

# Sodium Fluoride (NaF) Varnish and Silver-Diamine Fluoride (SDF) Knowledge and Use in Family Medicine and Pediatric Medicine Residency Programs



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## INTRODUCTION

Non-surgical preventative treatment such as Sodium Fluoride (NaF) varnishes and Silver-Diamine Fluoride (SDF), have proven effective in reducing caries risk for patients at high risk of Early Childhood Caries (ECC)<sup>1,2</sup>.

Pediatricians provide oral health screenings with NaF varnish applications in young children during well-child checks (WCC); which is a covered benefit with Medicaid in most US states<sup>3</sup>. Current Procedural Terminology (CPT) for fluoride application include; code 99188 or using the International Classification of Diseases (ICD-10) code z29.3<sup>4</sup>. Although a medical code for SDF application does not exist, primary care physicians (PCPs) who applied SDF on carious lesions were able to use codes CPT99214 and ICD-10 k02.9 if the visit was education regarding dental caries and not another problem focused visit<sup>4</sup>.

There is limited research investigating the use of NaF varnish and SDF by medical clinicians during a patient's well-child visit. One study in Connecticut that assessed pediatricians who are registered to provide infant oral health services, revealed that approximately less than 30% of their participants provided NaF varnish to their patients<sup>5</sup>. SDF was applied on carious lesions by two PCPs in a "cavity clinic" in Wisconsin and using codes CPT99214 (established patient visit, 30-39 minutes) and ICD-10 k02.9<sup>4</sup> (dental and oral disease – dental caries), followed by a referral to a local dentist to establish a dental home or a 6-month follow-up was scheduled if the patient did not see a dentist<sup>4</sup>. This is the first clinic of its kind.

## OBJECTIVES

The first objective of this study is to evaluate the information taught to medical residents in family medicine and pediatric medicine residency programs about the use and indications of NaF and SDF for treating dental caries.

The Second objective is to learn if NaF and SDF is being used on pediatric patients to treat dental caries in family medicine and pediatric medicine residency programs.

