



PATIENTS' DESIRE AND PREVIOUS EXPERIENCE OF DENTAL BLEACHING

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ABSTRACT

Introduction: Dental esthetics is one of the most wanted procedures in the current business of dentistry. It is more common among the young aged patients, who tend to undergo whitening procedures more than the older aged patients. This process of teeth whitening is scientifically known as bleaching. A study was conducted by Al-Amriet *al*(2017), which focused on the reasons behind bleaching use and the extent of people's desire in demanding for such treatment. It was found out that majority of the patients were unaware of any side effect dental bleaching might be associated with.

Methodology: This is a cross-sectional study, which utilized a closed ended online questionnaire constructed on survey monkey. The survey questions included variables related to demographics and bleaching. A total of 525 participants were targeted, which included males and females more than 18 years of age and having at least one previous dental visit.

Discussion: As far as the gender comparison was concerned, we found that females tend to have better knowledge about the side effects associated with dental bleaching procedures. , no significant comparisons were seen regarding the experiences of males and females, which indicate that both genders have similar levels of desire and experience of receiving dental bleaching treatment. We also found significant differences among the educated and uneducated groups, When compared the survey responses on the basis of age groups, it was noted that there was no overall significant difference between age groups of participants.

As far as smoking and nationality were concerned, there were no overall significant comparisons reported in our study.

Conclusions

- No gender differences were reported in this study.
- Educated patients had better knowledge and experience of tooth bleaching.
- No relationship between age, income, smoking and dental visits with bleaching knowledge and desire could be established.

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INTRODUCTION

Dental esthetics is one of the most wanted procedures in the current business of dentistry. It is more common among the young aged patients, who tend to undergo whitening procedures more than the older aged patients. This process of teeth whitening is scientifically known as bleaching. It involves a chemical process of oxidation that occurs within the enamel, making it look lighter than before. However, several bleaching materials, techniques and procedures have been introduced over the years.

Each of these has a unique set of qualities as well as drawbacks, which are mainly influenced by certain factors (Joiner, 2006). There are two major types of dental bleaching, the office bleaching and home bleaching. The former consists of higher concentration and strong affects as compared to the later one, which is low in concentration but has slow and long term results. Several studies have been conducted in search of satisfaction levels among patients who have undergone both types of above mentioned treatments. Generally, the two main reasons of either accepting or rejecting bleaching procedures include post-operative sensitivity and longevity of whitening effect. Home bleaching has been believed to have produced better and long lasting results as compared to office bleaching (Nieet *al*, 2017). The authenticity of various bleaching agents

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that are available for the patients' use is not reliable. Home bleaching agents are commonly used by patients on a repetitive basis. Therefore, it is imperative to address such consumers as excess use of bleaching materials is responsible for sensitivity and discoloration of teeth as well (Demarco, Meireles&Masotti, 2008). A few dental bleaching agents are available in the market, which can only be used with the help of a custom made tray. However, bleaching strips are also available, which can be utilized without the need of tray. Successful results have been achieved by the use of above mentioned over the counter bleaching option (Gerlach & Zhou, 2001; Gokay, MujdeciandAlgin, 2004). Furthermore, additional materials are also widely used by the general public in order to achieve the desired esthetic results. One of these methods include the use of silica toothpaste, which is found to be effective in increasing the esthetic satisfaction among dental patients (Collins, Naeeni&Platten, 2008). As mentioned above, several whitening agents are easily available and commonly used by various socioeconomic groups. These include mouth rinses as well, which have been clinically proven to have a positive effect on the esthetic improvement of teeth (Torres *et al*, 2013). Additionally, chewing gums have also been utilized in order to improve the shade of teeth as they contain teeth whitening agents. Historically, sodium bicarbonate has been added to these gums to achieve desired results (Howard, 1998). Efficacy of whitening gels has also been documented in various studies, which provides another option for general public to use these materials to improve their dental esthetics. Safe use of these gels has been the most important aspect of patients' choice (Meireles *et al*, 2008; Nathoo *et al*, 2003). An important aspect of this study is to assess the desire of dental patients in opting for bleaching procedures, whether home or office. Although we have stated above that the keenness of acquiring dental bleaching treatments is similar in both genders, but there are several studies which incline towards the female gender. Similar findings were recorded and demonstrated by Grzicet *al* (2012), where patients facing embarrassment during smile and female gender were significantly higher in choosing dental bleaching as a treatment option to fulfill their satisfaction. Another Brazilian study compared the patients' willingness to undergo bleaching treatment on the basis of satisfaction levels. It was noted that the patients who were unsatisfied from their esthetic appearance were highly interested in receiving this treatment as compared to those who were satisfied. It was also revealed that many dental patients had already undergone teeth whitening procedures, which shows a high desire to improve personal dental esthetics (Da Silva *et al*, 2018).

