectively).

Figure 4 shows the amount of toothpaste placed on the child's toothbrush by the parents/guardians as done at home, as well as according to descriptions recommended by North and South American National Associations of Pediatric Dentistry. Except for the description "child's little fingernail", the amount of toothpaste placed on the toothbrush increased according to what would be expected from the descriptions. The amount used at home was not significantly different from descriptions "transversal technique" and "bean-size". On the other hand, wide variations were observed within each description, with large interquartile and overall ranges (Table 1).

3.5 DISCUSSION

Despite the benefits of using fluoride dentifrices for the control of dental caries is well documented (Marinho et al., 2003), fluoridated dentifrices represent the main source of fluoride intake by young children (Miziara et al., 2009). In the present study, children's age was significantly correlated with the amount of toothpaste placed on the toothbrush, and significantly influenced the choice of toothpaste. As for the type of toothpaste used, this variable was shown to significantly influence the amount of toothpaste used during toothbrushing and the habit of swallowing toothpaste during toothbrushing. The results above, in line with previous observations from studies with different research protocols (de Almeida et al., 2007; Moraes et al., 2007; Kobayashi et al., 2011) emphasize the

importance of adequate monitoring children (0-7 years) during toothbrushing, especially regarding the amount applied on the toothbrush and the need to spit out the toothpaste after brushing, in order to ensure exposure to fluoride at effective and safe levels.

An important aspect observed in the present study is related to the understanding of parent/guardians of the information regarding the amount of toothpaste to be applied on the toothbrush. In general, the observed values were consistent with those expected according to each quantity (i.e., the amount of toothpaste applied increased from lowest to largest quantities requested by the researchers). However, large variations were observed within each quantity (interquartile and overall range), so that descriptions of small quantities such as "smear" or "rice grain " showed interquartile variations greater than the median value for each description, with the maximum values being higher than the median of the largest amount requested (full bristles). The inverse is also true, since the minimum values observed for the description "full bristles" were lower than the medians of the descriptions of "smear" and "rice grain". The large variability in the results obtained for each quantity suggests that the interviewees' understanding of the descriptions of the quantities to be applied may be related to a two-dimensional (width x length) view of the brush, without considering the height. This observation indicates that verbal instructions alone do not seem to be an adequate strategy when instructing parents and caregivers about the correct use of fluoridated dentifrices by children.

It was observed that 34% of children with expected erupted teeth (i.e., 6 months old and above) had not started brushing practice. Although the reasons for this aspect have not been investigated in the present study, it is possible that difficulties encountered when cleaning the child's teeth, along with the popular belief that the deciduous teeth do not require the same care as do the permanent teeth (due to their short life span), have an influence on the observed pattern. This aspect points to the need to implement or reinforce educational-preventive strategies in early childhood, even before the eruption of the first deciduous tooth, instructing parents and caregivers on the negative impact that caries experience in deciduous teeth exerts on the permanent dentition (ref).

The American Association of Pediatric Dentistry (AAPD, 2011) recommends the use of a small amount of fluoride dentifrice (1100 ppm F) since

the eruption of the first deciduous tooth, using a quantity similar to a rice grain for children under 2 years of age, and a pea-size amount for children between 3-5 years of age (AAPD, Guideline on Infant Oral Health Care, Pediatric Dentistry, v. 33, pp. 124-8, 2011). However, recent studies have concluded that the amount of toothpaste used during brushing has a direct influence on salivary and biofilm fluoride concentrations (Zero et al., 2010; Hall et al., 2016; Paiva et al., 2017), evidencing that the intensity of the treatment (amount of dentifrice versus concentration) seems to be a more relevant parameter of clinical efficacy than fluoride concentration alone (Paiva et al., 2017, Hall et al., 2016). Based on the above, clinical studies with adequate methodology are needed to establish the amount of fluoride dentifrice suitable for each age group, taking into account the fluoride concentration in the product and caries risk and activity.

