Journal of Research in Medical and Dental Science
2020, Volume 8, Issue 5, Page No: 16-21

Available Online at: www.jrmds.in
eISSN No.2347-2367: pISSN No.2347-2545

Parental Perceptions of Silver Diamine Fluoride Discoloration in Baghdad/Iraq

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ABSTRACT

Introduction: The major drawback of Silver diamine fluoride was the dark discoloration of the treated carious lesion.
Aim: This study was conducted to determine the parental acceptability and perceptions to the discoloration and assess whether the degree of their acceptability could be altered with the position of the discoloured teeth, child attitude and the demographic characteristics of parents.
Method: The parents who attended the dental clinic received a questionnaire which formulated with short summery about silver diamine fluoride with photographs (before and after treatment) and containing questions about the demographical data, attitude of the child in the dental clinic and the acceptability of SDF discoloration at different locations and situation according to child attitude. Coded data were processed in IBM SPSS statistics software for calculating the result by using independent t- test and P-value < 0.05 was considered statistically significant.
Results: 79 mothers and 23 fathers with different backgrounds were participated in this study. The acceptance of silver diamine fluoride discoloration was more in the back teeth 71.6% and less in the front teeth 43.2%. Statistically, non-significant differences were obtained with the demographic data like age, gender, community, and educational level while high associations were found with the different child attitudes.
Conclusion: Silver diamine fluoride discoloration showed widely different acceptability. The position of the tooth and child attitude were the most influenced factors in the perception of the parents that the discoloration was more tolerable when the tooth located posteriorly, and the child acting was worse.

Key words: Iraq, Parental perception, SDF, Silver diamine fluoride, Black discoloration

HOW TO CITE THIS ARTICLE: Asmaa M Khammas, Aseel HMJ Al-Haidar,Parental Perceptions of Silver Diamine Fluoride Discoloration in Baghdad/Iraq, J Res Med Dent Sci, 2020, 8(5): 16-21

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Received: 15/07/2020
Accepted: 07/08/2020

INTRODUCTION

Throughout the human life, diseases had come during man's history and diseases had disappeared. The disorder was put under control for most of the main diseases. Such means could include national or global vaccination, changing living conditions to enhanced nutrition and un-contaminated drinking water. For many other diseases, it might be more difficult to clarify the rationales for a change. This is exactly the case for diseases with a multifactorial scenario like caries [1]. Caries is a complex, dynamic and chronic condition that is endemic to people around the world, which starts in early childhood for many people and persists throughout their lives [2]. Although caries is uncommonly related with mortality, it results in remarkable morbidity, including ache, suffering, loss of job and schooldays, loss of revenue, and the outlay of billions of dollars on health care [3].

The primary aim of caries management should be the prevention of the occurrence of the caries over the life. If the disease is present, however, clinicians face the challenge of assessing the convenient approach to halt the consequences of the caries process [4].

The contemporary philosophy of carious teeth management has been shifted from the conventional surgical trajectory to a medical trajectory, which frequently involved the fluoride therapy [5]. Topical silver diamine fluoride (SDF) is an influential, inexpensive, and inoffensive cariostatic agent, that can be utilized in the management of both primary and permanent carious teeth [6-8]. It incorporates the remineralizing action of fluoride and the antimicrobial action of silver, thus making SDF treatment more efficient in limiting the caries than the other numerous fluoride treatments, like sodium fluoride [7]. Nevertheless, it has the downside of black discoloration of the arrested carious lesion attributable to silver ions reduction to metallic silver and silver oxide [9]. This is a concern, as this negative outcome can influence the acceptability of patients and constitutes a significant obstacle to the use of SDF [6]. Parents have dissimilar attitudes towards using SDF taking into consideration its pros and cons. Indeed, a surveying study of the administrators of paediatric residency programs in the United States revealed that the most identified hurdle to