AIM:

- To determine the level of desire among patients to undergo bleaching procedure.
- To determine relationship among desire and several variables.

MATERIALS AND METHODS

This is a cross-sectional study, which utilized a closed ended online questionnaire constructed on survey monkey. The survey questions included variables related to demographics and bleaching (Table 1). The survey was made in Arabic language and sent to general public using social media and emails. A total of 525 participants were targeted, which included males and females more than 18 years of age and

having at least one previous dental visit. Collected data was analyzed using SPSS version 20, which included descriptive as well as inferential statistics. Chi-square test was done to compare the responses on the basis of various variables.

Table 1. E-Survey Questions

Questions	Answers
Q1) Gender ?	1) Male 2) Female
Q2) Educational level ?	1) Bachelor 2) Non-Bachelor
Q3) Nationality ?	1) Saudi 2) Non-Saudi
Q4) Age?	1) 18-25 2) 26-35 3) 36 or older
Q5) The level of income ?	1) Less than 5000 SR 2) More than 5000 SR
Q6) Last visit to the dentist ?	1) Less than a year 2) More than a year
Q7) do you smoke ?	1) Yes 2) No
Q8) Did you whiten your teeth at the dentist's office?	1) Yes 2) No
Q9) Did you whiten your teeth at home?	1) Yes 2) No
Q10) Have you tried teeth whitening by any of the following products?	1) Whitening dentifrices 2) Whitening strips 3) Rinses 4) Paint-on gels 5) Chewing gum
Q11) Which of the previous bleaching methods did you notice an improvement in the teeth color?	1) In-office bleaching 2) Home bleaching 3) Whitening dentifrices 4) Whitening strips 5) Rinses 6) Paint-on gels 7) Chewing gum
Q12) Do you periodically whiten your teeth?	1) Once a life 2) Every 3 months 3) Every 6 months 4) Once a year 5) Never
Q13) Do you think teeth whitening has side effects?	1) Yes 2) No 3) I don't know
Q14) If your answer is yes, what are the possible side effects?	1) Teeth sensitivity 2) Burning gum 3) No color improvement

RESULTS

Table (2) shows that there were statistically significant differences between male and female in their thinking that whitening has side effects and Q14 with p-values 0.004 and 0.000 respectively.

Table 2. Comparison between Male and Female for all questions regarding Bleaching

Questions	ANSWERS	Gender		P-valueOf Chi-square test
		Male	Female	
Q8) Did you whiten your teeth at the dentist's office?	1)Yes	71(30.34%)	86(29.55%)	0.84
	2)No	163(69.66%)	205(70.45%)	
Q9) Did you whiten your teeth at home?	1)Yes	37(15.81%)	63(21.65%)	0.09
	2)No	197(84.19%)	228(78.35%)	
Q10) Have you tried teeth whitening by any of the following products?	1)Whitening dentifrices	151(89.35%)	210(88.98%)	0.89
	2)Whitening strips	36(21.30%)	44(18.64%)	
	3)Rinses	18(10.65%)	19(8.05%)	
	4)Paint-on gels	10(5.92%)	10(4.24%)	
	5)Chewing gum	13(7.69%)	10(4.24%)	
Q11)Which of the previous bleaching methods did you notice an improvement in the teeth color?	1)In-office bleaching	60(40.27%)	94(42.92%)	0.54
	2)Home bleaching	23(15.44%)	39(17.81%)	
	3)Whitening dentifrices	62(41.61%)	95(43.38%)	
	4)Whitening strips	20(13.42%)	28(12.79%)	
	5)Rinses	9(6.04%)	10(4.57%)	
	6)Paint-on gels	5(3.36%)	3(1.37%)	
	7)Chewing gum	3(2.01%)	4(1.83%)	
Q12) Do you periodically whiten your teeth?	1)Once a life	32(13.68%)	56(19.24%)	0.09
	2)Every 3 months	26(11.11%)	14(4.81%)	
	3)Every 6 months	19(8.12%)	16(5.50%)	
	4)Once a year	27(11.54%)	37(12.71%)	
	5)Never	130(55.56%)	168(57.73%)	
Q13) Do you think teeth whitening has side effects?	1)Yes	92(39.32%)	151(51.89%)	0.004*
	2)No	28(11.97%)	32(11%)	
	3)I don't know	114(48.72%)	108(37.11%)	
Q14) If your answer is yes, what are the possible side effects?	1)Teeth sensitivity	82(75.23%)	150(80.21%)	0.000*
	2)Burning gum	43(39.45%)	67(35.83%)	
	3)No color improvement	22(20.18%)	42(22.46%)	