Oliveira et al. (2016) concluded that the online recommendations of North American and South American Pediatric Dentistry Associations (NAPD) on dental practices in children are controversial and without scientific basis. Therefore, it is evident the need to re-evaluate the recommendations on the proper use of fluoride dentifrice, as well as to implement new educational strategies, or reassess existing ones. Considering the wide variation in the amount of dentifrice placed in the brush within each description in the present study, it is possible that the availability of three-dimensional models indicating the amount of dentifrice suitable for each age group in large circulation sites (schools, health centers, etc) may enhance the understanding and the accuracy of the parents/caregivers on this aspect.

3.6 CONCLUSION

The wide variation regarding the amount of toothpaste placed on the toothbrush within each description indicate that verbal instructions regarding the amount of toothpaste to be used by children might not be an effective strategy for ensuring optimum exposure to fluoride, considering risk and benefits.

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Table 1. Amount of toothpaste placed on the child's toothbrush by the parents/guardians as done at home and according to descriptions recommended by scientific associations

	Median	1st quartile	3rd quartile	Interquartile range	Overall range	
					Lower	Upper
Smear	0.08 ^a	0.03	0.17	0.14	0.01	0.77
Rice grain	0.10 ^a	0.05	0.16	0.11	0.01	0.84
Small amount	0.20 ^b	0.12	0.30	0.18	0.01	1.01
Bean-size	0.31 ^{cd}	0.22	0.40	0.18	0.04	0.98
Pea-size	0.26 ^c	0.18	0.41	0.23	0.01	1.16
Child's little fingernail	0.20 ^b	0.10	0.33	0.23	0.01	1.52
Transveral technique	0.37 ^d	0.23	0.53	0.30	0.01	1.85
Full bristles	0.67 ^e	0.44	0.98	0.54	0.05	2.13
Amount used at home	0.37 ^d	0.22	0.59	0.37	0.01	2.48

Different superscript letters indicate significant differences (Friedman's and Tukey's tests, $p < 0.05$, $n = 306$).

Figures

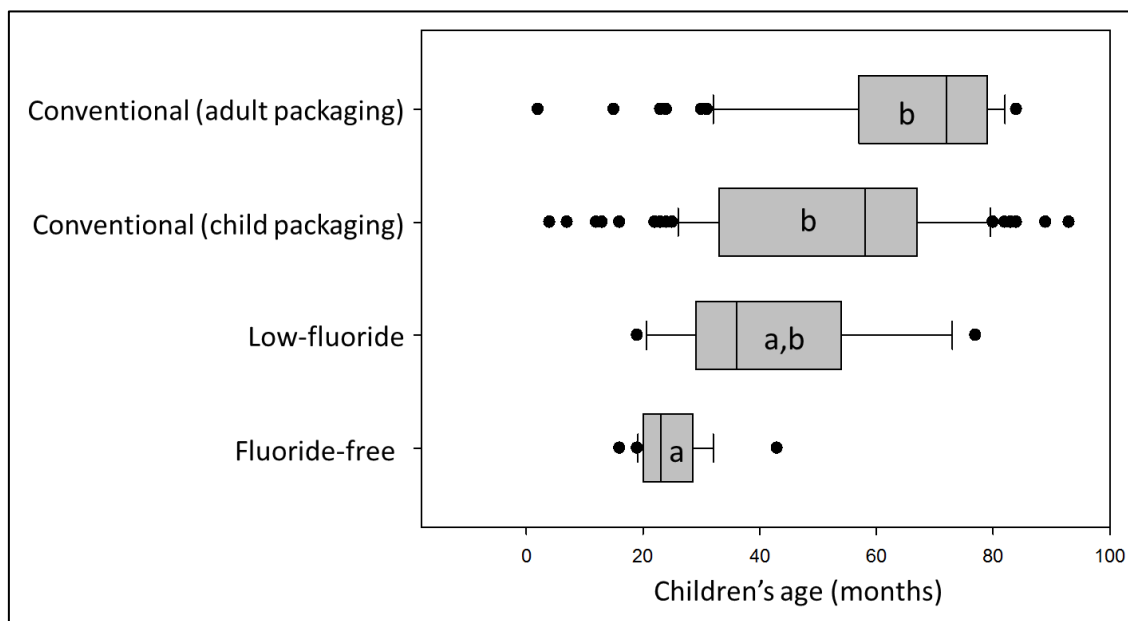


Figure 1. Children's age according to the type of toothpaste used at home. Different letters indicate significant differences (Kruskal-Wallis and Dunn's tests, $p < 0.001$, $n = 206$).

