

The Decision Maker –An Insight On Factors Influencing Parental Acceptance Of Utilising Sdf Treatment For Their Children

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ABSTRACT

Dental caries is the most common pervasive oral health problem in children which has major impact in terms of pain, impairment of function, and oral health-related quality of life of mass populations affecting communities. Despite the widespread use of fluoride preparations in schools and other public health care centres , preschool children still show a high number of untreated carious lesions . Silver diamine fluoride serves as an alternative care approach for those patients in whom conventional restorative treatment cannot be done. SDF presents with a non-invasive, simple method of application and low cost restoration tool which can be a favourable means of treating caries in children. It has also gained recent global attention by clinicians due its effectiveness in arresting the progression of carious lesion without any pulpal damage .However the potential drawbacks that accompany the use of SDF such as black discolouration of the teeth and unpleasant metallic taste have limited their application in caries restoration .When treating children ,parental acceptance is an integral part of pedodontic procedures .The article provides an insight on the effectiveness of SDF which might outweigh the side effects caused ,the factors affecting parental attitude on acceptance of using SDF and how they differ in using it on anterior and posterior teeth ; in primary and permanent dentitions .

Keywords: *silver diamine fluoride , Dental esthetics , caries arrest*

INTRODUCTION :

Despite the fact that dental caries is a preventable disease , it still remains a pervasive severe oral health problem In children having a major impact on their quality of life .due to the widespread use of fluoride dentifrices and , mass school water fluoridation methods and community fluoridation practices considerable improvement seen in oral health status of children.[1]Although preschool children present with high caries untreated lesions [2,3].Children from low income countries, poor socio economic backgrounds for offering high expensive restorative treatment, dental fear scheduling difficulties, inaccessibility of dental care to certain populations are all the significant obstacles reported to dental care of children as reported by parents.

From the past various conventional restorative materials have been into use following caries eradication.[4] Subsequently, birth of Minimal Invasive Dentistry which aims at maintenance of sound tooth structure using non-invasive techniques has taken over the use of traditional restoratives .silver diamine fluoride has been established as successful preventive fluoride material in both clinical and in vitro studies.[6,7]

HISTORY OF SILVER DIAMINE FLUORIDE:

Revisiting the ancient history it is observed that silver has been used as therapeutic agent for tetanus and rheumatism in the early 19th century. Further it became a preferable antimicrobial agent because of the fact that it acts broad spectrum ,less toxic and is more bacterial resistant. These factors favoured use of silver as part of restorations ,cavity sterilization and dentin desensitization in dentistry. In the 1960's was the first time that it was advocated to use silver along with fluoride as an anti caries agent .Later Nishino et al from Japan proposed that application of silver fluoride arrested the lateral spread of caries .[8]

SILVER DIAMINE FLUORIDE – AN ENCUMBRANCE TO CARIES PROGRESSION:

SDF compound, AgF(NH₃), is a colourless topical agent containing on an average of 38% w/v Ag (NH₃)₂F comprised of 24.4–28.8% (w/v) silver and 5.0–5.9% fluoride, at pH 10. [15]However the fluoride content varies from brand to brand [16, 17, 18] There are three mechanisms by which SDF acts which are by forming a squamous layer on the exposed dentin and partially blocking the dentinal tubules.[10] The silver compounds arrest caries by interfering with the ability of the pathogens to form a biofilm on the SDF-treated surface. Also, it encourages remineralisation, with the development of Fluor apatite from the first hydroxyapatite crystals.[10] The use of SDF was cleared by the Food and Drug Administration in the United States of America in August 2014 as a desensitizing agent.[11]SDF is indicated for patients who are medically compromised and for patients with extreme caries risk who cannot be treated conventionally.[28] Horst et al opined that SDF are very useful in community dental health programmes due to its low cost and recommended application for once or twice a year as a preventive agent.[12] SDF is contraindicated in patients with known silver allergy ,in cases with active carious lesion is suspected to have pulpal involvement and in situations when parents/guardians do not consent for using SDF, along with concerns of the colour changeAccording to Crystal and niederman , systematic reviews validate the usage of SDF because of effectiveness in caries arrest and prevention in primary dentition. SDF is safe , with no severe adverse effects reported in the clinical trials conducted and published worldwide .It can hamper the caries progression by arresting 80% of the treated lesion .It can be applied with minimal training in less than a minute time at community settings thus utilising its role as an effective interventional tool the moment the problem is detected .SDF is patient friendly as it requires a one treatment session , instant application, cost effective, non-invasive and painless restorative option to the children.[9]

PARENTAL ACCEPTANCE – THE DECISION MAKER:

In pedodontic practice, the parental acceptance of a procedure is of paramount importance. SDF presents with aesthetic disadvantages such as discolouration of the restored tooth surface and unpleasant taste. The presence of silver compounds in SDF such as silver oxide and silver phosphate leads to the black staining of the carious lesions. This could possibly influence the parental attitude on accepting SDF restorations. However, many of them will prefer SDF treatment over general anaesthesia and further invasive treatment.[12] A recent review by Hu et al, in 2018 reported that most children found it comfortable and relatively pain-free procedure [13] while most of the parents rejected such treatment for their children teeth.[14] Parental acceptance on utilisation of SDF restoration for their children is governed by a number of factors .the parents attitude was highly affected by the location of tooth to be treated ,type of teeth to be treated ,the behaviour and co-operation of the child and aesthetic concerns.

