

INTRO

The current standard of care for initial non-cavitated caries lesions has been to reinforce good diet and oral hygiene, to promote remineralization of the lesion with topical fluoride varnish application, and to monitor the lesion with bi-annual radiographs. silver diamine fluoride (SDF), when used as a caries arresting medicament, offers a treatment with the possibility to slow or stop the progression of incipient interproximal caries without removal of tooth structure. SDF appears to re-mineralize dentin.¹ The effectiveness of treating carious lesions with SDF has been demonstrated by the increase in mineral density of the previously carious tissue.² A retrospective study published in 2020, found that placing SDF on interproximal lesions resulted in caries arrest in 84% of lesions at the 12 month follow up.³ To date, there has been no prospective randomized control trial looking evaluating the effectiveness of silver diamine fluoride in the arrestment of interproximal caries.

PURPOSE

The purpose of this study is to investigate whether silver diamine fluoride (SDF) application can arrest the progression of incipient interproximal caries in primary molars as determined by comparing bitewing radiographs (BWx) over time. The study will additionally investigate the following: (1) the method of application (Microbrush vs Superfloss) (2) the number of applications and (3) re-application time intervals.

METHODS

A randomized control trial was conducted on healthy children, 3-12 years of age, with incipient interproximal decay on deciduous molars. The following treatment groups were randomly assigned and applied at the initial visit: 1. Fluoride varnish application alone (Control) 2. SDF application with Superfloss (intervention) 3. SDF application with Microbrush (Intervention). (Image 1) The participants returned for re-application of their respective treatments in 3 and 6 months, as well as returning for bitewing radiographs at 6m and 12m. Three independent raters evaluated radiographs according to the ICCMS radiographic caries classifications.



Figure 1: The three treatment groups differentiated by their various treatments and methods of application.

RESULTS

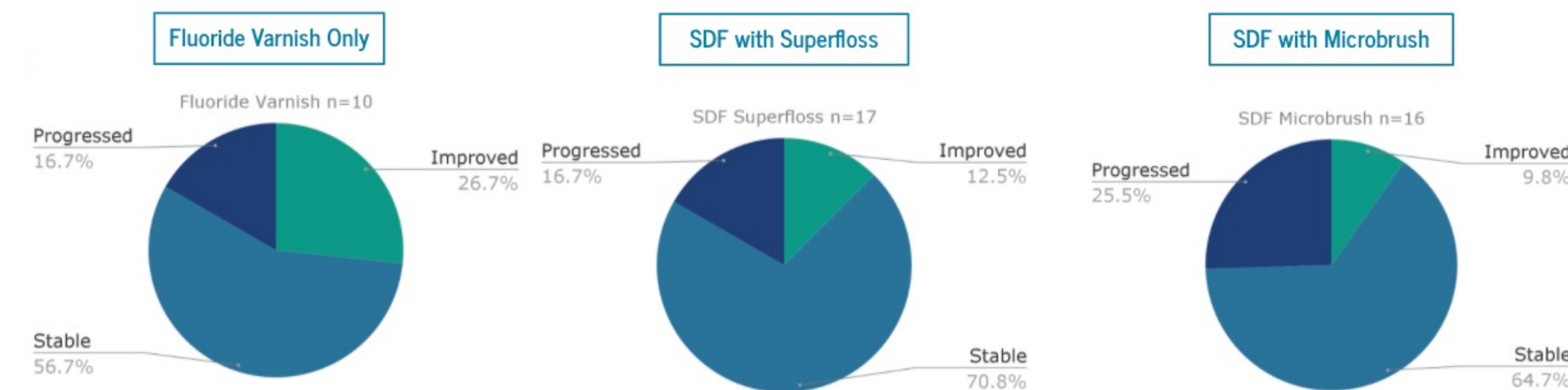


Figure 2: Results at 6 months following initial application

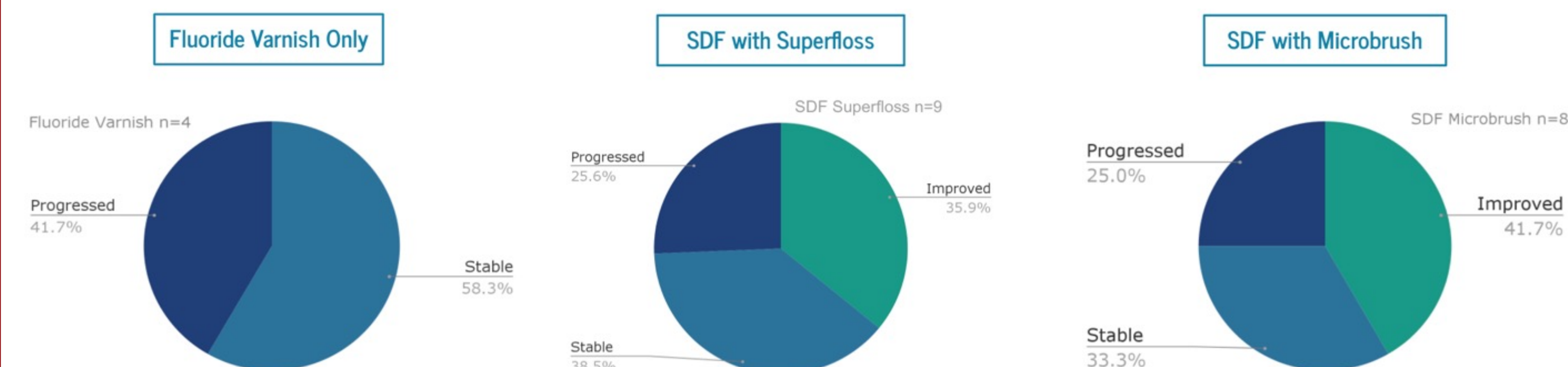


Figure 3: Results at 12 months following initial application

RESULTS – cont.

At the 6-month assessment, the FV group (n=10) and the SDF with superfloss group (n=17) both had 16.7% of lesions progress, with the remaining 83.3% of lesions assessed to be stable or improved. (Chart 1) The SDF with microbrush treatment group n=18 had 25.5% progression with 74.5% of lesions rated as stale or improved. At the 12-month assessment (n=21): the control treatment FV(n=4) had 41.7% of the lesions progress or grow, the SDF w/ SF treatment (n=9) had 25% of the lesions progress and SDF w/ MB (n=8) treatment had 25% of lesions progress at both 6 and 12 months. (image 3)

CONCLUSIONS

All three groups demonstrate a trend towards stabilization or improvement of interproximal caries at 6 months following initial treatment. While these preliminary results are hopeful, caries progression is multifactorial and perhaps no single therapy is adequate. As more data is gathered statistical analysis will be performed to determine significance.

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