



## Parental Acceptance of Silver Diamine Fluoride Treatment for Children

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### ABSTRACT

The present study aimed to assess the parental acceptance of silver diamine fluoride and to determine whether the acceptability level differs depending on the demographic factors and the location of dental caries. Demographic data and the opinion about the staining effect of SDF treatment on primary teeth were obtained through questionnaire from parents of 60 children aged between 2-5 years with ECC in Chennai, India. The opinion was obtained after showing clinical photographs of SDF treatment. Of the 60 participants, male parents with low socioeconomic status, tend to accept the SDF treatment more. To our knowledge, this is the first study to check for the parental acceptance and perception of silver diamine fluoride treatment in Indian populations. The results show that parent's gender, child's gender, socioeconomic status, level of education, number of children in the family plays an essential role in the acceptance of SDF treatment by the parents. Parents with high socioeconomic status accept SDF treatment to avoid treatment under general anesthesia. A significant difference between male and female and the anterior and posterior teeth ( $P < 0.05$ ) was observed in acceptance ratings of SDF treatment. Though parents have a concern with the discoloration associated with SDF treatment, most of them prefer SDF treatment over treatment under general anesthesia.

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### INTRODUCTION

Dental caries, the multi factorial disease, is known to be the common disease affecting the children of all age groups (Dülgergil *et al.*, 2013). The level of caries risk is influenced by various factors such as socioeconomic status, dietary habits, educational

level, and other demographic factors (Costa *et al.*, 2012). Untreated dental caries in preschool children may result in an increased risk of caries incidence, resulting in pain and infections; increased treatment costs from increased emergency room visits and hospital admissions and the need for general anesthesia; and missed days from school and work (de Abreu da Silva Bastos *et al.*, 2015). Management approach to dental caries includes traditional therapeutic techniques, which includes the drill and fill and preventive strategies. Silver diamine fluoride (SDF) is considered to be a potential anti caries agent (Chu and Lo, 2008). It has been used successfully to arrest dental caries progression particularly in the treatment of early childhood care (Sharma *et al.*, 2015). The use of SDF can prevent or delay dental treatment until a child reaches a more cooperative age or in those with behavioral problems or those who are medically fragile, or those who have logistical challenges. It is a non-

surgical alternative to managing caries in populations where surgical management of decay is not an option (Fung *et al.*, 2013). The main disadvantage of using SDF is that it causes dark staining on the tooth surface, which may raise esthetic concerns (Llodra *et al.*, 2005). The degree of acceptance of SDF varies from parents to parents depending on various factors. The purpose of the present study was to assess the acceptance of SDF treatment by Indian parents and to determine whether the acceptability level differs depending on the demographic factors and the location of dental caries. The present study hypothesises that 38% of SDF would be well accepted by the parents.

**MATERIALS AND METHODS**

The current short term cross-sectional study was approved by the Institutional Review Board (IHEC/SDC-PED01703/19/022). Parents of 60 children aged between 2-5 years with ECC who visited the Department of Pediatric Dentistry were included in the present study.

**Inclusion criteria**

Children with at least two carious lesion defined by ICDAS in the anterior or posterior region were included

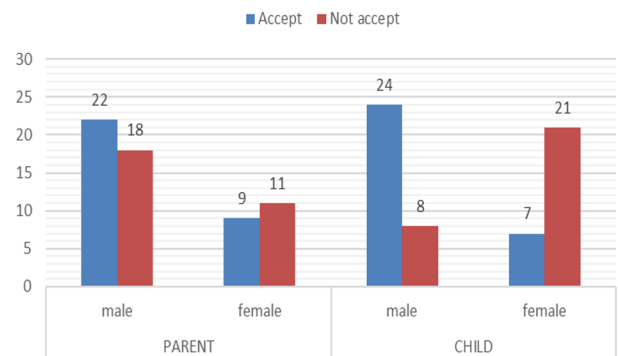
**Exclusion criteria**

Decayed teeth with spontaneous pain, tooth mobility, signs of pulpal infection, medically compromised children, a tooth with developmental defects, children with special health care needs, children with allergies to dental materials or silver were excluded from the study.

To evaluate the parents' acceptance set of standard photographs showing the decalcified enamel and carious dentin in both the anterior and posterior teeth before and after SDF application. Questionnaires were distributed to the parent who provided the information about their age, sex, level of education, annual income, child's age, child's sex, number of children in the family, whether they agree for SDF treatment. The questionnaire was a 5 item, five levels Likert scale ranging from strongly accept, accept, neutral, refuse and strongly refuse which asked the parent whether SDF application was a pain-free process, whether the discoloration after the application is acceptable, whether the procedure is easy, whether they consider SDF application is an interim treatment before the definitive treatment or an alternative for traditional restoration.

