

General Public Perceptions and Knowledge on Tooth Bleaching in Riyadh, KSA

Abdul Qadir Abdul Wahid¹, Abdulkarim Mansour T Alshamrani²

¹Lecturer Dental biomaterials, BDS, MSc, Riyadh College's of Dentistry and Pharmacy
Riyadh City, ²General Dentist in Ministry of Health-Tabuk City

ABSTRACT

Objective: To assess the perceptions and knowledge on tooth bleaching among general public in 5 different areas in Riyadh, KSA.

Method: We assessed a population sample of 300 individuals aged between 15 and 65 years old resident in Riyadh region (2016). We used frequency distribution and Chi-square test to investigate the association between socio-demographic factors and knowledge/use of bleaching products.

Results: The sample is consisted of 66.7% of males and 33.3% of females. 83.3% of the respondents reported knowing bleaching products and advertisements seemed to be the most popular source of information (65.2%). However only 53.1% reported using bleaching products. Most respondents tried using bleaching products at home (86%), while only 9% undergone tooth bleaching treatment in dental clinics. The commonest reason reported for bleaching was to improve esthetics (66.7%). Data analysis showed that knowledge of bleaching in Riyadh City is not related to gender, nationality, education and occupation ($p > 0.05$).

Conclusion: Large majority of patients were not happy with the appearance of their teeth, the main complaint being the color. Most of the patients knew that bleaching is a treatment option to improve dental aesthetics, and those who knew only half tried the treatment. More efforts are needed by the dental professions

Keywords: Bleaching products, knowledge, use

INTRODUCTION

Today the cosmetic dentistry has become an important part of restorative dentistry as the patients perception of teeth appearance is associated with their general health and well being ⁽¹⁾. Two recent studies reported that most of the subjects considered tooth color to be a major factor with regard to dental esthetics. Also they wanted to improve their tooth appearance and whiten their teeth. Their general satisfaction with tooth appearance was influenced mainly by tooth color, followed by malalignment and caries. Therefore it was suggested that when planning treatment, dentists should consider, patient's esthetic objectives in addition to function, structure and biology. This can lead to a higher level of patient satisfaction ^(2,3). To improve esthetics bleaching is considered to be the least invasive method to treat the discolored teeth ⁽⁴⁾. Also the popularity of teeth whitening has increase many-fold with the availability of over the counter bleaching agents ⁽⁵⁾. Patient's perceptions and expectations from tooth bleaching must be assessed before the patients undergo the treatment. The expected outcome must be made clear to the patient as discrepancies between the patient's and dentist's perceptions of esthetic treatment needs have been reported ⁽⁶⁾.

This study aims to assess the general public perceptions and knowledge on tooth bleaching so that the discrepancies between the general public and the dental surgeon's perception regarding tooth whitening are identified and a comprehensively better dental care is delivered to the general public.

MATERIALS AND METHODS

It is a cross-sectional survey based study. The samples were selected based on a two stage convenience sampling technique.

The first stage comprised of selection of study sites. The study sites are five different locations of Riyadh City as following: Hayat Mall-North, AlAziziah Mall-South, Panorama Mall-in the Middle, AlOthaim Mall-East and AlBadiah Mall-West.

The second stage comprised of selection of subjects. The subjects were males and females general public arriving in the above mentioned areas. The sample size was 300, 200 males and 100 females. The subjects were interviewed face to face in open area .

An informed consent were taken before interview. The interview was structured, based on a questionnaire which was available with the interviewer. The questionnaire is based on a study published by R Ahmad, E.H.Z.M. Ariffin, I. Vengrasalam, N.H.A. Kasim et al 2005(7). The questionnaire has been modified and translated to meet the requirements of our study. The questionnaire is of three parts . Part A is based on socio-demographic questions, Part B is based on general public perception of their oral health and Part C is based on their knowledge of dental bleaching agents. Interviewers were dental interns . The average time of the interview was 10 minutes. The interview was comprised of showing the patient Vita Shade Guide to aid them in selecting the desired shade for themselves.