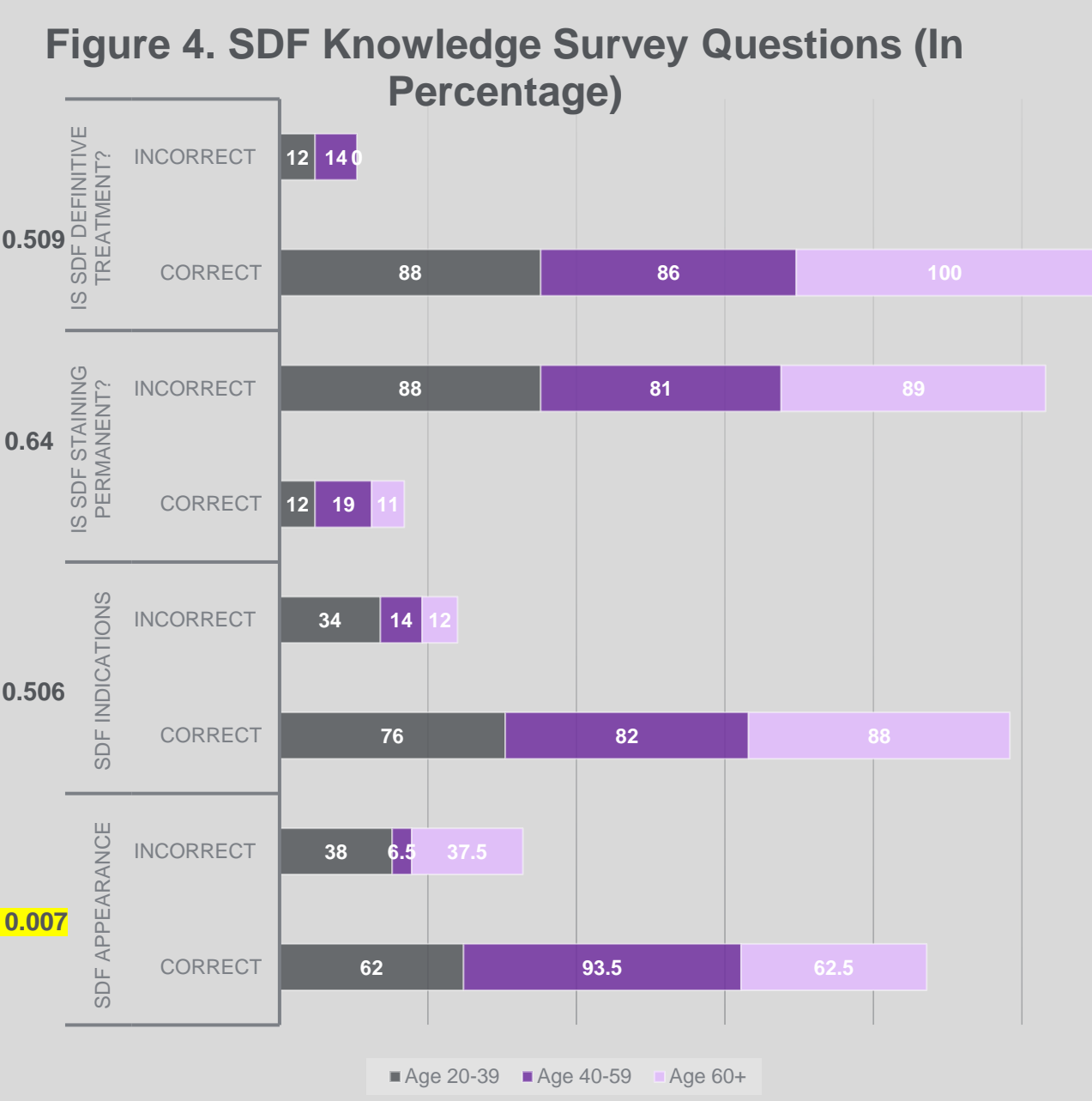
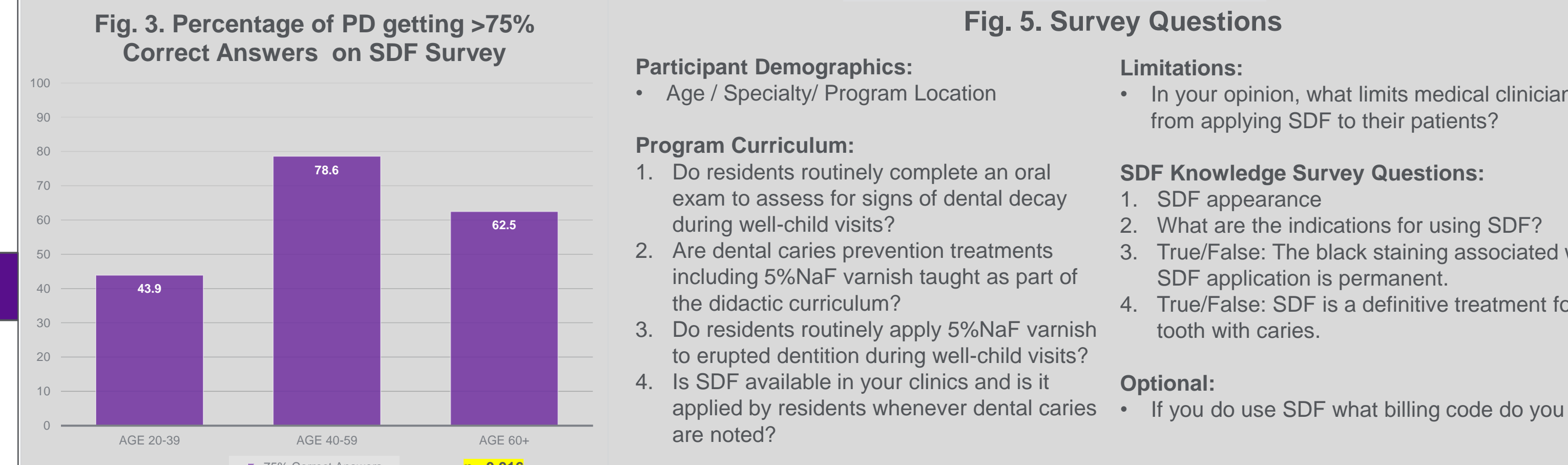