SDF use was low parental acceptance [10]. However, a study performed in China by Chu et al. had reported that there was poor parental concern about discoloration (less than 7 percent) [11]. Another study that was conducted in the States indicated a different tolerability level. Crystal et. al. labelled that parents could support SDF discoloration in back teeth more than in the front teeth [12]. In 2019, an influential study in Kingdom of Saudi Arabia concluded that the acceptance differed with the location of teeth and most of the parents rejected the treatment [13]. In contrast, a scoping review in 2019 showed that the discoloration from SDF did not affect the parent's satisfaction or perception in SDF, while most dental professionals credited that it would have an effect [14]. To date, parental perceptions, or the acceptance of SDF on the basis of its benefits and the side effect of discoloration among Iraqi parents still not been empirically investigated. Because SDF tends to be a valuable tool for caries management particularly for children, the parental expectations and attitudes regarding its discoloration effects should be examined. In this study, the aim was to determine the parental perceptions of SDF discoloration and to find out whether the acceptability level of SDF could be altered along with the position of the discoloured teeth, the attitude of the child, as well as the demographic characteristics of the parents. The findings of this study will help the clinicians in making the treatment plan that coincide with the parents and patient's requirement and situations.

MATERIALS AND METHODS

Approval from the scientific and ethical committee at the Collage of Dentistry/University of Baghdad was obtained (Approval Number: 121319) and was registered in the Registry of Clinical Trials that run by the United States National Library of Medicine (clinical trials.gov ID: NCT04213573).

The sample was collected from the parents who attended the Paediatric and Preventive Departments in Al-Ameria dental specialized centre and private clinic, both were in al-Karkh district in Baghdad. A questionnaire was formulated with a short summery concerning SDF and questions about the demographical data, attitude of the child in the dental clinic and the acceptability of SDF in different locations and situation according to the child attitude. It estimated the parents' opinion on SDF discoloration and their acceptance to this discoloration when their child would have increasing barriers to receiving conventional restorations. Starting with the parents of children who were cooperative, explanation to the parents about these barriers was done which include the child crying, yelling or kicking, and the barriers may progress to the child's need for conscious sedation or general Anesthesia (GA). In all these scenarios, parents were asked to answer separate questions about front and back teeth discoloration. Questions were included to capture the demographic data, including the parent's age, gender, educational level and residence location (urban, suburban, or rural), so that evaluation whether any of these variables had an impact on the level of the parental acceptance of the discoloration produced by SDF was determined. The parents were asked also about the level of importance they placed on restoring their child's primary teeth, and to describe their child's past attitude when undergoing treatment for caries. In addition, SDF treated teeth photographs were added in the questionnaire. Parents who had at least one child with prior dental experience were included, after their approval to participated in this survey. Questionnaires with incomplete answers and who one of the parents was a dentist were excluded. The validity and reliability of the questionnaire were checked. Coded data were processed in IBM SPSS statistics version 26 software for analyzing and calculating the result by using independent t- test. The rating scale was 1– 4 units as 1 for" unacceptable", 2 for "somewhat unacceptable", 3 for "somewhat acceptable" and 4 as "acceptable". $P<0.05$ was considered statistically significant (S) and highly significant (HS) when (P value ≤ 0.0001) with 95% confidence interval.

RESULTS

One hundred fifteen parents had been contributed to this survey and only 102 wrote back the completed answers (79 females and 23 males). The age of the participated parents was mostly ranged between 31- 40 years old (45.1%) followed by the age range of 21- 30 years old (22.5%). The mass was living in a city community (95.1%) and few was living in suburban and rural area (2.9% and 2% sequentially). Sixty-three participants were graduated from college (61.8%) and eighteen had a postgraduate degree (17.6%) while fifteen completed the secondary school and only six had complete the elementary school.

Most of the parents found the deciduous teeth preservation is "very important"(49%) then "important " was 37%", little important" was 11.8% and two only chose "not important". Twenty-three (22.5%) reported that their kids were fine during the restorative treatment, twenty-eight (27.5%) were upset, nineteen (18.6%) were crying and ten (9.8) were kicked and yelled. Thirty-six of the parents reported the need for different behavior management technique like physical restrainer (12.7%), nitrous oxide (1%), oral sedation (17.6%) and only four (3.9%) required G.A to complete the dental procedures.

