

Marketing Strategies and Warning Labels on Children's Toothpaste

Corey Hannah Basch, EdD, MPH, CHES; Sonali Rajan, EdD, MS

Introduction

Research has suggested that the overconsumption of fluoridated toothpaste has health implications and may pose risk for fluorosis and fluoride toxicity.¹ These risks are heightened among young children, because they often swallow toothpaste while brushing, particularly as they learn to implement best oral care practices.² Further, children's toothpastes typically contain at least 1,000 parts per million of fluoride - therapeutic levels on par with adult toothpastes.³ Given that fluoride is a drug, the U.S. Food and Drug Administration (FDA) is responsible for the labeling of products with fluoride in addition to regulating both the safety and efficacy of such products. The American Dental Association (ADA), is not a regulatory agency, but plays an important role in following and supporting FDA regulations.⁴ Therefore, in an attempt to inform consumers about the safety and effectiveness of toothpaste, the ADA initiated the ADA Seal of Acceptance program, in line with FDA guidelines.⁵ As such, toothpaste manufacturers who seek to have the ADA seal on toothpastes must include the following warning, "Do not swallow. Use only a pea-sized amount for children under 6. To prevent swallowing, children under 6 years of age should be supervised in the use of toothpaste."⁵ The authors posit that these efforts to warn parents and children about possible consumption risks, however, are often missed, as toothpaste manufacturers use aggressive techniques to market toothpaste to children as if it is a food product.

No studies currently exist that look at the presence of warning labels on children's toothpaste and marketing strategies that might encourage consumption of toothpaste. Therefore, this study was conducted to determine the presence, placement and size of warning labels, as well as to describe the marketing strategies currently used in selling chil-

Abstract

Purpose: The overconsumption of toothpaste has negative consequences, particularly for children. This study's objectives were to describe misleading marketing strategies used in selling children's fluoridated toothpaste and identify warning label characteristics. Two researchers independently coded the packaging from 26 over-the-counter toothpastes that are specifically marketed for children. Aggressive marketing strategies targeting children were identified: every toothpaste in this sample displayed at least 1 children's animated character, 50% had at least 1 picture of a food item, 92.3% stated they were flavored and 26.9% depicted a full swirl of toothpaste, directly contradicting dentist recommendations for young children. Further, on most toothpaste tubes, warnings regarding fluoride overconsumption for young children were only listed on the back and in very small font. Misleading marketing strategies are regularly used in selling children's toothpaste as if it is a food product, while warnings regarding overconsumption among youth are minimized. Dental hygienists are in an important position to help parents of young children implement safe oral care practices.

Keywords: toothpaste, advertising, warning labels, fluorosis

This study supports the NDHRA priority area, **Health Promotion/Disease Prevention:** Investigate how diversity among populations impacts the promotion of oral health and preventive behaviors.

dren's toothpaste. The authors hypothesized that the implications of this study are important for all dental clinicians, with a particular emphasis on dental hygienists given the crucial role that dental hygienists play in the education and advocacy of oral self-care behaviors among their patients. As such, this work is aligned with the Health Promotion and Disease Prevention category of the American Dental Hygienists' Association National Dental Hygiene Research Agenda. More specifically, this study aligns with the following priority area: "Investigate the effectiveness of oral self care behaviors that prevent or reduce oral diseases among all age, social and cultural groups."⁶

Methods and Materials

Two researchers independently coded toothpastes from drug stores and pharmacies in New York City. The researchers continued to visit locations throughout the city until all brands of chil-

dren’s toothpastes were located. The study’s final sample was derived from 9 different drugstores. An additional 7 locations were visited and all products overlapped. A coding sheet was created to capture not only the size and placements of warnings about consuming too much fluoride, but to also highlight the marketing tactics used on the product, specifically pictures of food, characters and other endorsements. Each toothpaste tube was counted individually based on the packaging and brand. All data were cleaned and warehoused in SPSS (version 20.0). This research was determined to be exempt by the Human Subjects Committees at William Paterson University and Teachers College, Columbia University.

Results

A total of 26 fluoridated toothpastes for children were identified from drug stores and pharmacies in New York City. Children’s toothpastes were identified from a range of well-known toothpaste companies (including Colgate® (Colgate-Palmolive Company, New York, NY), Crest® (Procter & Gamble, Cincinnati, Ohio), Aquafresh® (GlaxoSmith-Kline, Brentford, England) and Oral B® (Procter & Gamble, Cincinnati, Ohio)). Inter-rater reliability was calculated to determine the level of internal consistency between the 2 coders. Specifically, there were a total of 71 independent items captured via the coding sheet and 26 toothpastes coded, yielding 1,846 responses provided by each coder. Of these 1,846 responses, the coders had consistent responses in 98.7% of entries across the data set. The few discrepancies were readdressed and agreed upon prior to data analysis.