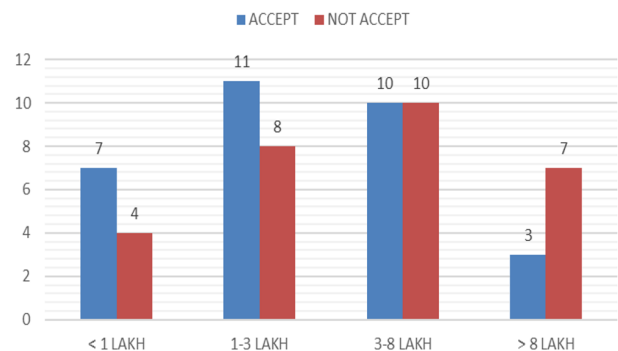
**RESULTS AND DISCUSSION**

In the present study, a total of 60 parents participated and provided their demographic data. Of the 60 participants, 40 were male, and 20 were female with a mean age of  $37.511 \pm 2.079$ . The results were collected and represented using a bar chart.



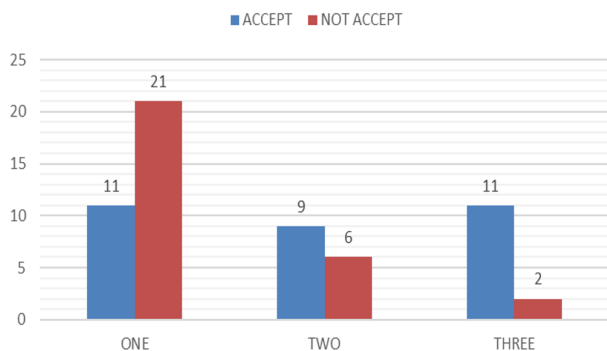
Graph 1: Acceptance of treatment based on the sex of the parent and the child.

Graph 1 shows that, among the 40 males, 22 agreed for the treatment and 18 did not accept for the treatment. Among the 20 females, nine agreed for the treatment and 11 did not accept for the treatment. Out of 32 male children, parents of 24 male children agreed for the treatment and out of 28 female children, parents of 7 female children agreed for the treatment.



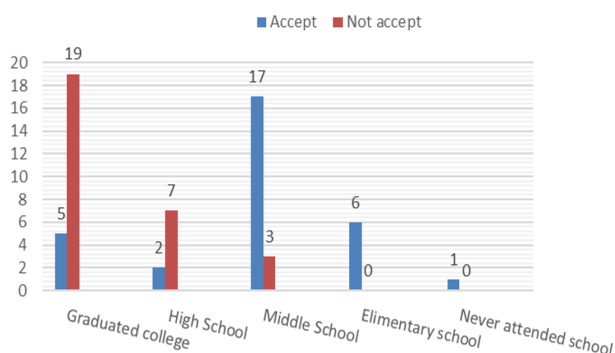
Graph 2: Acceptance of treatment based on the annual income of the parent.

Graph 2 shows that non-acceptance of SDF treatment was more in parents with an annual income of more than eight lakhs (n=7). Acceptance of SDF treatment was more in parents with annual income less than 1 lakh (n=7) and annual income between 1 to 3 lakh (n=11). No difference in the acceptance rate was found in the parents with the annual income of 3 to 8 lakhs (n=10). Graph 3 shows that the acceptance for SDF treatment was more in parents with three or more children (n=11) and was less in parents with single child (n=21).



Graph 3: Acceptance of treatment based on the number of children in the family.

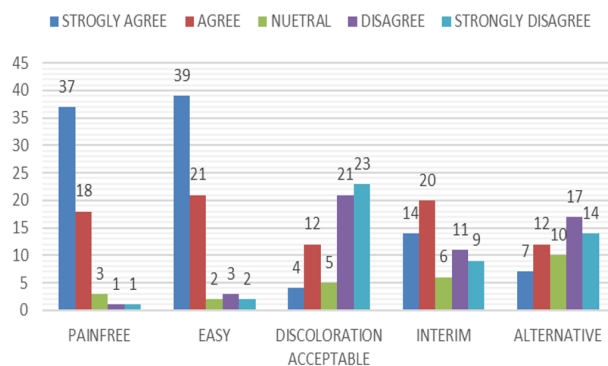
Graph 4 shows that parents who graduated from in college did not accept for the treatment (n=19) and parents who have completed middle school had higher acceptance for SDF treatment (n=17). Graphs 5 and 6 shows the parental perception of SDF treatment to anterior and posterior teeth, respectively. Graph 7 shows the parent preference for future esthetic management was more for the anterior teeth (n=44) than the posterior teeth.