According to the position of the treated teeth, the acceptance of SDF discoloration in the back teeth were high 71.6% (somewhat acceptable=44.1% and acceptable=27.5%) and less in the front teeth 43.2% (somewhat acceptable=26.5% and acceptable=16.7%) with highly significant difference ($p<0.0001$) (Figure 1). The average rating of acceptance was approximately 2.9 for the back teeth and 2.58 for the front teeth, both in the range of "somewhat acceptable". Only two parents found SDF discoloration unacceptable in any situation.

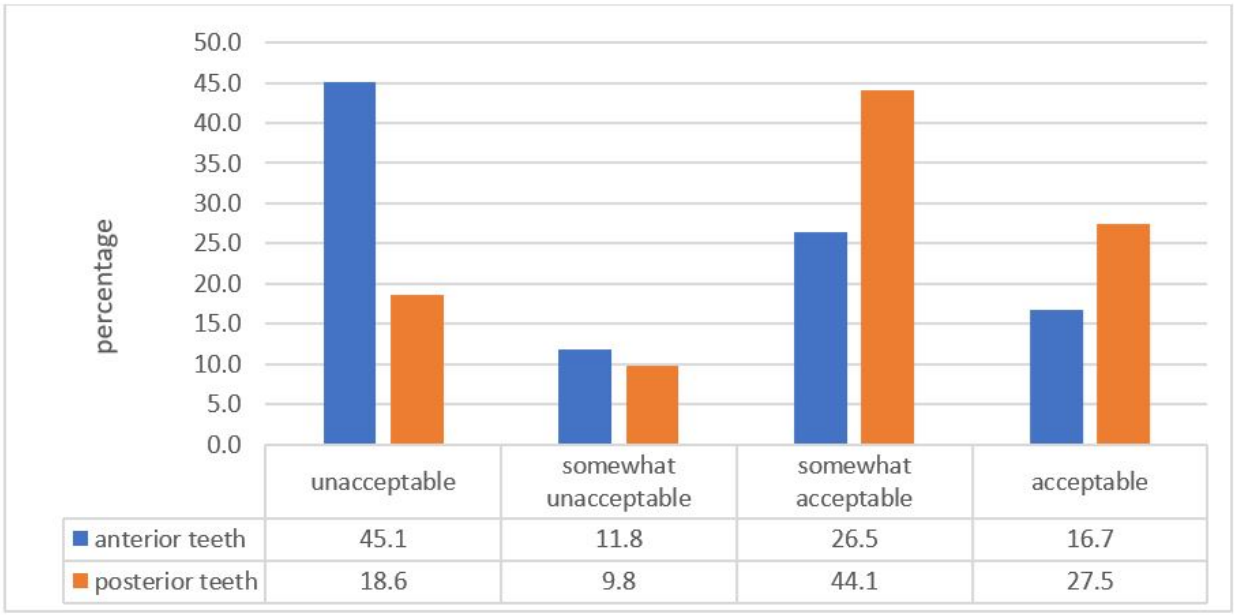

Figure 1: Acceptability of SDF discoloration according to the tooth position.

While demonstrating the acceptance of the SDF discoloration with the difficulty faced during dental treatment, it was found that the more uncooperative child the more the acceptance was especially for the back teeth. Statistically when connecting the acceptance of discoloration by the parents for both the front and the back teeth along with the child attitude, a highly significant difference was found if the child where cooperative or anxious, while significant difference was found when the child where cried, kicked or yelled and with oral sedation. On the contrary, non-significant difference was found whether the treatment was done with G.A as shown in the Table 1.

Table 1: The acceptance of front and back teeth discoloration in accordance with the child attitude.