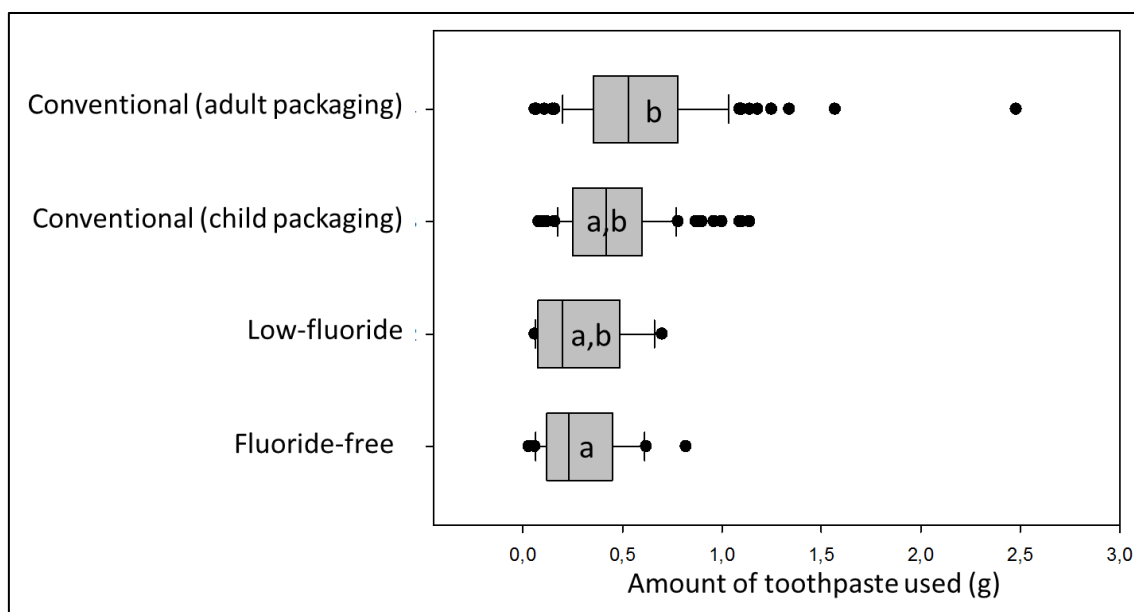


Figure 2. Amount of toothpaste used during toothbrushing according to the type of toothpaste used at home. Different letters indicate significant differences (Kruskal-Wallis and Dunn's tests, $p < 0.001$, $n = 206$).