Significant P-value <0.05

Table (3) shows that there were highly statistically significant differences in between graduated and nongraduated in using bleaching products, whiten teeth at home, bleaching methods make improvement and in their opinions in whitening teeth has side effects with p-value= 0.005 ,0.0006,0.02 and 0.013 respectively.

Table 3. Comparison between Educated and non-educated for all questions regarding Bleaching

Questions	ANSWERS	Educational level		P-valueOf Chi-square test
		Bachelor	Non-bachelor	
Q8) Did you whiten your teeth at the dentist's office?	1)Yes	126(30.14%)	31(28.97%)	0.81
	2)No	292(79.62%)	76(20.38%)	
Q9) Did you whiten your teeth at home?	1)Yes	92(22.01%)	8 (7.48%)	0.00006*
	2)No	326(79.62%)	99(20.38%)	
Q10) Have you tried teeth whitening by any of the following products?	1)Whitening dentifrices	281(88.92%)	80(89.89%)	0.005*
	2)Whitening strips	72(22.78%)	8(8.99%)	
	3)Rinses	27(8.54%)	10(11.24%)	
	4)Paint-on gels	19(6.01%)	1(1.12%)	
	5)Chewing gum	14(78.02%)	9(21.98%)	
Q11)Which of the previous bleaching methods did you notice an improvement in the teeth color?	1)In-office bleaching	121(41.72%)	33(42.31%)	0.02*
	2)Home bleaching	56(19.31%)	6(7.69%)	
	3)Whitening dentifrices	121(41.72%)	36(46.15%)	
	4)Whitening strips	43(14.83%)	5(6.41%)	
	5)Rinses	14(4.83%)	5(6.41%)	
	6)Paint-on gels	7(2.41%)	1(1.28%)	
	7)Chewing gum	3(1.03%)	4(5.13%)	
Q12) Do you periodically whiten your teeth?	1)Once a life	69(16.51%)	19(17.76%)	0.56
	2)Every 3 months	34 (8.13%)	6 (5.61%)	
	3)Every 6 months	31(7.42%)	4 (3.74%)	
	4)Once a year	49 (11.72%)	15 (14.02%)	
	5)Never	235(56.22%)	63(58.8%)	
Q13) Do you think teeth whitening has side effects?	1)Yes	205(49.04%)	38(35.51%)	0.013*
	2)No	41(9.81%)	19(17.76%)	
	3)I don't know	172(41.15%)	50(46.73%)	
Q14) If your answer is yes, what are the possible side effects?	1)Teeth sensitivity	202(82.79%)	30(57.69%)	0.38
	2)Burning gum	91(37.30%)	19(39.54%)	
	3)No color improvement	52(21.31%)	12(23.08%)	

Significant P-value <0.05

Table (4) shows that there were Highly statistically significant differences between Nationality and type of different products of with p-value =0.002*

Table 4. Comparison between nationality (Saudi and Non Saudi)for all questions regarding Bleaching