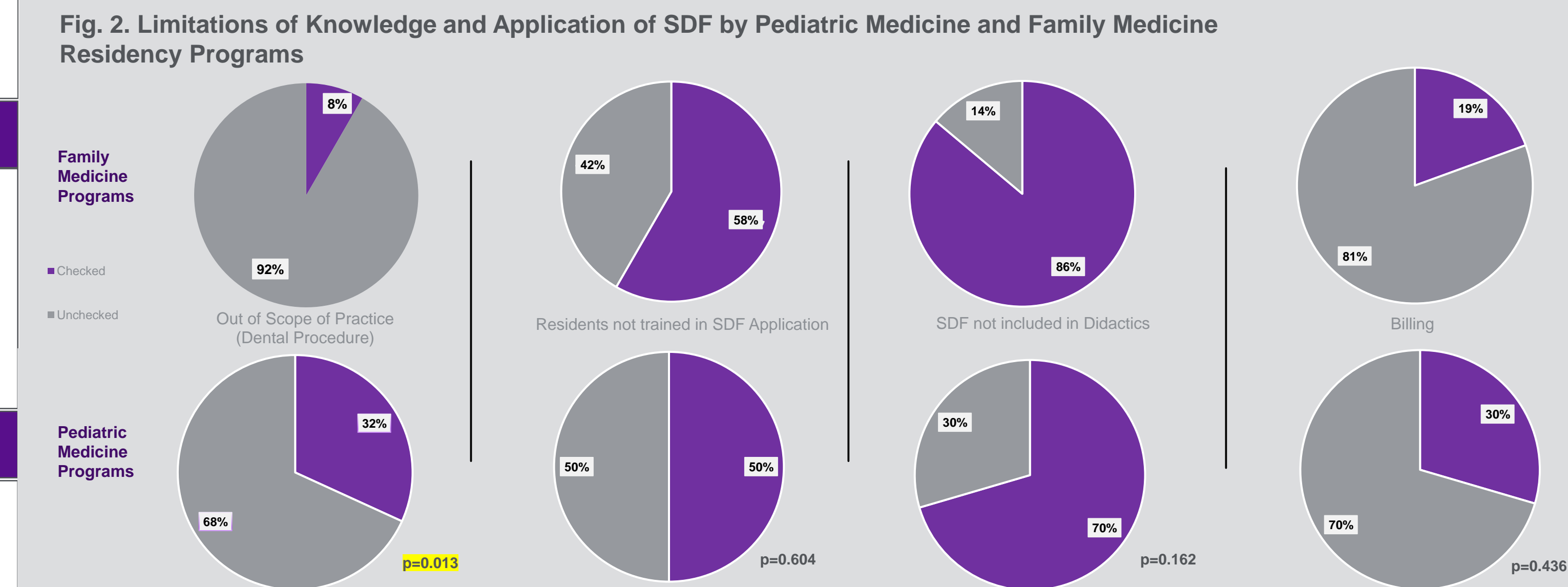
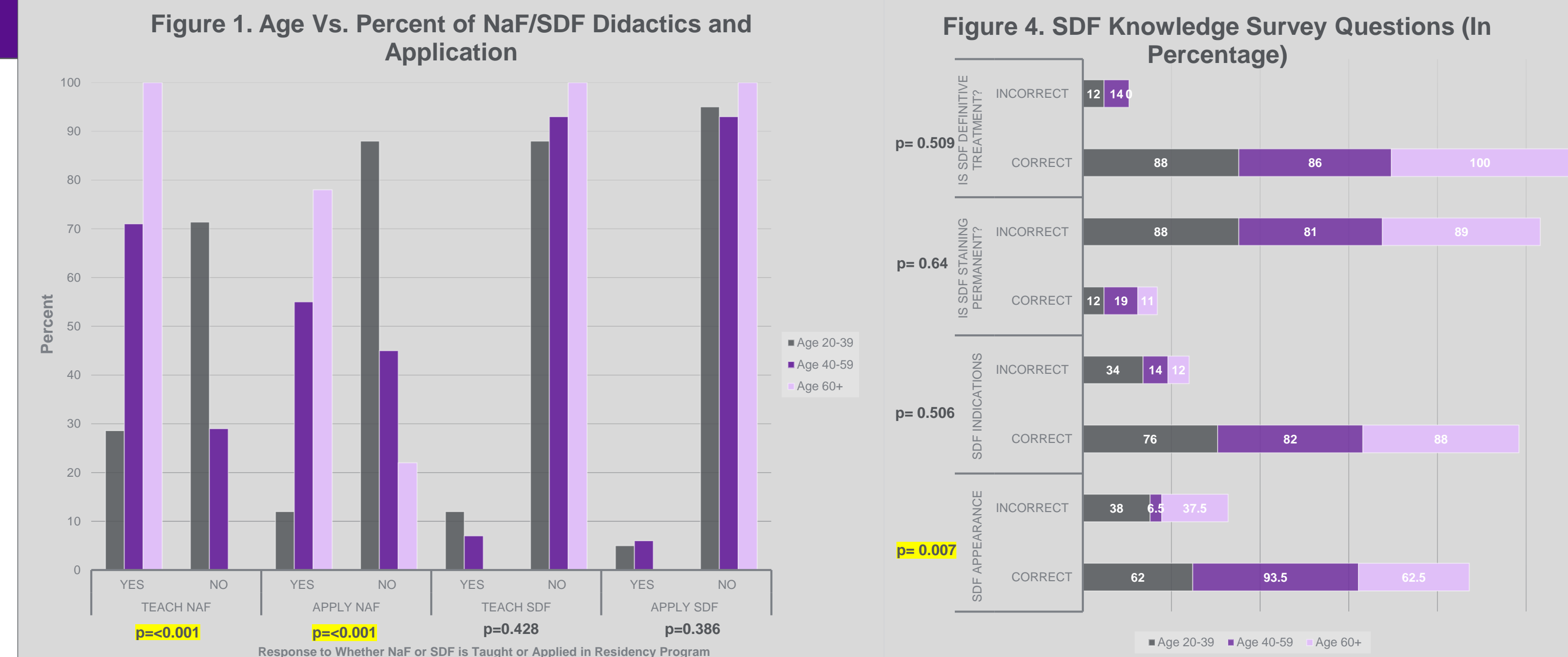
## METHODS