Statistical analysis was conducted by SPSS Version 20. Frequency distribution and chi-square test were performed for statistics.

Statistical analysis

Data entry and statistical analysis were performed using the Statistical Package for Social Science (SPSS) program (version 22), for windows. Frequency and range verifications were carried out initially to detect errors in the data entry. Then detected errors were corrected by reverifying the original data forms. Descriptive analysis approach was used to determine the socio-demographic factors

and perceptions and knowledge of population on teeth bleaching. We used Chi-square test to examine the relation between socio-demographic factors and knowledge about teeth bleaching and the use of bleaching products. P-values ≤ 0.05 were considered for statistical significance.

RESULTS

A- Socio-demographic and life style factors

***Socio-demographic factors**

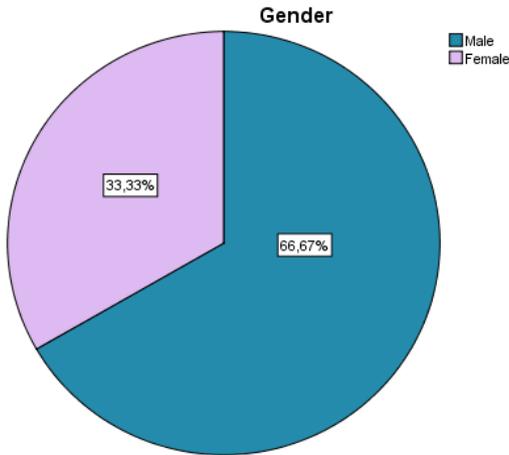
The socio-demographic characteristics are shown in table (1)

Table 1 : Socio-demographic characteristics

		Frequency	Percent (%)
Gender	Male	200	66.7
	Female	100	33.3
	Total	300	100.0
Age (years)	15 – 25	77	25.7
	26 – 35	117	39.0
	36 – 45	70	23.3
	46 – 55	27	9.0
	56 – 65	9	3.0
	Total	300	100.0
	Nationality	Indian	2
Jordanien		15	5.0
Lebanon		18	6.0
Palestine		6	2.0
Saudi		189	63.0
Sudanese		24	8.0
Syrian		22	7.3
Yemni		24	8.0
Total		300	100.0
Marital Status	Married	215	71.7
	Single	85	28.3
	Total	300	100.0
Education	Primary	18	6.0
	Highschool	77	25.7
	Intermediate	8	2.7
	University	197	65.7
	Total	300	100.0
Occupation	Government employee	91	30.3
	Private sector employee	69	23.0
	Student	60	20.0
	Retired	9	3.0
	Banker	7	2.3
	Dental technicien	3	1.0
	Driver	6	2.0
	Lecuterer	6	2.0
	Receptionist	4	1.3
	Security	2	.7
	Teacher	43	14.3
	Total	300	100.0

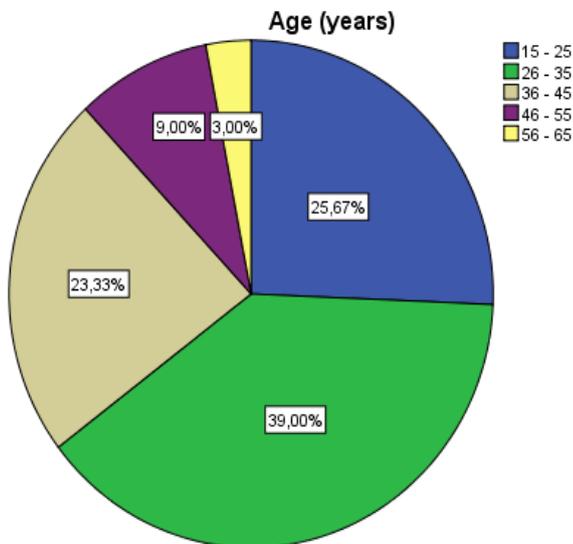
- Our study included 300 persons among general population chosen from five different locations of Riyadh City.
- By looking at table (1), related to the distribution of respondents according to demographic factors:
- The survey included 66,7% males and 33,3% females.