Questions	ANSWERS	Nationality		P-value Of Chi-square test
		Saudi	Non-saudi	
Q8) Did you whiten your teeth at the dentist's office?	1)Yes	71(30.34%)	86(29.55%)	0.08
	2)No	163(69.66%)	205(70.45%)	
Q9) Did you whiten your teeth at home?	1)Yes	37(15.81%)	63(21.65%)	0.55
	2)No	197(84.19%)	228(78.35%)	
Q10) Have you tried teeth whitening by any of the following products?	1)Whitening dentifrices	151(89.35%)	210(88.98%)	0.002*
	2)Whitening strips	36(21.30%)	44(18.64%)	
	3)Rinses	18(10.65%)	19(8.05%)	
	4)Paint-on gels	10(5.92%)	10(4.24%)	
	5)Chewing gum	13(7.69%)	10(4.24%)	
Q11)Which of the previous bleaching methods did you notice an improvement in the teeth color?	1)In-office bleaching	60(40.27%)	94(42.92%)	0.09
	2)Home bleaching	23(15.44%)	39(17.81%)	
	3)Whitening dentifrices	62(41.61%)	95(43.38%)	
	4)Whitening strips	20(13.42%)	28(12.79%)	
	5)Rinses	9(6.04%)	10(4.57%)	
	6)Paint-on gels	5(3.36%)	3(1.37%)	
	7)Chewing gum	3(2.01%)	4(1.83%)	
Q12) Do you periodically whiten your teeth?	1)Once a life	13(16.68%)	56(19.42%)	0.4
	2)Every 3 months	26(11.11%)	14(4.81%)	
	3)Every 6 months	19(8.12%)	16(5.50%)	
	4)Once a year	27(11.54%)	37(12.71%)	
	5)Never	130(55.56%)	168(57.73%)	
Q13) Do you think teeth whitening has side effects?	1)Yes	92(39.32%)	151(51.89%)	0.34
	2)No	28(11.97%)	32(11%)	
	3)I don't know	114(48.72%)	108(37.11%)	
Q14) If your answer is yes, what are the possible side effects?	1)Teeth sensitivity	82(75.23%)	150(80.21%)	0.34
	2)Burning gum	43(39.45%)	67(35.83%)	
	3)No color improvement	22(20.18%)	42(22.46%)	

Significant P-value <0.05.

Table (5) shows that there were highly statistically significant differences among age groups in whiten teeth at dentist's office, bleaching methods make improvement and in their opinions in periodically whitening teeth with p-value= 0.000 ,0.000,0.02 and 0.03respectively.

Table 5. Comparison between age groups for all questions regarding Bleaching

Questions	ANSWERS	Age			P-valueOf Chi-square test
		18-25	26-35	36 or older	
Q8) Did you whiten your teeth at the dentist's office?	1)Yes	31(15.98%)	46(36.22%)	80(39.22%)	0.000*
	2)No	163(84.02%)	81(63.78%)	124(38.86%)	
Q9) Did you whiten your teeth at home?	1)Yes	36(18.56%)	30(23.62%)	34(16.67%)	0.287
	2)No	158(81.44%)	97(76.38%)	170(83.33%)	
Q10) Have you tried teeth whitening by any of the following products?	1)Whitening Dentifrices	114(85.07%)	97(88.99%)	150(92.59%)	0.07
	2)Whitening strips	34(25.37%)	27(24.77%)	19(11.73%)	
	3)Rinses	13(9.70%)	10(9.17%)	14(8.64%)	
	4)Paint-on gels	10(7.46%)	5(4.59%)	5(3.09%)	
	5)Chewing gum	12(8.96%)	5(4.59%)	6(3.70%)	
Q11)Which of the previous bleaching methods did you notice an improvement in the teeth color?	1)In-office bleaching	28(25.00%)	48(47.52%)	78(50.32%)	0.000*
	2)Home bleaching	28(25.00%)	21(20.79%)	13(8.39%)	
	3)Whitening dentifrices	59(52.68%)	40(39.60%)	58(37.42%)	
	4)Whitening strips	21(18.75%)	13(12.87%)	14(9.03%)	
	5)Rinses	7(6.25%)	2(1.98%)	10(6.45%)	
	6)Paint-on gels	5(4.46%)	2(1.98%)	1(0.65%)	
	7)Chewing gum	3(2.68%)	0(0.00%)	4(2.58%)	
Q12) Do you periodically whiten your teeth?	1)Once a life	26(13.40%)	26(20.47%)	36(17.65%)	0.03*
	2)Every 3 months	20(10.24%)	13(10.24%)	7(3.43%)	
	3)Every 6 months	12(6.19%)	11(8.6%)	12(5.88%)	
	4)Once a year	17(8.76%)	17(13.39%)	30(14.71%)	
	5)Never	119(61.34%)	60(47.24%)	119(58.33%)	
Q13) Do you think teeth whitening has side effects?	1)Yes	94(48.45%)	62(48.82%)	87(42.65%)	0.54
	2)No	25(12.89%)	25(12.89%)	22(10.78%)	
	3)I don't know	75(38.66%)	52(40.94%)	95(46.57%)	
Q14) If your answer is yes, what are the possible side effects?	1)Teeth sensitivity	85(84.16%)	60(80.00%)	87(72.50%)	0.940
	2)Burning gum	42(41.58%)	31(41.33%)	37(30.83%)	
	3)No color improvement	25(24.75%)	15(20.00%)	24(20.00%)	