Marketing Strategies

All 26 toothpaste products had at least 1 children’s animated character or cartoon on the tube of toothpaste. Dora the Explorer was the most frequently observed character (38.5%, n=10). In addition, 21.1% (n=6) of the toothpastes were endorsed by a children’s entertainment company, such as Nickelodeon or Disney. The authors also noted that 50% (n=13) of the sample had at least 1 picture of a food item, such as a strawberry, orange slices or watermelon present on the toothpaste tube itself. Further, 92.3% (n=24) of

Table I: Summary of Key Marketing Strategies and Warning Label Characteristics (n=26)

Toothpaste Flavor	<ul style="list-style-type: none"> Berry: 3.8% (n=1) Bubble Fruit: 19.2% (n=5) Bubble Gum 15.4% (n=4) Bubble Mint 3.8% (n=1) Mint 19.2% (n=5) Orange Mango 3.8% (n=1) Other Flavor: 19.2% (n=5) Strawberry 7.7% (n=2)
Children’s Entertainment Company	<ul style="list-style-type: none"> Disney/Pixar/Disney Junior: 11.5% (n=3) Marvel: 3.8% (n=1) Nickelodeon: 7.7% (n=2)
Picture of Animated Character or Cartoon	<ul style="list-style-type: none"> Angry Birds: 3.8% (n=1) Animated Fruit: 7.7% (n=2) Cinderella: 3.8% (n=1) Disney’s Cars: 3.8% (n=1) Dora the Explorer: (n=10) Hello Kitty: 3.8% (n=1) One Direction: 3.8% (n=1) Other Animated Character: 15.4% (n=4) Scooby Doo: 3.8% (n=1) Spiderman: 3.8% (n=1) Spongebob: 3.8% (n=1) Toy Story: 3.8% (n=1) Transformers 3.8% (n=1)
Toothpaste “Swirl”	<ul style="list-style-type: none"> 26.9% (n=7)
ADA Approval/Acceptance	<ul style="list-style-type: none"> ADA Approval: 3.8% (n=1) ADA Acceptance: 38.5% (n=10)
Warning: Use pea-size amount	<ul style="list-style-type: none"> 84.6% (n=22)
Warning: Use by children only over 2 years	<ul style="list-style-type: none"> 96.2% (n=25)
Warning: Consult dentist or physician before use among children under 2 years	<ul style="list-style-type: none"> 96.2% (n=25)

the sample stated they were flavored toothpastes, with sweet and appealing flavors ranging from strawberry to bubblegum to orange mango. Interestingly, 26.9% (n=7) depicted a picture of a full swirl of toothpaste on the tube, in direct contradiction with dentist recommendations for children under the age of 12. In 2 of these cases, the swirl of toothpaste was illustrated as an animated character. Table I summarizes the key marketing strategies and warning label characteristics observed across the study sample.

Warning Labels

Nearly the entire sample (96.2%, n=25) stated that the toothpaste was fluoridated on the front of the toothpaste tube. Nearly half (42.3%, n=11) had ap-

proval or acceptance from the ADA.³ Regulations state that in order to receive ADA approval or acceptance, the pea-sized amount warning must be included directly on the toothpaste tube. Specifically, while the majority of the sample (84.6%, n=22) indicated that children should use a pea-sized amount of toothpaste and be supervised by an adult when brushing and rinsing to minimize swallowing, all 22 of these toothpaste products listed this warning on the back of the tube and in a very small font (size 8 font or smaller).

Similarly, the entire sample listed a warning for use of fluoridated toothpaste by children over age 2 years. Nearly all (96.2%, n=25) listed this warning on the back of the tube and in a very small font (size 8 font or smaller). The same trend was observed regarding warning parents that a dentist or physician be consulted before using fluoridated toothpaste among children under the age of two years. All 26 toothpastes listed this warning on the back of the toothpaste tube and 100% of these toothpastes listed this warning on the back of the tube and in a very small font (size 8 font or smaller).

Discussion

The findings of this study are of interest for 3 reasons. First, the small size and the minimally accessible placement of the warning labels presents a problem for parents and guardians of young children who may miss this important information. Second, the ubiquitous presence of food pictures and appealing flavors on the toothpaste creates a distinct conflict. While the labels warn the consumer to use only a pea-sized amount and note that toothpaste is not intended to be swallowed, many toothpastes simultaneously boast pictures of fruit with flavoring to match - a common signal to a child that toothpaste is intended to be consumed as if it were food. It should be mentioned that in some cases, the pictures of food were not animated nor did they resemble a cartoon; rather, they were an actual photograph. Third, a large swirl of toothpaste was depicted on nearly one-third of toothpaste tubes. Again, this directly conflicts with recommendations and warnings for how much toothpaste should be used by a child. Indeed, findings from a study of advertisements in popular parenting magazines also found this confusing marketing tactic to be used with regularity.⁷

Special efforts should therefore be made to bring these aforementioned issues to light among parents who may not be aware that the amount of toothpaste depicted in advertisements or on actual tooth-

paste tubes is well over the recommended amount.⁸ In addition, given that 21,513 calls were received by the Poison Control Center in 2011 that specifically related to the over-consumption of fluoridated toothpaste, measures need to be taken to deter children from eating toothpaste rather than drawing them to it.⁹ Aside from addressing these manipulative marketing tactics, efforts should be made to encourage parents of young children to instill proper supervised tooth brushing habits.¹⁰⁻¹³ It should be noted that these marketing tactics are used, in part, to encourage positive oral care practices among youth. However, to discourage high rates of toothpaste consumption, particularly among young children, the authors suggest that marketing tactics specifically limit the use of pictures of food and addictive flavorings. Similarly, the authors suggest that warnings are made clearer on the toothpaste package by increasing the warning label font size and label placement. Lastly, the use of an animated full swirl of toothpaste ought to be removed as well, as it is in direct conflict with the ADA's pea-sized recommendation.