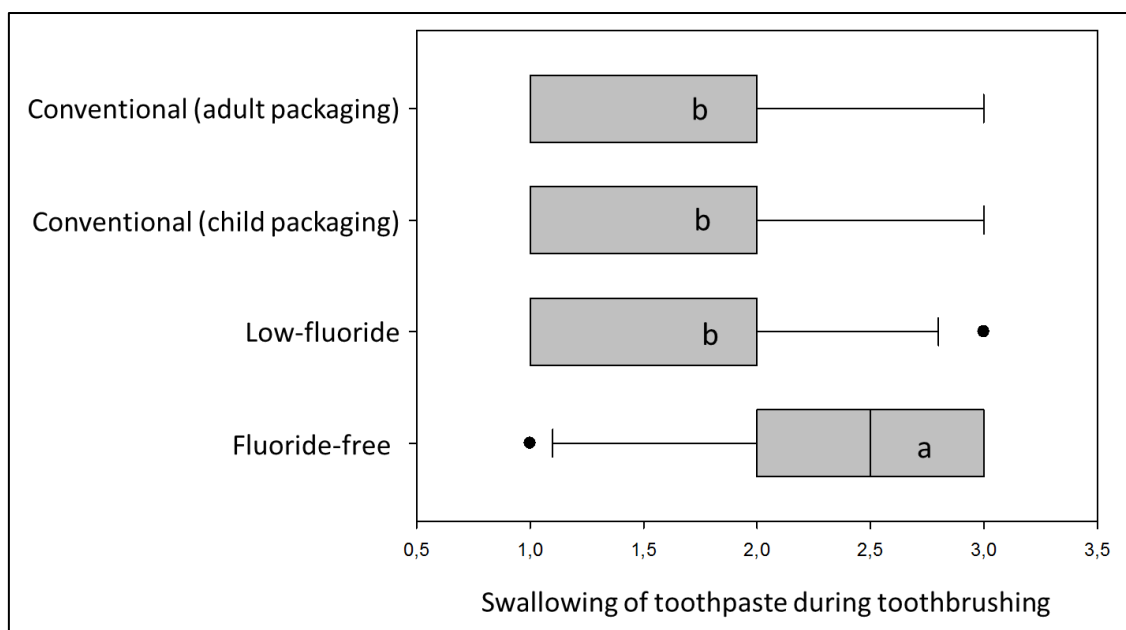


Figure 3. Habit of swallowing toothpaste during toothbrushing according to the type of toothpaste used at home (Score 1: child does not swallow toothpaste; Score 2: child swallows part of the toothpaste; Score 3: child swallows all the toothpaste. Different letters indicate significant differences (Kruskal-Wallis and Dunn's tests, $p < 0.001$, $n = 206$).

