

ABSTRACT

Purpose: The objective of this retrospective study is to quantify and compare the application of silver diamine fluoride (SDF) in children before, during, and after the COVID-19 pandemic.

Methods: Retrospective study using the electronic records from the UT Health San Antonio School of Dentistry, Ricardo Salinas Clinic, and Laredo Pediatric Dental Clinic patient database to search and identify the dental code for SDF (D1354). Dental code for silver diamine fluoride was populated from electronic dental records (Axium and anonymized) between March 2019-March 2022 for children aged between 2-6. Codes were then separated as follows: March 2019-March 2020 (before COVID-19), March 2020-March 2021 (during COVID-19), and March 2021-March 2022 (after COVID-19). The inclusion criteria included: All children, ASA 1-3, ages 2-6 years old, enrolled in Texas Medicaid Dental (MCNA/Dentaquest).

Results: From March 2019-March 2020, 66 patients had SDF placed. From March 2020-March 2021, 85 patients had SDF placed. From March 2021-March 2022, 148 patients had SDF placed. When comparing the year-end March 2020 data to the year-end March 2022 data, there was a 124% increase in silver diamine fluoride placement.

Conclusion: The data collected for our study can be utilized to represent the pandemic's effect on non-aerosolized treatment of dental caries using silver diamine fluoride in young children. Our study showed the application of silver diamine fluoride in children aged 2-6 continues to increase after the pandemic.

SIGNIFICANCE

Due to the nature of the pandemic, it has been of utmost importance to decrease aerosolized procedures in the field of dentistry. Many clinical studies have been done to establish the effectiveness of 38% silver diamine fluoride, a commonly used medication for sensitivity and, more popularly to arrest carious lesions in young children, deemed as "off-label" usage. More importantly, the emergence of the COVID-19 pandemic has predisposed children to an unhealthy and sedentary lifestyle. The increase in staying indoors has reduced outdoor physical activity, which has altered eating habits, especially an increase in highly cariogenic diets.

MATERIALS and METHODS

Following Institutional Review Board approval from UT Health San Antonio (San Antonio, Texas), a retrospective chart review was conducted of dental records from the UT Health Pediatric Clinic, Laredo Pediatric Clinic, and Ricardo Salinas Clinic served by the pediatric dental residents of UT Health San Antonio. This was a retrospective study using the electronic records from the UT Health San Antonio School of Dentistry patient database to search and to identify dental codes (D1354). Dental code for silver diamine fluoride was populated from electronic dental records (via Axium) between March 2019-March 2022 for children aged between 2-6. The charts were anonymized to mask the subject details. The scored data in the Microsoft Access database was linked to the Microsoft Excel for data output and analysis. A reference database was created comprising data corresponding to D1354 codes between March 2019 through March 2022. Codes were then separated as follows: March 2019-March 2020 represents before the COVID-19 pandemic, March 2020-March 2021, represents during the COVID-19 pandemic, and March 2021-March 2022 represents after the pandemic. The final data will represent the quantitative completed silver diamine dataset. The inclusion criteria included: All children, from ASA 1-3, children aged 2 to 6 years old, and enrolled in Texas Medicaid Dental (MCNA/Dentaquest). There were no exclusion criteria.

RESULTS

From March 2019-March 2020, which represented before the COVID-19 pandemic, 66 patients had silver diamine fluoride placed. From March 2020-March 2021, which coincided with the onset of the COVID-19 pandemic, 85 patients had silver diamine fluoride placed. This represents a year over year increase in silver diamine applications of 28% when comparing March 2019-March 2020 to March 2020-March 2021. From March 2021-March 2022, which represents the post pandemic time-period, 148 patients had silver diamine fluoride placed. That is a 74% increase when comparing March 2020-March 2021 to March 2021-March 2022. When comparing the year-end March 2020 data to the year-end March 2022 data, there was a 124% increase in silver diamine fluoride placement.