Graph 4: Acceptance of treatment based on the level of education of the parent.

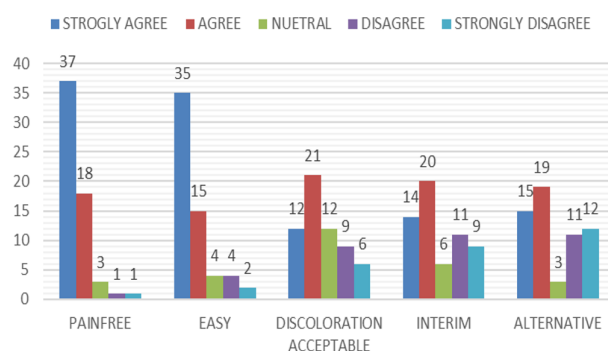
Infants and preschool children with ECC with lack of cooperation often require treatment with general anesthesia with its potential complications (Dülgergil *et al.*, 2013). SDF treatment is a simple, inexpensive and conservative approach for the management of ECC in such patients. It is known to be effective in preventing caries in the primary dentition and arresting caries in the root caries of older patients (Oliveira *et al.*, 2019). To our knowledge, this is the first study to check for the parental acceptance and perception of silver diamine fluoride treatment in Indian populations. The results show that parent's gender, child's gender, socio-economic status, level of education, number of children in the family plays a vital role in the acceptance of SDF treatment by the parents. The frequency of

acceptance of treatment was more in fathers than the mothers. Level of acceptance by the parents was more for male children than female children. Parents who graduated from in college tend to disagree for the SDF treatment when compared to those who did not graduate. But this result is not very significant as the distribution of participants based on the level of education was not uniform.



Graph 5: Parental perception of SDF treatment in the anterior teeth.

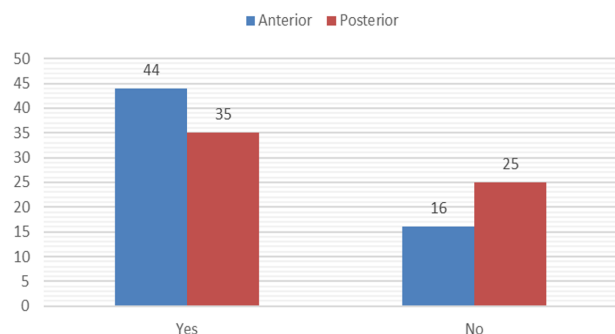
Parents with an annual income of less than 3 lakh accept for the SDF treatment. Some parents who did not accept for the SDF treatment was more in those with annual income above eight lakhs. Parents with more than three children tend to accept treatment when compared to parents with a single child. The possible reason could be since patients from low socioeconomic status are not affordable for the treatment under general anesthesia as it cannot be claimed under insurance.



Graph 6: Parental perception of SDF treatment in the posterior teeth.

The level of acceptance was more for the posterior teeth when compared to the anterior teeth. Most of the parents strongly agree that SDF treatment was pain-free and easy for the child. Thirty-five parents agree that the discoloration is acceptable in the posterior teeth, whereas 38.3% of patents strongly disagree that the discoloration is acceptable for ante-

rior teeth. Most of the parents agree that the SDF treatment is considered to be an interim treatment where treatment under general anesthesia can be deferred, and more definitive treatment can be given later when the child can be managed in the chair side treatment.



Graph 7: Parent preference for future esthetic treatment as the child grows older.

28.3% of parents disagree that SDF is an alternative treatment for the conventional treatment for the anterior teeth. 31.6% of parents agree that SDF is an alternative treatment for conventional treatment of the posterior teeth. 73% of the parents were willing for future esthetic management when the child grows older for the anterior teeth. The results of the present study were consistent with the previous studies by [Alshammari et al. \(2019\)](#); [Crystal et al. \(2017\)](#); [Kumar et al. \(2019\)](#). The limitation of the present study was the decreased sample size. Similar studies with increased sample size are needed.

## CONCLUSIONS

There is a difference in parental acceptance to the SDF treatment between the anterior and posterior teeth. Though parents have a concern with the discoloration associated with SDF treatment, most of them prefer SDF treatment over treatment under general anesthesia, and they consider this as an interim treatment. The study also highlights the need for obtaining written informed consent from the parents before the treatment.

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The authors declare that they have no funding support for this study

### Conflict of Interest

The authors declare that they have no conflict of interest for this study.

### Ethical Clearance

Taken from Institutional Review Board, Saveetha Dental College and Hospitals, Chennai, India

(IHEC/SDC-PED01703/19/022).

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