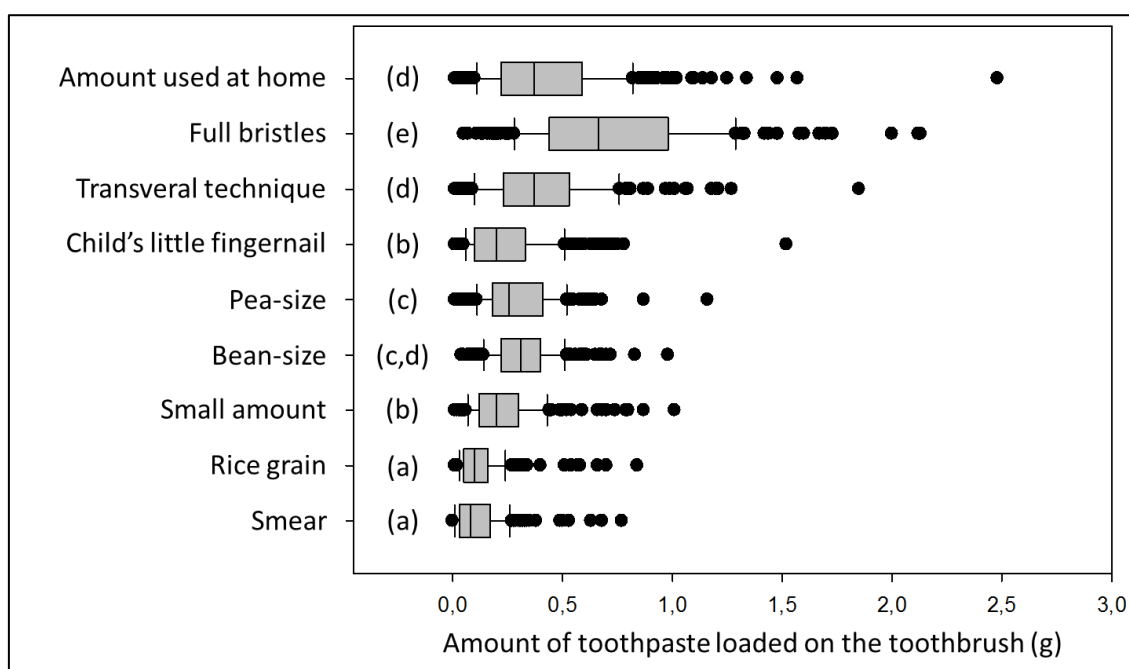


Figure 4. Amount of toothpaste placed on the child's toothbrush by the parents/guardians as done at home and according to descriptions recommended by scientific associations. Different letters within parenthesis indicate significant differences (Friedman's and Tukey's tests, $p < 0.05$, $n = 306$).

Anexos

ANEXO A

Certificado de aprovação do Comitê de Ética em Pesquisa

UNESP - FACULDADE DE
ODONTOLOGIA-CAMPUS DE
ARAÇATUBA/ UNIVERSIDADE



PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: Estimativa de ingestão de flúor pela escovação com dentífricos fluoretados em crianças

Pesquisador: GIOVANNA ELISA GABRIEL COCLETE

Área Temática:

Versão: 1

CAAE: 67074217.7.0000.5420

Instituição Proponente: Faculdade de Odontologia do Campus de Aracatuba - UNESP

Patrocinador Principal: FUND COORD DE APERFEIÇOAMENTO DE PESSOAL DE NÍVEL SUP

DADOS DO PARECER

Número do Parecer: 2.037.967

Apresentação do Projeto:

O uso não supervisionado de dentífricos fluoretados tem sido considerado como fator de risco para o desenvolvimento de fluorose dentária em

crianças abaixo de 6 anos de idade, uma vez que durante a escovação uma parte considerável do dentífrico colocado na escova é ingerido. A

maioria da população desconhece as causas da fluorose dentária, e somente se dá conta desta alteração quando os dentes permanentes já foram

acometidos. Desta forma, fica evidente a necessidade de ações de caráter informativo e educativo a pais/responsáveis de crianças na faixa de risco

para o desenvolvimento de fluorose dentária. O objetivo do presente estudo será estimar a ingestão de flúor (F) pelo uso de dentífricos fluoretados,

levando-se em conta a idade, a quantidade de dentífrico usado durante a escovação, número de escovações por dia e concentração de F no

produto, em crianças entre 0 e 5 anos de idade, residentes na cidade de Aracatuba. Serão aplicados questionários aos pais/responsáveis por

crianças a serem vacinadas em postos de saúde, acerca de informações socioeconômicas, quantidade de dentífrico utilizada durante a escovação,

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Continuação do Parecer: 2.037/967

frequência de escovação por dia e marca do dentífrico utilizado. Também será perguntado se existe o hábito de Ingestão de dentífrico diretamente do tubo ou durante a escovação. Por fim, questões sobre os efeitos preventivos e adversos do flúor serão direcionadas ao entrevistado. Os dados serão tabulados e analisados por meio de estatística descritiva, utilizando valores relativos. Parte dos dados será analisada pelo teste Qui-quadrado (χ^2), utilizando um nível de significância de 5%.

Objetivo da Pesquisa:

O objetivo do presente estudo será estimar a ingestão de flúor através do uso de dentífricos fluoretados, verificando a associação entre a idade da criança, quantidade de dentífrico usada durante a escovação, frequência de escovação/dia e concentração de F no produto, em crianças entre 0 e 5 anos de idade, bem como a influência de fatores socioeconômicos.

Avaliação dos Riscos e Benefícios:

Riscos:

Risco mínimo.

Benefícios:

ao participar desta pesquisa o(a) sr.(a) será entregue um folheto explicativo ao entrevistado, contendo informações (imagens e textos) sobre higiene bucal, efeitos preventivos e adversos do uso do flúor, bem como instruções sobre concentração ideal de fluoreto nos dentífricos para crianças, quantidade a ser utilizada e frequência de escovação. Será enfatizada a importância da supervisão da escovação das crianças e o estímulo a cuspir o dentífrico após a escovação, como forma de se minimizar a ingestão de fluoreto pelo dentífrico, o qual é considerado como um fator de risco para o desenvolvimento de fluorose dentária.

