

Introduction

Dental caries is the single most prevalent chronic disease of childhood in the US,¹ and poor dental health may significantly affect a child's nutritional intake, growth, speaking, self-esteem, school performance/attendance, and cognitive development.⁴

Studies have shown interproximal plaque to be more acidogenic than plaque in other areas of the mouth, and thus removal of interproximal plaque is of utmost importance in halting the dental caries process. Flossing is a means of mechanically disrupting and removing interproximal plaque, and is an important tool in reversing the dental caries disease process.

However, flossing is a technique sensitive process. Currently, the AAPD recommends that while initially parents should floss for their children, children should master the skill of flossing by age 10.⁷ Similarly, the AAP states that flossing should be assisted by a parent until the child is 10 years of age.^{5,6}

Few studies have been done to identify flossing alternatives that would allow younger children to floss independently and effectively. The advent of GumChucks makes such a study possible.

Purpose: In this study, we aim to evaluate whether the GumChucks flossing system can be a safe, effective, and preferred alternative to regular flossing for children.

Materials & Methods

- 40 children (4-15y) were recruited
- Participants viewed an educational video about proper flossing and about how GumChucks works, and took a survey assessing preferences for GumChucks and string floss.
- Participants were randomly assigned to the string floss group (control) or the GumChucks group (experimental).
- Baseline gingival health³ and plaque scores (with disclosing solution)¹⁰ were measured.
- Participants were timed on flossing speed using their assigned flossing method.
- Post-op plaque score was taken to identify flossing efficacy.
- Participants were timed on flossing speed using the flossing method they were not assigned to.
- Participants were asked to floss daily for 4 weeks with their assigned flossing modality
- Upon 4 week recall, gingival health was reassessed



Results

Table 1: Demographic distribution of study participants

		GumChucks	Floss
4-9 years	Sample size (%)	7 (44%)	9 (56%)
	Mean Age (years)	8.0	6.4
10-15 years	Sample size (%)	14 (58%)	10 (42%)
	Mean Age (years)	11.4	11.8
All	Sample size (%)	21 (52%)	19 (48%)
	Mean Age (years)	10.3	9.3

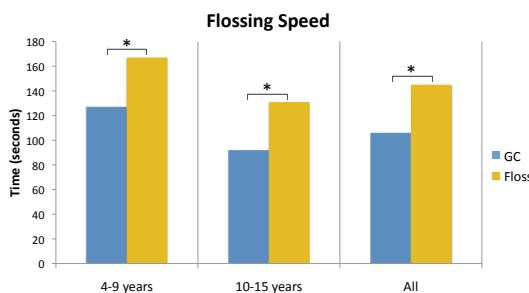


Figure 1: Comparison of flossing speed (time it takes to floss all contacts) using GumChucks vs. String Floss among different age groups. There was a significant difference in the 4-9 age group ($p=0.03$), 10-15 age group ($p=0.01$), and in the entire cohort ($p=0.0002$)

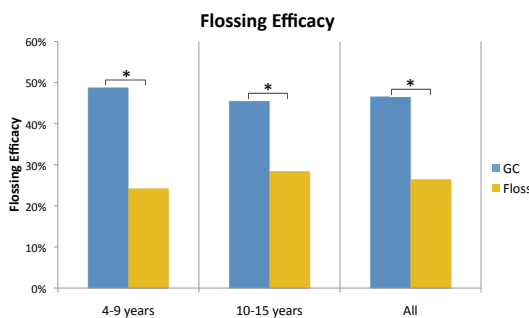


Figure 2: Comparison of flossing efficacy (percent of plaque removed) using GumChucks vs. String Floss among different age groups. A significant difference was found in all age groups: 4-9 ($p=0.03$), 10-15 ($p=0.04$), and all ($p=0.002$)

Results (cont.)

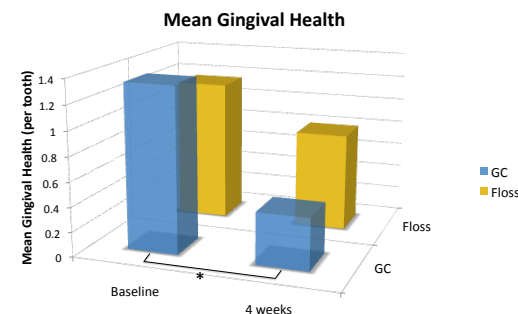


Figure 3: Mean gingival health scores (cumulative gingival health divided by number of sites) at baseline and at 4 weeks post-op for both GumChuck and String Floss participants. A significant difference was found between baseline and 4 weeks for the GumChucks group ($p=0.002$) but not in the floss group ($p=0.204$)

Conclusions

Children aged 4-9 were able to floss more quickly and effectively with GumChucks than were children aged 10-15 with string floss. This demonstrates that children aged 4-9 may be able to floss independently and effectively with GumChucks.

GumChucks are an efficient and effective alternative to traditional string floss for children because they allow for:

1. Faster flossing
2. More effective flossing
3. Greater improvements in gingival health over a 4 week recall period

References

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