

SDF Efficacy in Reducing Dental Emergencies at USC

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INTRODUCTION

Many children from low socioeconomic statuses are unable to receive dental treatment in a timely fashion. Dental fear, situational anxiety, and unpleasant dental experiences in the past are a few of the barriers to receiving treatment in normal dental settings. With the increased demand for treatment to be conducted using advanced techniques such as general anesthesia and a limited number of qualified personnel, the wait time to receive treatment has increased multifold. Silver diamine fluoride (SDF) has shown excellent results in caries control and arrestment as an alternative interim treatment modality until a definitive dental treatment could be rendered.¹ Arresting dental caries helps in avoiding the painful consequences that can result due to untreated caries.² Thomas et al demonstrated that applying SDF helped reduce emergency visits for those children awaiting general anesthesia.³ We hoped to see a similar result with our patient population in an urban, predominantly Hispanic community.

PURPOSE

The purpose of this study is to determine whether silver diamine fluoride (SDF) application reduces the number of dental emergencies due to dental-related pain or infection in patients waiting for comprehensive dental treatment under general anesthesia (GA) at the Herman Ostrow School of Dentistry of USC Pediatric Dental Clinic.

METHODS

This retrospective longitudinal chart review evaluates the efficacy of silver diamine fluoride in reducing the number of dental emergencies in children awaiting treatment under GA. This study was approved by the Institutional Review Board of the University of Southern California. This study was adapted from the prospective cohort SDF study by Thomas et al. conducted at the University of Florida.³ Charts from children who received comprehensive treatment under GA over a five-year period from March 2016 to March 2021 were reviewed. The charts were divided into two groups.

Group 1 (SDF Group): Patients who received one or more applications of SDF on carious teeth prior to their dental treatment under GA at the treatment planning visit or while waiting for the treatment.

Group 2 (Non-SDF Group): Patients who were seen for GA and did not receive any SDF applications prior to their dental treatment under GA.

Inclusion criteria: Children between 3 to 13 years of age who received treatment under GA, are ASA I or ASA II and have the USC pediatric dental clinic as their primary provider for dental care.

Exclusion criteria: Children who had a history of treatment at an outside dentist prior to their visit at USC, a history of SDF application prior to their initial visit at USC, were treatment planned but received treatment at a different dental practice in between the treatment plan visit and treatment under general anesthesia, and children who fall in the category of ASA III or above.

The following data were collected: 1) date of treatment planning, 2) date of treatment under GA, 3) age of a child on the day of treatment planning, 4) gender, 5) ethnicity, 6) wait time (in days) between the treatment planning and the treatment under GA, 7) DMFT/dmft scores, 8) date and number of SDF applications, and 9) number of emergency visits while the child was waiting to receive the treatment. An emergency visit was defined as any visit due to dental pain, extra or intra-oral swellings, abscessed teeth, or pain in the mouth due to ulcers or trauma.

RESULTS

Out of 467 total charts, 178 (38.1%) matched the inclusion criteria and 289 (61.8%) charts were excluded. The demographic information is presented in Table 1. Out of 178 charts, 24 charts qualified for Group 1 (SDF group) and 154 charts for Group 2 (Non-SDF group). In Group 1, 62.5% (n=15) were male and 37.5% (n=9) female. In Group 2, 66% (n=101) were male, and 34% (n=53) were female. In Group 1, 83% of the children were of Hispanic ethnicity and in Group 2, 79.2% children were of Hispanic ethnicity. The average age of children in Group 1 was 44.2 months and 59.4 months in Group 2. Children in Group 2 were slightly older than Group 1 with a difference in the mean of 15.2 months. DMFT score was zero for Group 1 and 0.5 for Group 2. The dmft scores were 11.1 for Group I and 10.8 for Group 2. No significant difference was found in the dmft scores in both groups. The mean wait time for general anesthesia was 223 days for Group 1 and 181 days for Group 2.

Eight (33.33%) out of 24 patients in Group 1 presented with dental emergencies. Thirty-seven (24.03%) of 154 patients in Group 2 presented with dental emergencies. (Figure 1). The odds ratio was 1.5, demonstrating that Group 1 had 1.5 times the odds of having emergencies as compared to Group 2. Dental emergencies occurred in all age groups with the highest percentage in children between 3 to 6 years of age in both groups (Figure 2.).