The natural extension of these efforts includes educating parents. One qualitative study involving interviews with hygienists confirmed that hygienists feel education is an important component of their job.¹⁶ In addition, a national survey indicated that high percentages of dental hygienists actively seek new information related to staying relevant in their practice.¹⁷

Conclusion

The role of dental hygienists has evolved greatly over the past 100 years.¹⁴ Dental hygienists play a very important role in the oral health of children and while it can be challenging, research indicates that dental hygienists are in a key position to provide oral health education to children as well.¹⁵

The results of this study provide another opportunity for dental hygienists to play a crucial role in speaking with and educating parents and young children about best oral self-care behaviors, given the possibility that parents (and their children) likely have difficulty understanding the amount of toothpaste to use and the corresponding dangers of overuse.

Corey Hannah Basch, EdD, MPH, CHES, is an Associate Professor of Public Health at William Paterson University in Wayne, NJ. Sonali Rajan, EdD, MS, is an Assistant Professor of Health Education at Teachers College, Columbia University.

References

1. Beltrán-Aguilar ED, Barker L, Dye BA. Prevalence and severity of dental fluorosis in the United States, 1999-2004. *NCHS Data Brief*. 2010;53:1-8.
2. Erdal S, Buchanan SN. A quantitative look at fluorosis, fluoride exposure, and intake in children using a health risk assessment approach. *Environ Health Perspect*. 2005;113(1):111-117.
3. Best Fluoride Levels Determined for Children's Toothpaste. Center for Advancing Health [Internet]. 2010 January [cited 2013 October 5]. Available from: <http://www.cfah.org/hbns/2010/best-fluoride-levels-determined-for-childrens-toothpastes>
4. Code of Federal Regulations Title 21. U.S. Food and Drug Administration. 2013.
5. Statement on FDA Warning Labels. American Dental Association [Internet]. [cited 2013 July 21]. Available from: <http://www.ada.org/1761.aspx>
6. National Dental Hygiene Research Agenda. American Dental Hygienists' Association [Internet]. 2007 March [cited 2013 July 21]. Available from: http://www.adha.org/resources-docs/7834_NDHRA_Statements.pdf
7. Basch CH, Hammond R, Guinta A, Rajan S, Basch CE. Advertising of Toothpaste in Parenting Magazines. *J Community Health*. 2013;38(5):911-914.
8. Bentley EM, Ellwood RP, Davies RM. An investigation into the ingestion of fluoride from toothpaste by young children. *Br Dent J*. 1999;186(9):460-462.
9. Bronstein AC, Spyker DA, Cantilena LR Jr, Rumack B, Dart RC. 2011 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 29th Annual Report. *Clin Toxicol (Phila)*. 2012;50(10):911-1164.
10. de Silva-Sanigorski A, Ashbolt R, Green J, et al. Parental self-efficacy and oral health-related knowledge are associated with parent and child oral health behaviors and self-reported oral health status. *Community Dent Oral Epidemiol*. 2013;41(4):345-352.
11. Kranz AM, Rozier RG, Zeldin LP, Preisser JS. Oral health activities of early head start teachers directed toward children and parents. *J Public Health Dent*. 2011;71(2):161-169.
12. Tay HL, Zainudin IS, Jaafar N. Fluoride toothpaste utilization behavior among preschool children in Perlis, Malaysia. *Community Dent Health*. 2009;26(4):211-215.
13. Vichayanrat T, Steckler A, Tanasugarn C, Lecomboon D. The evaluation of a multi-level oral health intervention to improve oral health practices among caregivers of preschool children. *Southeast Asian J Trop Med Public Health*. 2012;43(2):526-539.
14. Battrell A. Looking at the past to see the future: the role of the dental hygienist in collaborating with dentists to expand and improve oral health care. *J Am Coll Dent*. 2012;79(1):29-32.
15. St Onge NA. The hygienist's role in improving children's oral health throughout their development. *Compend Contin Educ Dent*. 2002;23(3 Suppl 2):10-16.
16. Rogo EJ. Dental hygienists as adult learners and educators to improve access to care. *Int J Dent Hyg*. 2012;10(1):36-45.
17. Finley-Zarse SR, Overman PR, Mayberry WE, Corry AM. Information-seeking behaviors of U.S. practicing dental hygienists and full-time dental hygiene educators. *J Dent Hyg*. 2002;76(2):116-124.