Significant P-value <0.05

Table (6) shows that there were highly statistically significant differences between Income levels in whiten teeth at dentist's office and bleaching methods make improvement in teeth color with p-values 0.000 and 0.016 respectively.

Table 6. Comparison between Income levels for all questions regarding Bleaching

Questions	ANSWERS	The level of income		P-valueOf Chi-square test
		Less than 5000 SR	More than 5000 SR	
Q8) Did you whiten your teeth at the dentist's office?	1)Yes 2)No	39(18.14%) 176(81.86%)	118(38.06%) 192(61.94%)	0.000*
Q9) Did you whiten your teeth at home?	1)Yes 2)No	39(18.14%) 176(81.86%)	61(19.68%) 249(80.32%)	0.66
Q10) Have you tried teeth whitening by any of the following products?	1)Whitening dentifrices 2)Whitening strips 3)Rinses 4)Paint-on gels 5)Chewing gum	131(85.62%) 39(25.49%) 12(7.84%) 10(6.54%) 13(8.50%)	230(91.27%) 41(16.27%) 25(9.92%) 10(3.97%) 10(3.97%)	0.063
Q11) Which of the previous bleaching methods did you notice an improvement in the teeth color?	1)In-office bleaching 2)Home bleaching 3)Whitening dentifrices 4)Whitening strips 5)Rinses 6)Paint-on gels 7)Chewing gum	38(29.92%) 28(22.05%) 64(50.39%) 23(18.11%) 7(5.51%) 5(3.94%) 3(2.36%)	116(48.13%) 34(14.11%) 93(38.58%) 25(10.37%) 12(4.98%) 3(1.24%) 4(1.66%)	0.016*
Q12) Do you periodically whiten your teeth?	1)Once a life 2)Every 3 months 3)Every 6 months 4)Once a year 5)Never	31(14.42%) 21(9.77%) 13(6.05%) 19(8.84%) 131(60.93%)	57(18.39%) 19(6.13%) 22(7.10%) 45(14.52%) 167(53.87%)	0.89
Q13) Do you think teeth whitening has side effects?	1)Yes 2)No 3)I don't know	98(45.58%) 23(10.70%) 94(43.72%)	145(46.77%) 37(11.94%) 128(41.29%)	0.82
Q14) If your answer is yes, what are the possible side effects?	1)Teeth sensitivity 2)Burning gum 3)No color improvement	86(80.37%) 51(47.66%) 24(22.43%)	146(77.25%) 59(31.22%) 40(21.16%)	0.24

Significant P-value <0.05

Table (7) shows that there were highly statistically significant differences between Last visit levels in whiten teeth at home, periodically and side effect with p-value =0.01, 0.0008 and 0.03 respectively

Table 7. Comparison between Last visit to the dentist for all questions regarding Bleaching