<i>Total charts reviewed N=467</i> <i>Charts that met inclusion criteria n=178</i>				
Demographics	Group 1 (SDF)		Group 2 (Non-SDF)	
	n	%	n	%
Total number of patients	24	13.4%	154	86.5%
Age group				
0-3y	8	33.3%	8	5.1%
3-6y	16	66.7%	113	73.3%
6-10y	0	0	27	17.3%
10-13	0	0	6	3.9%
Average age (months)	44.2		59.4	
Male	15	62.5%	101	66%
Female	9	37.5%	53	34%
Ethnicity				
Hispanic	20	83.3%	122	79.2%
Other	4	16.7%	32	21.8%
No. of dental emergencies	8	33.3%	37	24.03%

Table1. Demographics of the study participants, number of emergencies in SDF and Non-SDF group

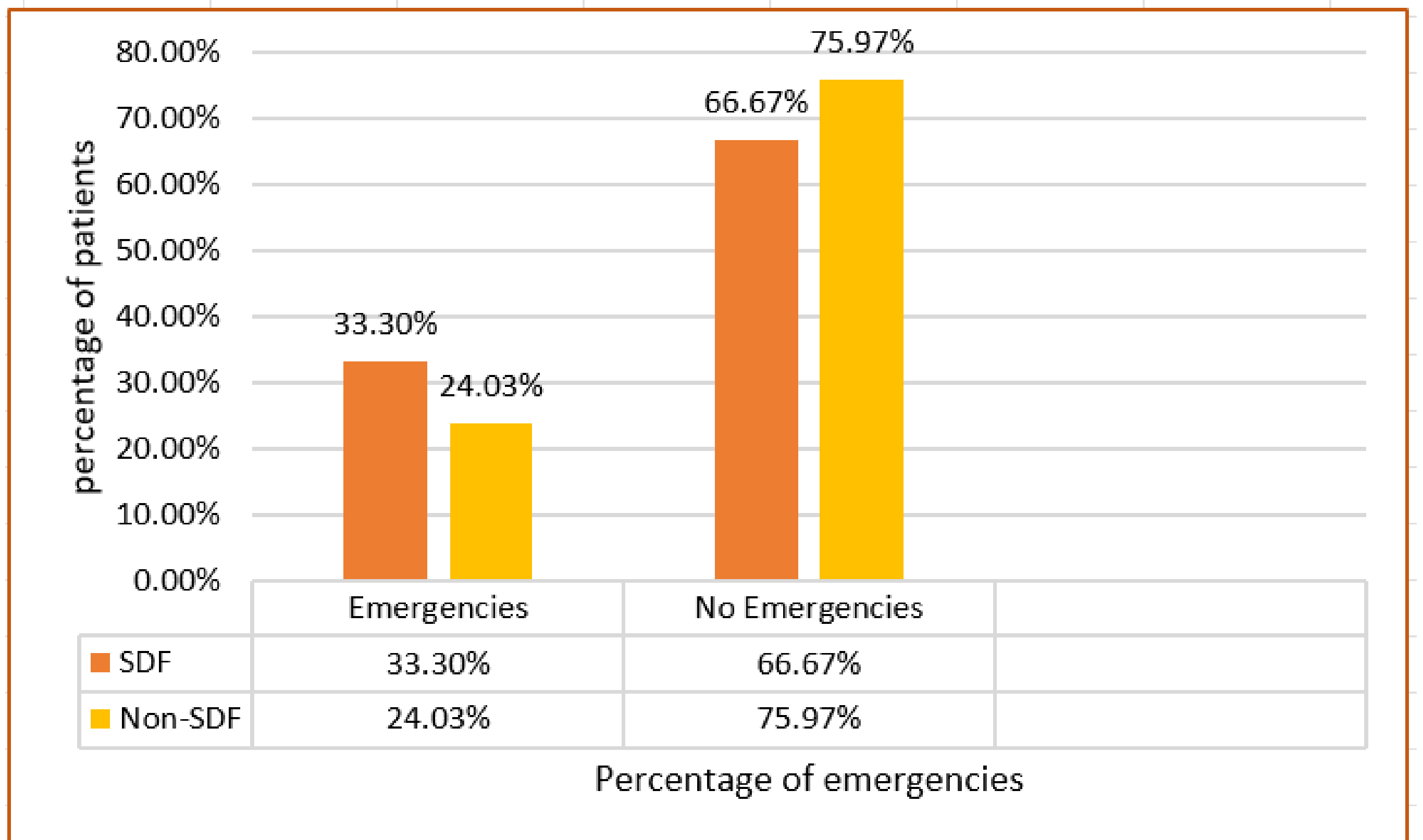


Figure 1. Percentage of dental emergencies in SDF and Non-SDF group

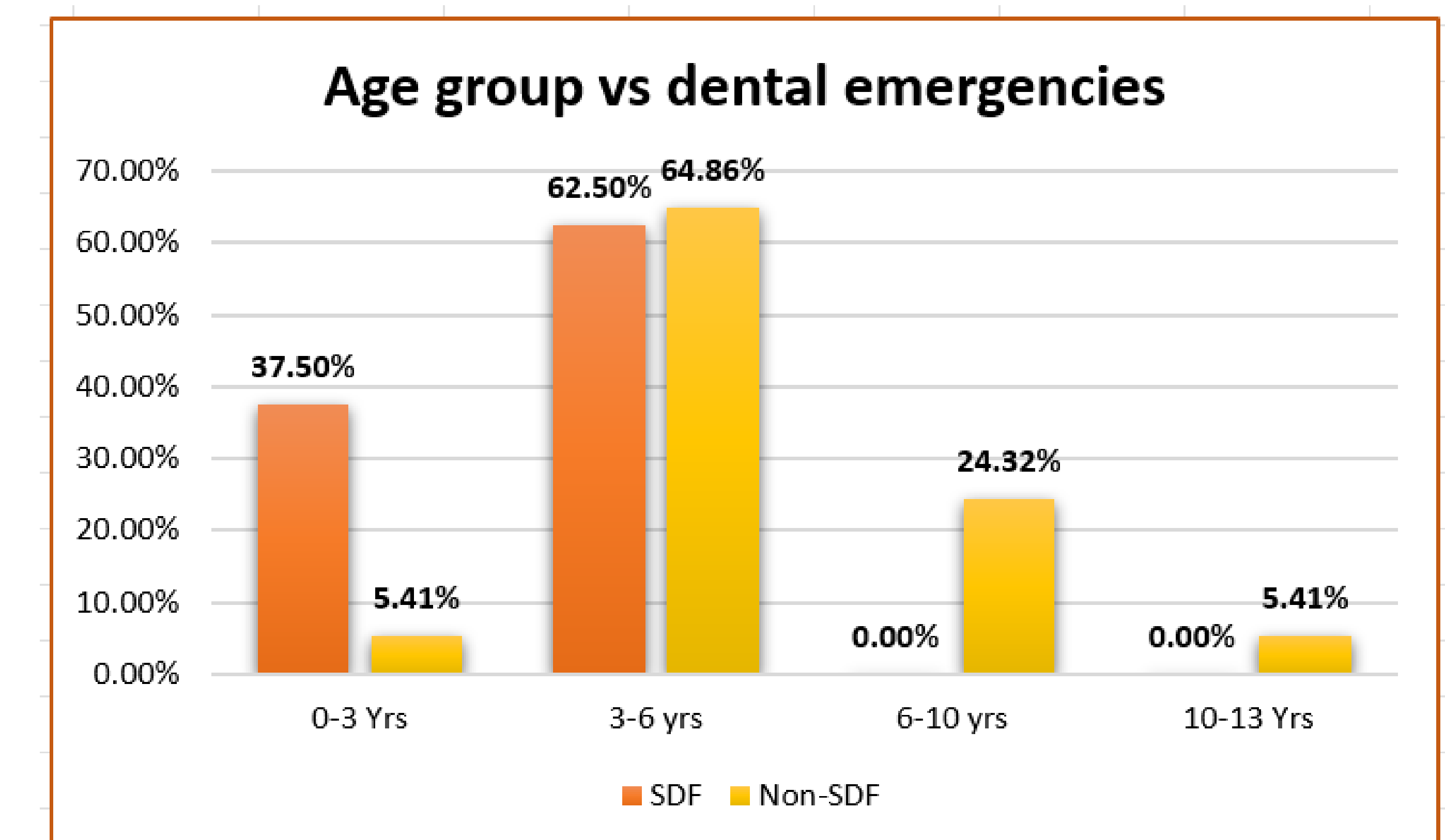


Figure. 2 Dental emergencies in different age groups

CONCLUSIONS

In our study, SDF did not reduce the number of dental emergencies. The sample size and data collected were significantly too small to obtain conclusive results. A larger sample size and a prospective study design should be considered in the future.

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