Topical Fluoride Impact in Future Restorative Dental Procedures: A Claim Study

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ABSTRACT

Background: Dental caries is one of the most prevalent diseases impacting children. Topical fluoride is used to decrease the incidence of dental caries. The purpose of this study was to investigate the impact of fluoride varnish and gel applications on future restorative dental treatment claims.
Methods: The data were obtained in conjunction with a dental data warehouse through a partnership agreement. A retrospective analysis of dental claims made from 2010-2018 was completed. Data were extracted for patients 1 to 8 years old with topical fluoride application and its subsequent impact on restorative dental claim..
Results: The data included 672,889 patients in the analysis. Patients who received topical fluoride had significantly decreased numbers ($p < 0.001$) of restorative procedures and extractions per year than patients who did not. Patients who did not receive topical fluoride and those who received it 0.1 to 1.4 times per year had significantly increased number ($p < 0.001$) of procedures or extractions and significantly decreased time ($p < 0.001$) to their first restorative procedure or extraction than patients who received fluoride 1.5 or more times per year.
Conclusion: The application of fluoride varnishes and gels at least 1.5 times a year increased the time to future restorative/extraction dental claims and decreased the number of future restorative/extraction dental claims.
Practical Implications: This study is important because it shows the use of topical fluoride decreased future restorative/extraction dental claims and decreased the number of future restorative/extraction dental claims.
Key Words: FLUORIDE, RESTORATIONS, EXTRACTIONS, PEDIATRIC DENTISTRY

METHODS

Data were collected for 672,889 patients 1 to 8 years old based on the following four categories which have had at least one prophylaxis and/or oral exams in the 9-year window (2010-2018):

- Received fluoride treatments but no restorations/extractions
- Received no fluoride treatments but had restorations/extractions
- Received both fluoride treatments and restorations/extractions
- Received neither fluoride treatments nor restorations/extractions

Patients were categorized into frequency levels of receiving topical fluoride as 0, 0.1 to 1.4 per year, and at least 1.5 per year. These groups were calculated based on the number of fluoride applications per year divided by the total amount of follow-up time.

RESULTS

Patients who did not receive topical fluoride and patients who received topical fluoride 0.1 to 1.4 times per year had significantly increased numbers ($p < 0.001$) of restorative procedures and extractions per year than patients who received topical fluoride 1.5 or more times per year. (**Figure 1**)

The patients who did not receive topical fluoride had a significantly decreased time ($p < 0.001$) to their first restorative procedure or extraction. (**Figure 2**)

Patients who received topical fluoride at least 1.5 applications per year had significantly increased ($p < 0.001$) time to first restorative procedure or extraction than patients who did not receive topical fluoride. (**Figure 3**)

FIGURES

Figure 1. Restorative Procedures and Extractions per Year

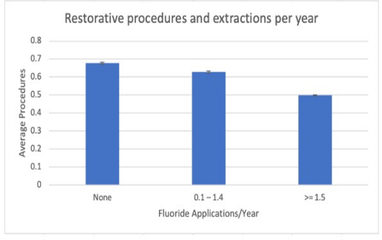


Figure 2. Time to Restorative Procedure/Extraction in Years – Any Topical Fluoride

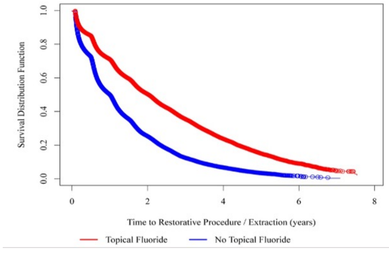
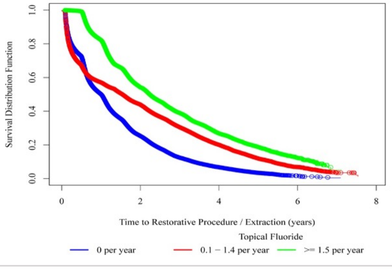


Figure 3. Time to Restorative Procedure/Extraction in Years – Topical Fluoride Frequency



DISCUSSION

Few studies have directly measured the effect of utilizing fluoride varnishes and gels as a prevention method on restorative dental treatment using dental claims. This study allowed us to measure the impact of topical fluoride application and its result of decreased restorative/extraction claims.

Limitations:

- Database encompasses only private insurance claims.
- Claims do not include radiographic images, clinical photos, diagnosis, caries risk, or provider/patient experience.
- Data do not include the reason for the extraction or restoration failure.
- Could not estimate how additional fluoride influences may affect the caries rate of the population studied.

CONCLUSION

Patients who received professionally applied topical fluoride had significantly lower numbers of restorative procedures and extractions per year and longer time to first their restorative procedure or extraction than patients who did not receive topical fluoride.

Increased frequency of professionally applied topical fluoride results in decreased restorative/extraction dental claims.

REFERENCES

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