Questions	ANSWERS	Last visit to the dentist		P-value Of Chi-square test
		Less than a year	More than a year	
Q8) Did you whiten your teeth at the dentist's office?	1)Yes 2)No	95(31.99%) 202(68.01%)	62(27.19%) 166(72.81%)	0.23
Q9) Did you whiten your teeth at home?	1)Yes 2)No	68(22.90%) 229(77.10%)	32(14.04%) 196(85.96%)	0.01*
Q10) Have you tried teeth whitening by any of the following products?	1)Whitening dentifrices 2)Whitening strips 3)Rinses 4)Paint-on gels 5)Chewing gum	204(87.18%) 53(22.65%) 22(9.40%) 11(4.70%) 14(5.98%)	157(91.81%) 27(15.79%) 15(8.77%) 9(5.26%) 9(5.26%)	0.63
Q11)Which of the previous bleaching methods did you noticean improvement in the teeth color?	1)In-office bleaching 2)Home bleaching 3)Whitening dentifrices 4)Whitening strips 5)Rinses 6)Paint-on gels 7)Chewing gum	95(43.38%) 42(19.18%) 87(39.73%) 31(14.16%) 10(4.57%) 3(1.37%) 3(1.37%)	59(39.60%) 20(13.42%) 70(46.98%) 17(11.41%) 9(6.04%) 5(3.36%) 4(2.68%)	0.38
Q12) Do you periodically whiten your teeth?	1)Once a life 2)Every 3 months 3)Every 6 months 4)Once a year 5)Never	54(18.18%) 21(7.07%) 28(9.43%) 41(13.80%) 153(51.52%)	34(14.91%) 19(8.33%) 7(3.07%) 23(10.09%) 145(63.60%)	0.008*
Q13) Do you think teeth whitening has side effects?	1)Yes 2)No 3)I don't know	147(49.49%) 39(13.13%) 111(37.37%)	96(42.11%) 21(9.21%) 111(48.68%)	0.03*
Q14) If your answer is yes, what are the possible side effects?	1)Teeth sensitivity 2)Burning gum 3)No color improvement	147(80.33%) 65(35.52%) 39(21.31%)	85(75.22%) 45(39.82%) 25(22.21%)	0.34

Significant P-value <0.05

Table (8) shows that there were highly statistically significant differences between smoking and non-smoking in whiten teeth at dentist's office, periodically whiten teeth with p-value = 0.008 and 0.03 respectively.

Table 8. Comparison between smoking habit for all questions regarding Bleaching

Questions	ANSWERS	Do you smoke?		P-valueOf Chi-square test
		yes	No	
Q8) Did you whiten your teeth at the dentist's office?	1)Yes 2)No	35(42.17%) 48(57.83%)	122(27.60%) 320(72.40%)	0.008*
Q9) Did you whiten your teeth at home?	1)Yes 2)No	18(21.69%) 65(81.45%)	82(18.55%) 360(81.45%)	0.50
Q10) Have you tried teeth whitening by any of the following products?	1)Whitening dentifrices 2)Whitening strips 3)Rinses 4)Paint-on gels 5)Chewing gum	60(88.24%) 17(25.00%) 7(10.29%) 0(0.00%) 5(7.35%)	301(89.32%) 63(18.68%) 30(8.90%) 20(5.93%) 18(5.34%)	0.56
Q11) Which of the previous bleaching methods did you notice an improvement in the teeth color?	1)In-office bleaching 2)Home bleaching 3)Whitening dentifrices 4)Whitening strips 5)Rinses 6)Paint-on gels 7)Chewing gum	31(48.44%) 11(17.19%) 25(39.06%) 9(14.06%) 3(4.69%) 0(0.00%) 1(1.56%)	123(40.46%) 51(16.78%) 123(43.42%) 39(12.83%) 16(5.26%) 8(2.63%) 6(1.97%)	0.74
Q12) Do you periodically whiten your teeth?	1)Once a life 2)Every 3 months 3)Every 6 months 4)Once a year 5)Never	19(22.89%) 12(14.46%) 5(6.02%) 9(10.84%) 38(45.78%)	69(15.61%) 28(6.33%) 30(6.79%) 55(12.44%) 260(58.82%)	0.03*
Q13) Do you think teeth whitening has side effects?	1)Yes 2)No 3)I don't know	38(45.78%) 11(13.25%) 34(40.96%)	205(46.38%) 49(11.09%) 188(42.53%)	0.84
Q14) If your answer is yes, what are the possible side effects?	1)Teeth sensitivity 2)Burning gum 3)No color improvement	32(71.11%) 18(40.00%) 12(26.67%)	200(79.68%) 92(36.65%) 52(20.72%)	0.58