Comentários e Considerações sobre a Pesquisa:

Pesquisa bem fundamentada cientificamente.

Considerações sobre os Termos de apresentação obrigatória:

todos os protocolos foram apresentados adequadamente.

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Continuação do Parecer: 3.037.967

Recomendações:

-numero de participantes diferentes nos protocolos, 400 ou 500 (TCLE).

Conclusões ou Pendências e Lista de Inadequações:

adequar o numero de participantes nos protocolos.

Considerações Finais a critério do CEP:

O CEP solicita que sejam tomadas as providências cabíveis para sanar as pendências apontadas. Informa ao(a) senhor(a) pesquisador(a) que o prazo máximo para o atendimento dessas pendências será de 30 (trinta) dias corridos a partir da emissão deste parecer. Caso o prazo não seja respeitado e/ou as pendências atendidas a contento, o protocolo será retirado do sistema e, portanto, cancelado. No momento da inclusão das alterações no sistema da Plataforma Brasil atenção especial deverá ser dada ao cronograma que será apresentado, visto que nenhum protocolo já em andamento será autorizado pelo sistema CEP/CONEP.

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB INFORMACOES BÁSICAS DO PROJETO 895071.pdf	06/04/2017 13:03:54		Aceito
Projeto Detalhado / Brochura Investigador	Projeto_de_Pesquisa_CEP.docx	06/04/2017 12:58:13	GIOVANNA ELISA GABRIEL COCLETE	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO.docx	06/04/2017 12:54:50	GIOVANNA ELISA GABRIEL COCLETE	Aceito
Folha de Rosto	Folha_de_rosto_CEP.pdf	06/04/2017 12:00:42	GIOVANNA ELISA GABRIEL COCLETE	Aceito

Situação do Parecer:

Pendente

Necessita Apreciação da CONEP:

Não

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Continuação do Processo: 2.037.967

ARACATUBA, 28 de Abril de 2017

Assinado por:
André Pinheiro de Magalhães Bertoz
(Coordenador)

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Giovanna Elisa Gabriel Coclete

ANEXO B**Questionário estruturado aplicado aos participantes****Questionário Fluorose Dentária**

- 1) Entrevistado () mãe () pai () outro _____
- 2) Escolaridade: () analfabeto () 1º grau incompleto () 1º grau completo () 2º grau incompleto () 2º grau completo () 3º grau incompleto () 3º grau completo () pós-graduação
- 3) Em que ano parou de estudar? _____
- 4) Renda familiar (colocar o valor em salário mínimo R\$ 937): _____ salários mínimos
- 5) Gênero: () M () F 6) Peso da criança: _____ 7) Data de nascimento da criança: _____
- 8) Bairro: _____ 9) Há quanto tempo moram no Bairro? _____
- 10) Tem costume de comer a pasta direto do tubo? () sim () não () não sei
- 11) Durante a escovação, a criança: () engole parte da pasta () toda a pasta () não engole () não sabe
- 12) Frequência de escovação/dia: () _____
- 13) Marca: _____ (outra): _____
- 14) Você sabe para que serve o flúor da pasta?: _____
- 15) Você sabe se o flúor pode ter algum efeito ruim? () sim () não
- Qual? _____
- 16) Você sabe o que é fluorose dental? () sim () não
- O que é? _____

ANEXO C

Sequência da pesagem do dentifrício colocada pelo entrevistado na escova de dentes.



A) Aplicação do questionário ao entrevistado.



D) Entrevistado dispensando o dentifrício na escova de dentes.



B) Balança portátil (Escala de precisão Lb 0,01 -g; Itália; BEL Engineering s.r.l).



E) Peso final menos peso inicial.



C) Dentifrícios mais comumente disponíveis nos supermercados.