Application of SDF

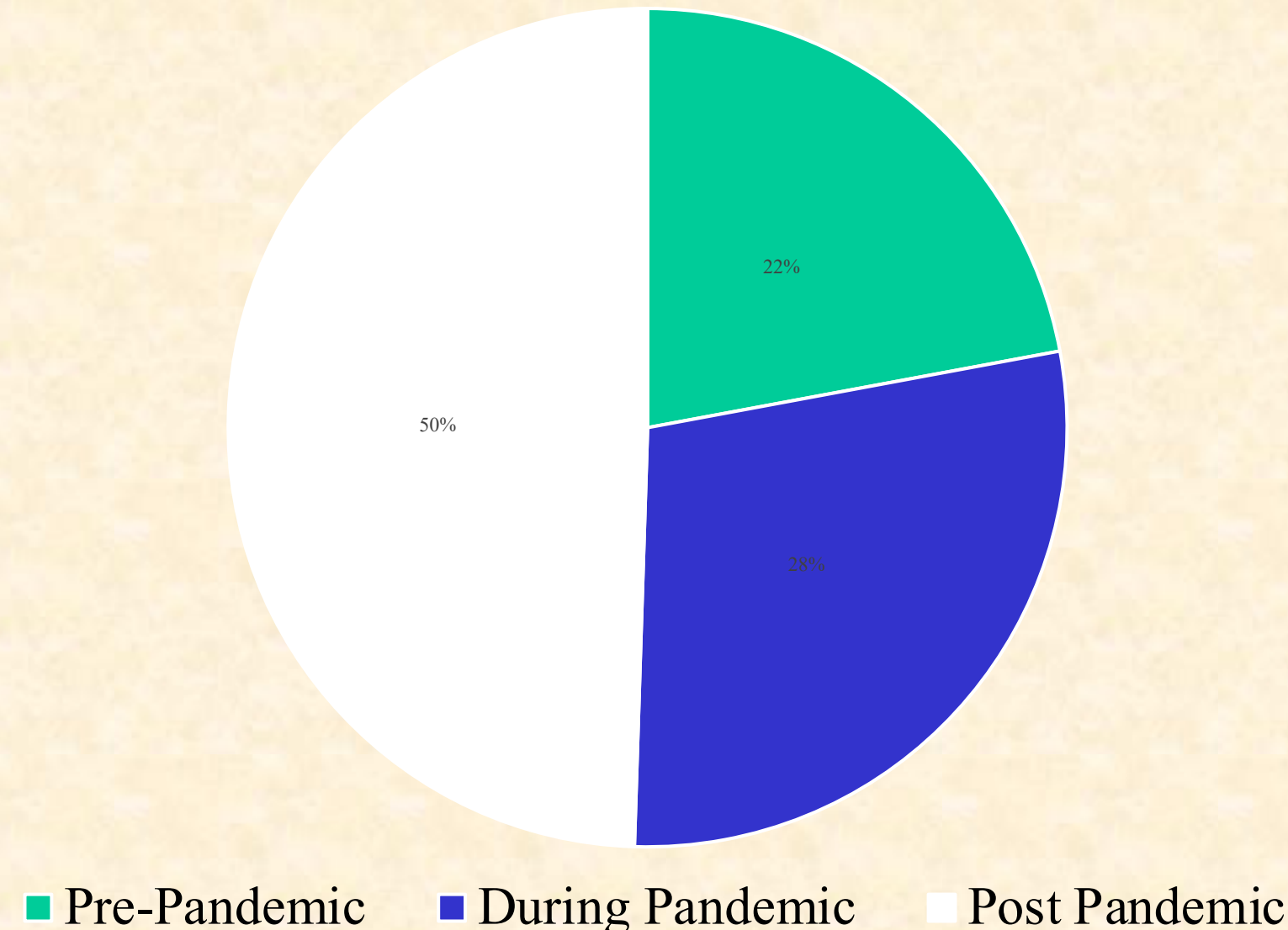


Figure 1

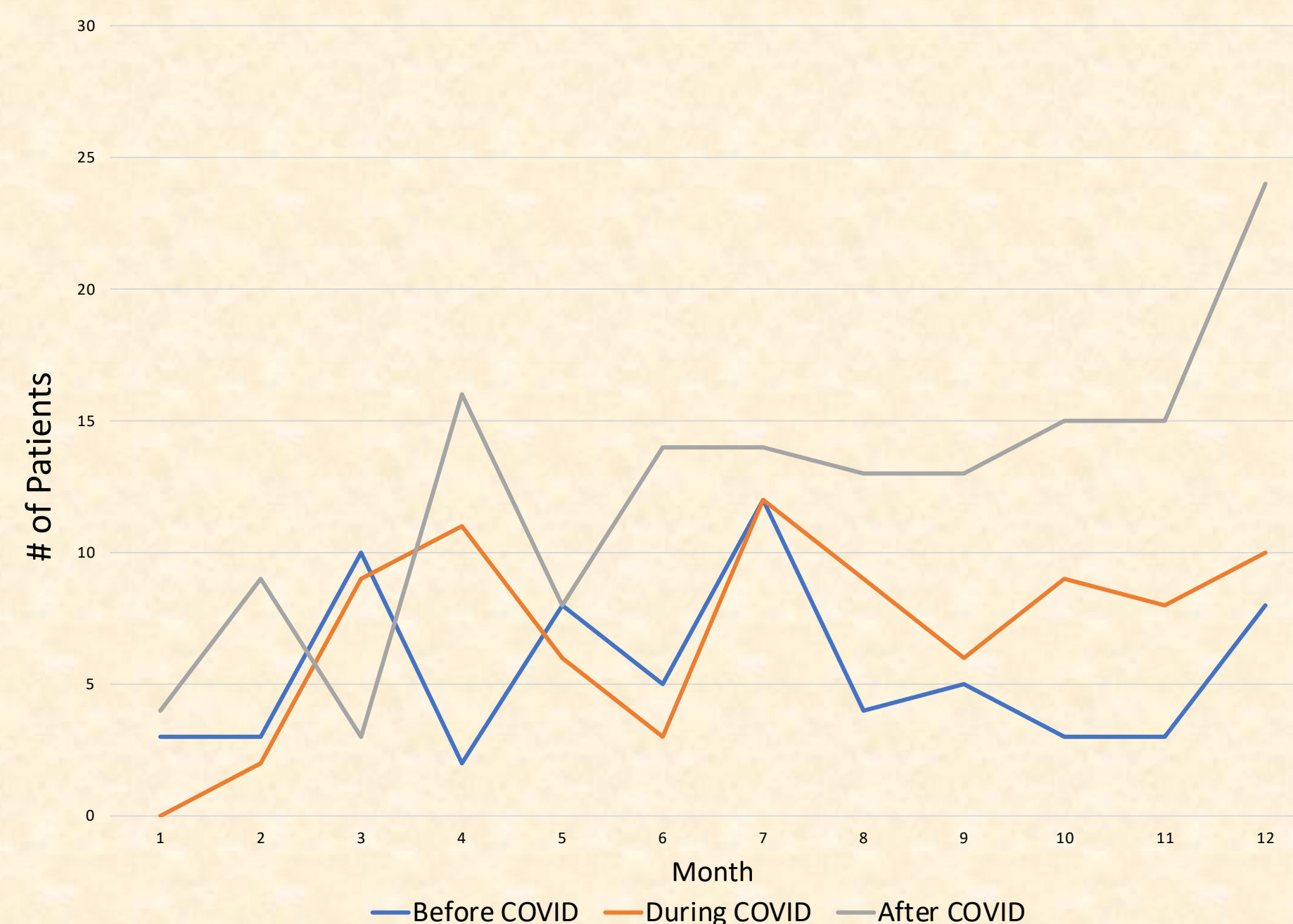


Figure 2

RESULTS (cont.)

Year	# of patients
3/20/2019 - 3/19/2020	66
3/20/2020 - 3/19/2021	85
3/20/2021 - 3/19/2022	148
Total	299

Figure 3

CONCLUSIONS

COVID-19 placed limitations on dental treatments, specifically aerosolized procedures. Initially, dentists may have applied silver diamine fluoride due to the limitations of aerosolized procedures, but our study shows the number of SDF applications continues to rise even through the post-pandemic era. This may be due to multiple reasons. Silver diamine fluoride is still used post-COVID-19 due to the ease of application, the relatively low cost, and the effectiveness of arresting caries. In this post-pandemic time-period, we have seen other issues related to dental treatment arise which could also contribute to an increase in SDF applications. In Texas, there has been a decrease in operating room access for pediatric dentists, a decrease in Medicaid enrollment, and an increase of delayed treatment, which could also contribute to the increase in silver diamine application before, during, and after the COVID-19 