ELEMENTS THAT CURB THE SDF PARENTAL ACCEPTANCE :**ESTHETICS – THE PRIMARY PERTURB:**

Majority of cases the primary reason for parents deferring SDF treatment is owing to the aesthetic discolouration that it causes to the treated teeth in their children. Literature reports in studies done by Llodra et al ,Rosenbalt et al have shown that parents had better acceptance rates on using SDF on posterior teeth when

compared to anterior teeth ,which perhaps infers that parents understood staining in the posterior segments are much less visible.[7,22]

SDF IN PRIMARY TEETH :

Several studies have reported that parents showed significantly higher acceptance of SDF in their child's primary teeth compared to permanent teeth .This could probably be attributed to the instinct that primary teeth will have short term stay in the oral cavity and hence the life long present permanent teeth cannot be compromised .[9,11,27]. Study reports given by Chibinski et al., olivera et al , rosebenblat etal , showed that SDF is 80% more effective than other alternative treatments or placebo in arresting dental caries in primary dentition.[23,6,7] Several reports have also showed that anterior teeth showed higher rates of arrest than the posterior teeth.[30] Fung et al. recommended that, in children with poor oral hygiene, caries arrest rate can be improved by increasing the frequency of application from once a year to twice a year[24]. Llodra et al. stated that the SDF showed better efficacy to arrest decay in primary dentition than permanent first molars.[21]

CHILD'S COOPERTION AND THE COMPROMISE :

Child's cooperation during dental procedures significantly affects the parental acceptance. Parents of children who exhibited un cooperative behaviour during previous treatment session ,more readily tend to accept SDF treatment compared to parents of cooperative children regardless of the type and teeth location .[27] Clemens et al and crystal et al concluded that parents would prefer a conservative approach even at the expense of compromising their child's aesthetic appearance so that the child can receive treatment without the need for more advanced behaviour management techniques or would defer treatment under GA or sedation due to fear.[12,28]

DISCRETE DISQUIETS:

Apart from the reasons mentioned above certain personal factors also influence their decision making .In study conducted by crystal et al (2017) in the new york city among Hispanic ethnicity its was reported that there are no significant differences found to be recorded on changes in levels of maternal and paternal acceptance as in all circumstances not both the parents are consented ,but only the one who is present at the time of treatment makes the decision.[12] .In contrast , other variables such as the level of parents education , their age and awareness about consequences of treatment under GA ,sedation or under a chair side will strongly play a role in their treatment acceptance attitude.[25] Additionally it has been established that parents in low socio economic background agree to simple SDF treatment more readily. Insight and perceptions of the may vary amongst parents depending on the ones who have had a bad previous treatment experience and the ones whose children had less severe effects from previous treatment experience .[23]

METHOD OF ASESSMENT OF PARENTAL ACCEPTANCE:

Factors that influence the parental attitude vary based on the method how they are assessed. The rates of acceptance may be higher if the given information was provided in native language .For example in a study done by crystal et al and Clemens the questionnaire was provide in both English and Spain languages either electronically or on paper. [12,28] .In study conducted by Sara m Bagher et al dentists interviewed the parents and clarified them all the advantages and disadvantages of the utilization of SDF. Other confounding factor is that the perception induced in the parents regarding SDF should be after showing identical images of SDF discolorations to ensure consistency in the results .[27]

SDF AS AN EFFECTIVE CARIES MANAGEMENT TOOL IN THE FUTURE:

- SDF will not treat or eradicate dental caries in children nevertheless it hampers or halts the caries progression by arresting the carious lesion. It does not restore the form and function of the teeth treated to normal thus predisposing to long term problems related to occlusion. Further research is yet to be done to assess the efficacy of SDF in long term and frequency of its application.[29]
- Parental acceptance of SDF treatment have been reported on a majority only based on studies that evaluated them by showing clinical pictures of the possible post treatment outcomes and educating them based on the data shown . However , accuracy in determining the parental acceptance rates on SDF might improve only following reports of studies that have actually been recorded from parents whose children have underwent the SDF treatment or witnessed it . In a recent study done by Clemens et al, in 2017, the parent’s satisfaction on treatment with SDF was assessed which revealed that most of them agreed to the treatment compromising on the discolouration associated with SDF treatment.[28]

CONCLUSION :

Silver diamine fluoride can be a non-invasive, inexpensive, effective, and recommended option for high-risk children and uncooperative patients across communities in arresting dentin caries. Parental acceptance studies for SDF treatment have shown high acceptance rates for treatment of primary teeth and more readily posterior teeth. Studies that which further elaborate on this concern should have more realistic approaches in explaining the parents about the SDF prospects which will provide better understanding thus paving way for the improved acceptance of SDF as an efficient caries management tool.

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