F) Quantidades aleatórias de dentifrício aplicado pelo entrevistado.

ANEXO D

Giovanna Elisa Gabriel Coclete

Folheto explicativo entregue aos participantes após a aplicação do questionário

O QUE É FLUOROSE?

A fluorose é um defeito no esmalte do dente, que aparece mais frequentemente como manchas brancas opacas. É mais comum nos dentes permanentes.



POR QUE OCORRE?

A fluorose ocorre devido a uma ingestão em excesso de flúor durante a fase de formação dos dentes, antes de irromperem na cavidade bucal.

COMO EVITAR A FLUOROSE?

1. Sempre manter a pasta de dente longe do alcance das crianças.
2. A criança nunca deve colocar a pasta na escova, e sim o adulto responsável.
3. A escovação dentária de crianças até 3 anos de idade deve ser realizada pelos responsáveis.
4. Entre 3 e 7 anos de idade, a escovação deverá ser supervisionada pelos pais, para evitar que a criança engula a pasta de dente.
5. Nesta faixa etária, a quantidade de pasta deve ser controlada pelos pais.
6. Colocar pequenas quantidades de pasta na escova, igual a um grão de ervilha.

QUAL A IDADE DE MAIOR RISCO?

Todas as crianças abaixo de 6 anos de idade podem desenvolver fluorose nos dentes permanentes, porque é nesta fase que estes estão em formação.

Com relação aos incisivos (dentes da frente), o risco maior é para crianças abaixo de 3 anos de idade. Assim, o cuidado nesta idade deve ser redobrado!

IMPORTANTE!

1. Deve-se escovar os dentes sempre com **PASTA COM FLÚOR**. Ainda não existe uma forma melhor e mais barata de se proteger contra a cárie.

2. **PASTA DE DENTE NÃO É ALIMENTO!** Por isso não deve ser nem engolida durante a escovação, nem ingerida como se fosse sobremesa!

3. Além da pasta de dente, o flúor está presente na água. Sua dosagem é controlada pelo Departamento de Água e Esgoto e Vigilância Sanitária. Importante lembrar que o flúor não tem cor e nem cheiro, então não deve ser confundido com o cloro presente na água.

4. O flúor é reconhecido e usado em todo o mundo na prevenção e controle da cárie. O importante é saber usá-lo.

7. Esta quantidade indicada é suficiente para controlar a cárie e prevenir a fluorose dentária



EXISTE TRATAMENTO?

Nos casos leves, o tratamento não é necessário devido ao desgaste natural dos dentes. Já em casos mais severos, deve-se procurar o dentista.

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ANEXO E

Giovanna Elisa Gabriel Coclete

Instruções aos autores – Pediatric Dentistry

AAPD Manuscript Submission Checklist

This checklist applies specifically to original research articles but much of it will apply to submission of other manuscript types, as well. Please see the section 'Types of Manuscripts' in the Instructions for Authors for complete information.

Submission Documents

- ☐ Submit manuscript in .doc or .docx format.
- ☐ Manuscript is double spaced.
- ☐ Used basic fonts such as Arial, Courier, Helvetica no smaller than 11 points.
- ☐ Two versions of the manuscript are to be uploaded, one version containing all the author information and one version without any information identifying the authors or their institutions (blinded).
- ☐ Tables appear at the end of the main document, while photos, photomicrographs and graphs are to be submitted as separate files (.jpg or .tif format only).
- ☐ IRB approval, informed consent (verbal or written), HIPAA compliance (if from the United States), and/or animal care committee must be included with the submission.
- ☐ IRB approval letters must be in English, on official IRB letterhead, and over an official signature of the IRB approval agent.

Short Title

- ☐ A brief but comprehensive phrase summarizing the paper.

Keywords

- ☐ Five words that appear in the title/abstract, and searchable in PubMed.

