

# The Knowledge and Perception of Dental Fluorosis among Saudi Arabian Population

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*Dental Fluoride occurs as a result of the excessive consumption of water containing an excessive amount of Fluoride leading to an unacceptable esthetic result, many reasons can cause dental fluorosis such as a high level of fluoride intake, drinking highly fluoridated water, and some diet containing fluoride Nowadays, esthetic treatment and beauty appearance is the main concern of people. Microabrasion is considered to be one of the most popular esthetic treatments of enamel, in regards to people's awareness of other esthetic treatment options as in-office bleaching and direct and indirect restoration.*

**Keywords:** Bleaching, Esthetic, Fluoride, Fluorosis, Microabrasion, Restorations.

## INTRODUCTION

An esthetic smile is a primary concern among many patients. Many attractive smiles lose their attractiveness because of some discoloration; due to fluorosis, hypomineralization, or stains. Dental color is one of the most important characteristics correlated with aesthetics. There are many causes of defects that could cause dental color change such as exogenous stains of extrinsic etiology, for example, food dyes (coffee, tea) or tobacco use or accumulation of plaque and dental calculus; or intrinsic etiology like dentinogenesis imperfecta, dental fluorosis, tetracycline dentin staining or injuries .

To overcome the stains, there is a wide range of treatments such as crowns, veneers, and composite veneers in moderate to severe discoloration.

People with mild defects usually can be treated with minimally invasive procedures. They are not aware of other treatment options, and economic problems have also influenced patients' decisions among treatment options. More conservative approaches are based on cheaper and less time-consuming treatments, such as microabrasion which is a conservative, atraumatic and non-restorative technique that removes a superficial layer of enamel that has some defects of texture or color such as brown or white opacities. This treatment can be so effective with in-home bleaching in such cases with mild defects.

The sample was randomly selected from different regions of Saudi Arabia to consider the knowledge of esthetic treatment options among Saudi Population. The data analysis was done using SPSS V 22 after ethical approval is taken. from the REU research center.

## AIM

The aim of this study is to assess the knowledge and perception of Fluorosis condition and esthetic treatment options as microabrasion, In-office bleaching, and Direct and indirect Restoration treatments among the Saudi population.

## MATERIALS & METHODS

This study was conducted to assess the knowledge and perception of dental Fluorosis among non-dental practitioners and to evaluate the knowledge of esthetic treatment options by a distributed online questionnaire survey (google forms) through Social Media (Twitter and WhatsApp ). Randomly selected in a different region in Riyadh City, Saudi Arabia. The number of the sample that we used was 350. The data analysis was done by using SPSS V 22 after ethical approval that was taken from the REU research center.

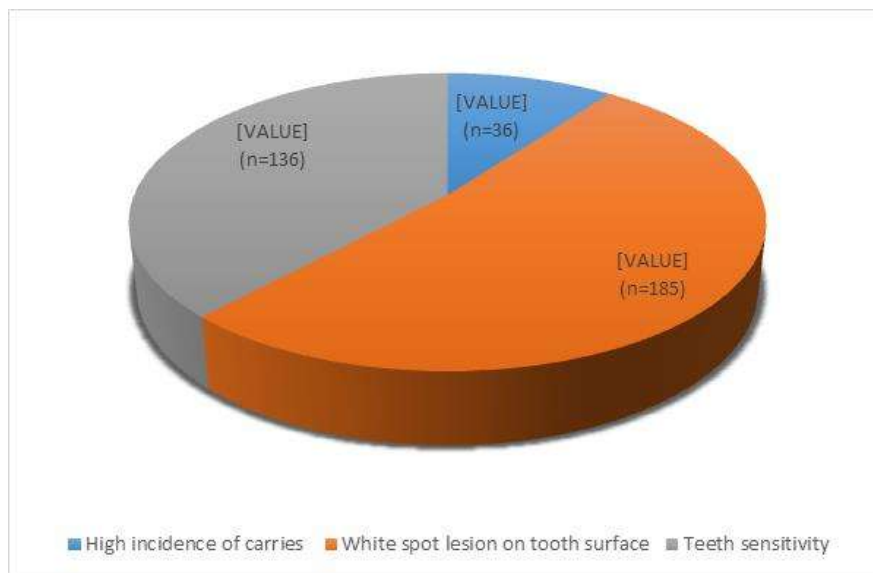
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**Table 1. Demographic characteristics of the participants**

		Frequency	Percent
Age in years	18-25	197	55.2
	26-30	55	15.4
	31-40	74	20.7
	Other	30	8.4
Gender	Male	83	23.2
	Female	274	76.8
Educational level	High school	92	25.8
	Bachelor	244	68.3
	Master	17	4.8
	Other	4	1.1
Smoking status	Yes	45	12.6
	No	312	87.4
Region	Central	184	51.5
	Western	35	9.8
	Eastern	107	30.0
	Northern	14	3.9
	South	17	4.8