pandemic. The data collected for our study can be utilized to represent the pandemic's effect on non-aerosolized treatment of dental caries using silver diamine fluoride in young children. Our study showed the application of silver diamine fluoride in children aged 2-6, increased before, during, and after the COVID-19 pandemic.

REFERENCES

- Javed F, Khan SY, Sharma MK. Satisfaction of primary caregiver with the dental treatment by silver diamine fluoride during COVID-19 pandemic. *J Dent Res Rev* 2021;8:283-7.
- Pradeepika Liyana Arachchige A, Sultan A, Herath C. Silver diamine fluoride for early childhood caries- A boon for dentists during COVID-19 pandemic. *Int J Oral Health Dent* 2021;7(3):161-165.
- Ramírez-Castellares, Hilda Lourdes Antonella, Vela-Flores, Italo Iván, & Cruz-Guillén, Claudia Sofía. (2022). Incidence of dental caries in children during the COVID-19 pandemic. *Odovtos International Journal of Dental Sciences*, 24(3), 12-14.
- Qing Hui Zhi, Edward Chin Man Lo, Huan Cai Lin. Randomized clinical trial on effectiveness of silver diamine fluoride and glass ionomer in arresting dentine caries in preschool children, *Journal of Dentistry* 2021; 40(11); 962-967.