Significant P-value <0.05

DISCUSSION

We aimed to conduct this study in order to infer a relationship of multiple variables with the desire and experience of dental bleaching treatment. As far as the gender comparison was concerned. It is a common perspective that females tend to have higher concern about their dental esthetics as compared to males. However, several studies have indicated that this is not the case, as both genders seem to have the similar amount of consciousness as far as their beauty satisfaction is concerned. The main emphasis of dental patients is on the shade of teeth and moderately displayed teeth when smiling. Lighter shade is usually the preference of both genders, which is the norm among the majority of demographics (Dunn, Murchison & Broome, 1996). We found that females tend to have better knowledge about the side effects associated with dental bleaching procedures (Table 2, Figure 1). There were 80% of female participants against 75% of males who responded with the correct option of teeth sensitivity resulted by bleaching. Similar findings were also investigated and disclosed by Al-Nomay et al. (2015). However, no significant comparisons were seen regarding the experiences of males and females, which indicate that both genders have similar levels of desire and experience of receiving dental bleaching treatment. This was also reported by Dunn, Murchison & Broome (1996), who did not find any significant difference between the genders. We also found significant differences among the educated and uneducated groups.

Dental patients have become increasingly aware of any discoloration that may affect their confidence and social health. Elevated levels of knowledge have been noticed among several patients when it comes to identifying any defect or abnormality in the appearance of their teeth. However, experience of patients in using dental bleaching as a remedy of unwanted discoloration remains on the lower side. Therefore, dentists must educate their patients to detect any related problem and address it in order to fix the issue (Azodo, Ogbomo and Agbor, 2012). It was noted that the educated group had higher level of previous experience and overall desire of receiving tooth bleaching as compared to uneducated participants. Educated participants had undergone home bleaching in a large majority (19%) as compared to the uneducated participants (8%). Moreover, the former group showed better knowledge regarding the possible side effects of bleaching (table 3); educated (83%) and uneducated (58%). These findings were also supported by Al-Nomay et al (2015), with participants having a graduate degree showing better awareness and experience as compared to the non-graduate ones. When compared the survey responses on the basis of age groups, it was noted that there was no overall significant difference between age groups of participants (Table 5). It was observed that 84% of 18-25, 80% of 26-35 and 72% of 35+ age groups believed that sensitivity occurs as a result of dental bleaching. Whereas, 9% of 18-25, 24% of 26-35 and 17% of 35+ age group of patients showed desire of receiving dental bleaching treatment. Similar findings were reported by Vijayaalakshmi (2017), who did not find any relationship of age with the overall knowledge and desire to go for tooth bleaching. As far as smoking and nationality were concerned, there were no overall significant comparisons reported in our study (Table 4 and 8), which are supported by another investigation done by Abdulwahid & Alshamrani (2018). A study was conducted by Al-Amri et al (2017), which focused on the reasons behind bleaching use and the extent of people's

desire in demanding for such treatment. It was found out that majority of the patients were unaware of any side effect dental bleaching might be associated with. On the other hand, bleaching toothpaste was the most common product which was used more frequently by the patients for their teeth whitening. Another investigation done in Malaysia also revealed a mixed response from the general public, where half of the respondents were unaware of the side effects resulting from dental bleaching. Majority of the patients opted for teeth whitening following stains caused by tea and coffee. Their main source of information was social media (Ahmad et al, 2005). A Turkish sample of population exhibited higher level of intent in going for tooth bleaching when inquired about choosing from various esthetic treatments (Akarslan et al, 2009). There is an overall difference in the opinions and experiences of study participants when compared on the basis of several sub-groups. However, major and significant differences were observed among educational levels only. All other groups showed little comparison as far as survey questions were concerned.

Conclusions

- No gender differences were reported in this study.
- Educated patients had better knowledge and experience of tooth bleaching.
- No relationship between age, income, smoking and dental visits with bleaching knowledge and desire could be established.

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