Abstract

- ☐ The Abstract is brief, providing the reader with a concise but complete summary of the paper.
- ☐ Date range of study should be given.
- ☐ Number of patients/animals (including age and gender, if appropriate) should be given.
- ☐ Various groups, including controls, described.
- ☐ Procedures performed should be described.
- ☐ Specifics of evaluation should parallel the results portion of the abstract.
- ☐ Abstract results parallel abstract methods.
- ☐ Abstract results contain quantitative data along with statistical significance.
- ☐ Abstract conclusions can be drawn from the results of the study.

Introduction

- ☐ Provides context for the article.
- ☐ Provides objective of the study.
- ☐ Provides a clear purpose/hypothesis.
- ☐ Does not exceed two or three paragraphs.

Methods

- ☐ As appropriate, includes a detailed description of the study design or type of analysis.
- ☐ As appropriate, includes dates and period of study.
- ☐ As appropriate, includes condition, factors, or disease studied.
- ☐ As appropriate, includes details of sample (e.g., study participants and the setting from which they were drawn).
- ☐ As appropriate, includes method of random sequence generation in detail (coin flip, random table, etc.).
- ☐ As appropriate, includes method of allocation concealment in detail (opaque envelopes, sequential numbered drug containers, etc.).
- ☐ As appropriate, includes a description of treatment providers.
- ☐ As appropriate, includes whether providers and participants were blinded.
- ☐ As appropriate, includes inclusion and exclusion criteria.
- ☐ As appropriate, includes intervention(s), if any.
- ☐ As appropriate, includes outcome measures.
- ☐ As appropriate, includes method of blinding of outcome assessors.
- ☐ As appropriate, includes method of standardization and calibration of outcome assessors, including kappa statistics.
- ☐ As appropriate, includes statistical analysis.

Results

- ☐ Clearly mirrors methods; used subtitles if needed. Check for consistency in data in text, tables, and figures.
- ☐ Report the results of the statistical analysis for all variables collected and analyzed, not just for those which exhibited statistical or near statistical significance.
- ☐ Text and Tables must stand alone.

Continued on next page



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INSTRUCTIONS FOR AUTHORS | 2015 7

Discussion

- ☐ State pertinent new findings, but do not repeat results.
- ☐ How did your results differ from other relevant literature?
- ☐ Do not cite tables or figures in the discussion. These should be introduced in the methods and results sections.
- ☐ Do not cite new results not previously reported in the Results. All results the author wishes to discuss must have first been presented in the Results section of the manuscript.
- ☐ Describe limitations of your study in the paragraph just before your Conclusions. Include itemization of limitations of any incomplete data.
- ☐ Describe the type of future studies needed, if appropriate.

Conclusions

- ☐ Synthesis of key points.
- ☐ List and number using Arabic numerals.
- ☐ Conclusions should be supported by data.
- ☐ Numbered succinct statements.

References

- ☐ Call out references in order they appear in text.
- ☐ Adhere to AAPD guidelines.
- ☐ Verify accuracy of your references.
- ☐ Archive each and all references in WebCite®.

Tables

- ☐ Adhere to AAPD Maximum requirements according to Type of Manuscript.
- ☐ Include title for each table.
- ☐ Numbers correspond to numbers in text.
- ☐ Define abbreviations below each table.

Figures

- ☐ Adhere to AAPD Maximum requirements according to Type of Manuscript.
- ☐ Image resolution, after cropping to the area of interest, should be a minimum 300-600 dpi.
- ☐ Figures should be submitted individually as .jpg or .tif files.
- ☐ Figures should be numbered in Arabic numerals in the order of the first citation in the text.
- ☐ Legends for each figure must be printed on a separate page.
- ☐ Figure legends should clearly define findings on each figure, with labels mentioned in the caption if they are used in the figure.
- ☐ If based on individual subject, caption should include subject age and gender.

NOTE: Authors desiring to have more Figures or Tables MUST agree with the electronic publication of their manuscript, and must select this preference. Each separate chart, graph or photograph will be counted as a separate figure. Figures grouped together will be counted as their individual parts. See examples on page 2.