	Descriptive statistics						95% Confidence interval of the difference	
	N	Mean ± SD	Min	Max	P Value	Sig	Lower bound	Upper bound
Cooperative	204	2.48 ± 1.01	1	4	0.0001	HS	0	0.029
Anxious	204	2.54 ± 0.94	1	4	0.001	HS	0	0.029
Cried	204	2.85 ± 0.84	1	4	0.002	S	0	0.029
Kicked and yelled	204	2.98 ± 0.85	1	4	0.026	S	0	0.029
Oral sedation	204	2.76 ± 0.88	1	4	0.004	S	0	0.029
GA	204	2.87 ± 0.95	1	4	0.351	NS*	0.269	0.456

*non-significant at P value>0.05

Lastly, the acceptance of the discoloration in the front and back teeth with the demographic data like age, gender, community, and level of education was analysed for the assessment of possible impacts on the acceptance degree. In accordance with age with the acceptability by parents there was no significant difference (P-value=0.488 anteriorly, P-value=0.721 posteriorly) as shown in Figure 2. Also a non-significant result was obtained when comparing the gender with the acceptance of the parents in the back and front teeth (P-value=0.746, P-value=0.383 respectively) (Figure 3).The same result was found when comparing the type of the community with the acceptance in the front and back teeth (P-value=0.941, P-value=0.065) (Figure 4). At last, there was no significant difference concerning the impact of the levels of the education on the parental perception (P-value=0.601 anteriorly, P-value=0.893 posteriorly) (Figure 5).

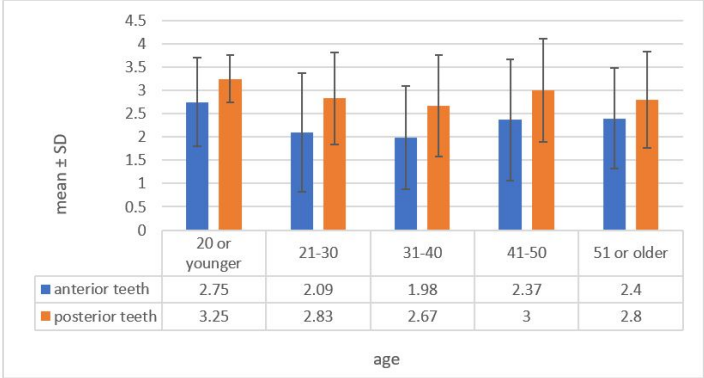

Figure 2: The acceptance of the discoloration according to the parents age.

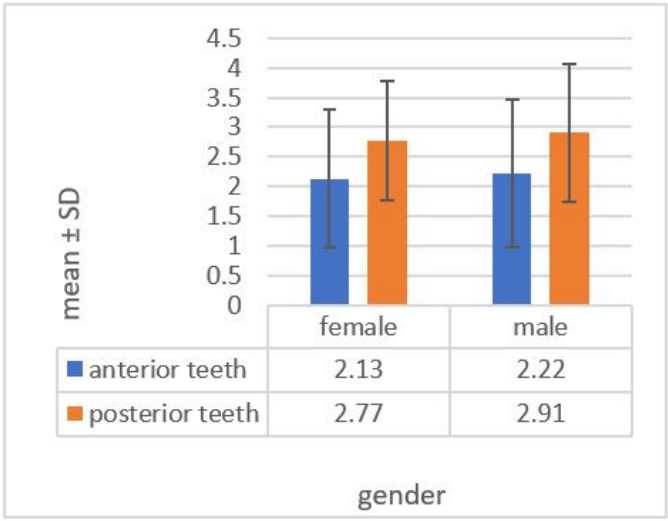

Figure 3: The acceptance of the discoloration according to gender.