**Table 2. Knowledge and perception of microabrasion**

		Frequency	Percent
Do you know about microabrasion technique?	Yes	134	37.5
	No	223	62.5
Have you ever been treated with microabrasion technique?	Yes	67	18.8
	No	290	81.2
Are satisfied with the results?	Yes	78	22.3
	No	188	53.7
	Other	84	24.0
Do you recommend treatment with microabrasion?	Yes	110	31.2
	No	202	57.2
	Other	41	11.6



**Figure 1. Effect of increased fluoride content**

**Table 3. Treatment choice for dental fluorosis**

Picture	Frequency (Percent)				
	Veener	Crown	Bleaching	Microabrasion	Other
	79 (22.1)	70 (19.6)	59 (16.5)	147 (41.2)	2 (0.6)
	81 (22.7)	52 (14.6)	111 (31.1)	101 (28.3)	12 (3.4)
	71 (19.9)	83 (23.2)	95 (26.6)	95 (26.6)	13 (3.6)

**Table 4. Association between knowledge and perception of microabrasion & demographi&**

	p value	
	Gender	Smoking status
Do you know about microabrasion technique?	0.244	0.513
Have you ever been treated with microabrasion technique?	0.024*	0.415
Are satisfied with the results?	0.010*	0.257
Do you recommend treatment with microabrasion?	0.005*	0.007*

\* Statistically significant at p≤0.05

**Table 5. Association between treatment choice for dental fluorosis & demographics**

	p value	
	Gender	Smoking status
	0.009*	0.979
	0.980	0.139
	0.920	0.987

\* Statistically significant at p≤0.05

## RESULTS

Table 1 shows the demographic characteristics of the participants. Of the total 357 participants, approximately half were between 18-25 years old (55.2%, n=197) and from the central region (51.5%, n=184). Most of the participants were female (76.8%, n=274), bachelor level of education (68.3%, n=244), and non-smokers (87.4%, n=312).

Over one-third of the participants were aware of the microabrasion technique (37.5%, n=134) but only 18.8% (n=67) have been treated with microabrasion technique. Approximately one quarter was satisfied with the results (22.3%, n=78) and 31.2 % (n=101) would recommend treatment with microabrasion (Table 2).

Most of the participants reported a white spot lesion on the tooth surface (51.8%, n=185) as an effect of increased fluoride content (Figure 1). Microabrasion for mild fluorosis and bleaching for moderate and severe fluorosis was reported as the choice of treatment (Table 3). Two-way cross-tabulation showed that males are more likely to have been treated with microabrasion technique, satisfied with the results, and recommend treatment with microabrasion. Non-smokers are more likely to recommend treatment with microabrasion. Furthermore, the Chi-Square test showed these associations to be statistically significant ( $p < 0.05$ ) (Table 4). Males are more likely to choose bleaching and females crowns as a treatment for mild fluorosis ( $p < 0.05$ ) (Table 5).

## DISCUSSION

There are numerous articles about each of the techniques either individually or as comparisons. However, there are very few researches that determine the perception and awareness of minimally invasive techniques to treat stains (intrinsic or extrinsic).

Dental fluorosis is a dental public health concern in many regions of Saudi Arabia (Siddique, AA et al, 2017). When answering the questionnaire, 51.8 % of participants thought white spot lesions were a sign of increased fluoride content. Efforts must be taken to increase awareness regarding fluorosis especially since it is a public concern.

After analyzing the data collected about the knowledge and perception of microabrasion as a treatment option, 37.5% of participants were aware of the microabrasion technique but only 18.8% have been treated with microabrasion techniques. Approximately one quarter was satisfied with the results (22.3%) and (31.2%) would recommend treatment with microabrasion (Table 2). Better marketing strategies about

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minimally invasive techniques should be applied to help the patients alongside the treating dentist reach the treatment that is in the best interest of the patient.

Regarding perception towards minimally invasive treatment options when fluorosis is concerned, 41.2% considered microabrasion as an option in cases of mild fluorosis; 31.1% considered bleaching as an option in cases of moderate fluorosis; however, in cases of severe fluorosis, the majority were equally split between bleaching (26.6%) and microabrasion (26.6%).

Interestingly, male participants were more likely to choose microabrasion treatment, were satisfied with treatment results, and are more likely to recommend the treatment. While female participants were more inclined towards invasive treatment (such as crowns) as a treatment for mild fluorosis.

## CONCLUSION

1. Minimally invasive techniques are effective treatments that can help with the aesthetics with minimal effects on natural tooth structures.
2. The majority of people are not aware of minimally invasive techniques.
3. Further research is needed to identify why female participants are more willing to go towards invasive treatment.
4. People should be more aware of indications of Microabrasion technique also new studies shows that is one of the most conservative that same timeless
5. There are special regions in Saudi Arabia that should be aware of these treatments which they have increased cases of fluorosis that may help
6. Most cases of mild to moderate fluorosis can be treated with these minimal invasive conservative technique combined with bleaching .

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## CONFLICT OF INTEREST

There is no conflict of interest among the authors regarding the writing and publication of this research.

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