An electronic 15 question survey (fig. 5) through REDCap was sent out via email to 653 Family Medicine Residency Program Directors (FM) and 193 Pediatric Medicine Residency Program Directors (PM) listed on the Accreditation Council for Graduate Medical Education (ACGME) website. Survey participants were also entered in an optional raffle to win one of two \$50 Amazon Gift Cards.

Comparisons of NaF varnish and SDF knowledge and application between pediatric medicine and family medicine residency programs was conducted by the Chi-square test by comparing program location, age of participants and specialty. Significance level was set at 0.05. A qualitative analysis was performed according to the responses collected from questions regarding SDF knowledge by participants.

## REFERENCES

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**Participant Demographics:**

- Age / Specialty/ Program Location

**Program Curriculum:**

- Do residents routinely complete an oral exam to assess for signs of dental decay during well-child visits?
- Are dental caries prevention treatments including 5%NaF varnish taught as part of the didactic curriculum?
- Do residents routinely apply 5%NaF varnish to erupted dentition during well-child visits?
- Is SDF available in your clinics and is it applied by residents whenever dental caries are noted?

**Limitations:**

- In your opinion, what limits medical clinicians from applying SDF to their patients?

**SDF Knowledge Survey Questions:**

- SDF appearance
- What are the indications for using SDF?
- True/False: The black staining associated with SDF application is permanent.
- True/False: SDF is a definitive treatment for a tooth with caries.

**Optional:**

- If you do use SDF what billing code do you use?

## RESULTS

A total of 82 responses were received (36FM, 44PM) and 90.1% of all programs complete an oral exam during their Well-Child Check.

### Knowledge and use of NaF

- 52.4% of all residency programs teach dental caries prevention including use of NaF varnish in their didactic portion of their program, though most residents do not place NaF at WCC (64.4%) with no significant difference noted between program type (p=0.25)
- Program Directors (PD) of ages 20-39 years reported not learning about NaF in their didactic curriculum (71.4% n= 30), whereas PD aged 40-59 years (71.0%, n=22) and those aged 60+ (100%, n=9) reported NaF being taught in didactic curriculum (P<0.001) (Figure 1).
  - This corresponds to 87.8% of younger PD (20-39 years) reporting that NaF is not applied at WCC visits (P<0.001) (Figure 1).
- Residency programs in the Southwestern states (Colorado, Kansas, Missouri, New Mexico, Oklahoma, Arkansas, Louisiana, Texas) were more likely to place NaF varnish than in other geographic areas (n=6;85.7%; p=0.031).

### Knowledge and use of SDF

- Only 7 programs (8.6%, 1 FM, 6 PM) learned about SDF as part of their didactic program with only 2 programs (Michigan and Maryland) applying SDF at WCC.
- Age was not a significant factor when reporting if SDF was taught in didactic curriculum and/or placed at WCC (P=0.428 P=0.386 respectively) (Figure 1) but was a factor in why PD felt their residents did not place SDF at WCC (resident not trained) with those PD aged 60+ reporting this as a factor significantly more than younger PD (P=0.011).
- When asked why SDF was not applied at WCC, 22% of all PD felt it was a dental procedure ( 31.8% of PM (n=14); 8.3% (n=3) of FM; p=0.013) (Figure 2)
- PD of ages 40-59 and 60+ years answered more answers correctly about SDF than younger PD (age 20-39) as indicated by getting 3+ (>75%) answers correct about SDF (78.6%, 92.5% respectively, p= 0.016) (Figure 3)
  - Bivariate analysis showed that program location and program type were not significantly associated with knowledge about SDF (p=0.288 and 0.266 respectively).
- PD aged (40-59 years) are significantly more likely to recognize SDF staining compared to other age groups (p=0.007, 93.5%, n=29). No difference noted in program specialties (n=0.48) (Figure 4)
- A majority of PD did not know that SDF staining is permanent with no difference noted between program type (p=0.57) and age (0.64).

## DISCUSSION/CONCLUSIONS

- There was no statistically significant difference in the knowledge and application of SDF or NaF varnish between pediatric medicine and family medicine programs; where most programs are not learning about or applying SDF as it is not part of their residency curriculum
- Compared to PD of age 20-39 years , PDs of 40-59 years have 4.825x and 60+ have 1.079x higher chance of getting >75% of answers correct about SDF
- More education is needed for family and pediatric medicine residency programs about NaF varnish to help physicians feel properly trained and consider applying it on their patients
- More education is needed for family and pediatric medicine residency programs about SDF use and indications

## LIMITATIONS

Limitations of this study include small sample size.