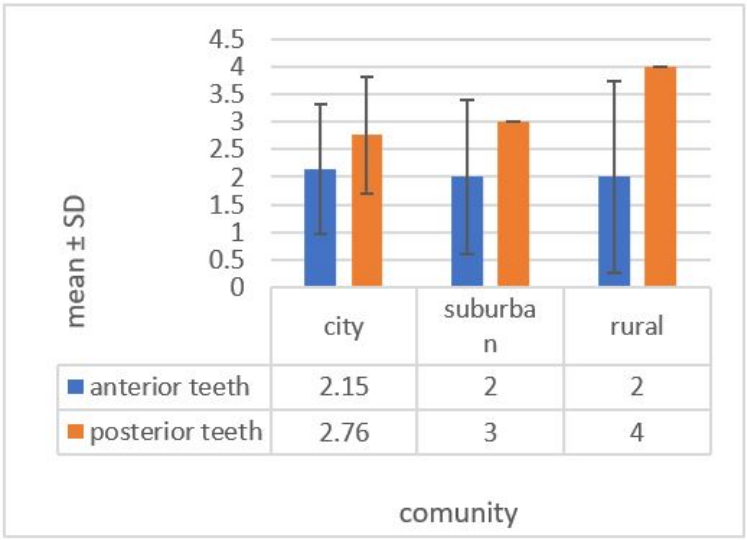

Figure 4: The acceptance of the discoloration according to the community.

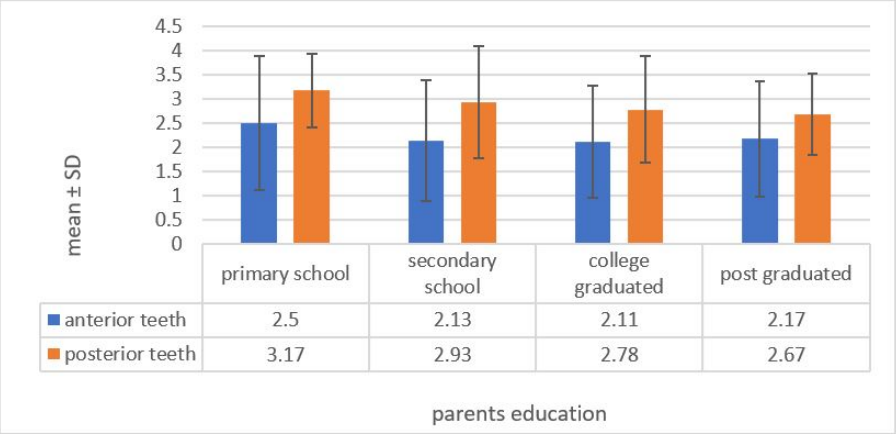

Figure 5: Acceptability of the discoloration according to the parent's level of education.

DISCUSSION

To date, this is the first study that focus on the parental acceptance on SDF discoloration in Iraq. The study recruited a sample of 115 participants; however, exclusion of 13 participants was done either because of incomplete questionnaire or when the parents were dentist. This study indicated that the discoloration of SDF influenced the parental perception. Yet, the parents tolerated the dark discoloration in the back teeth more than the front teeth. These results matched those in earlier studies [10,12,13,15].

In contrast, several studies revealed that the dark discoloration resulted from SDF did not affect the satisfaction of the parents [11,16-20] and another study reported that the poor esthetics was not a pivotal factor if SDF was indicated [16]. Although statistically there was no significant difference, the present findings suggested that when the level of education increased the acceptability was decreased. Also, the youngest group (20 or younger) supported the SDF treatment more than the older adults. These findings agreed with Crystal et. al. [12], while they disagreed with Al-shammari et al. [13] who revealed that the lower level of education strongly refused by 100% on using SDF. The results of the present study showed that the child attitude affect the acceptance of the discoloration in the front and back teeth. As the acceptability was increased when the child attitude gets worse which was in accordance with that of Chhokar et al. [15] and Crystal et al. in [12] but one unanticipated finding that when the child needed general Anesthesia the acceptance climbed down. The cause may be that the Iraqi population were not familiar with this treatment method.

CONCLUSION

The discoloration of SDF showed widely different acceptability by the parents in Baghdad\Iraq. The position of the tooth influences the parental perception that the back teeth discoloration was the more tolerable. The demographical data did not show any effect statistically. But the child attitude highly influenced on the acceptance of SDF discoloration. Before using SDF an informed consent should be obtained with photographs before and after treatment particularly when treating the front teeth.

ACKNOWLEDGEMENTS

The authors are thankful for the seniors and rotators of the al-Ameria dental specialized centre for their cooperation during the study. Special thanks to Dr. Jawad al diwan for his scientific instruction and support.

CONFLICTS OF INTEREST

No conflict of interest.

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