Figure 1 : Gender of the participants



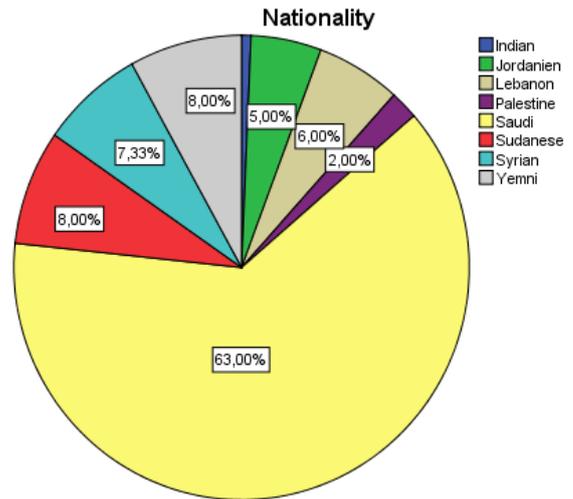
- Most respondents fall in the 26 – 35 year age range, 77 respondents are in the young age group (15 – 25 years old), and slightly more, 70 (23,3%), are in the 36 – 45 year range. 27 answered that they were 46-55 years old (9%), and 9 were 56-65 (3%).

Figure 2: Age groups of the participants



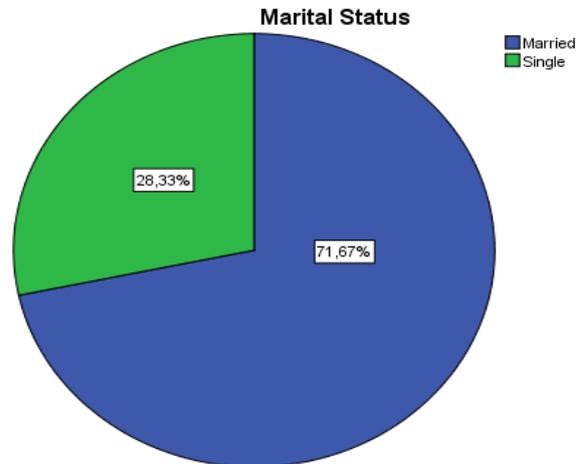
- The highest number of responses came from Saudi Arabia with a percentage of 63%.

Figure 3: Nationality of the participants



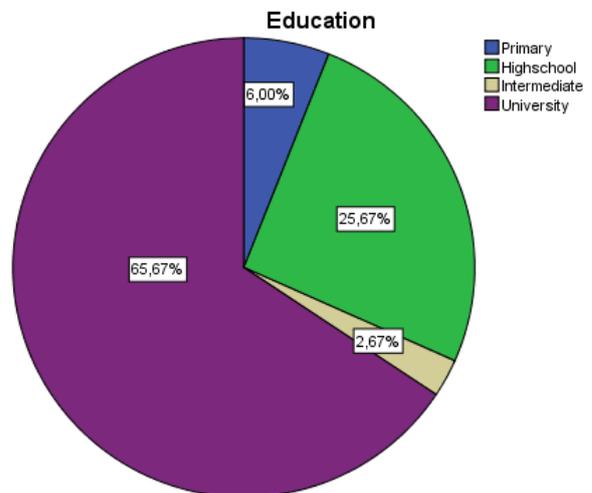
- Most of the participants are married (71,67%) and 28,33% reported to be single.

Figure 4: Marital status of the participants



- The majority of respondents studied at university (65,67%) while nearly the quarter were in high school (25,67%).

Figure 5: Education of the participants



***Life style factors**

Almost half of respondents were non smokers (47,5%), where 38,1% were currently cigarette smokers and 14,4% were shisha smokers.

Overall, the vast majority reported consuming tea or coffee (82,7%).

Table 2: Smoking and coffee drinking

Are you a smoker? Which type?

		Frequency	Percent
Smoker	No	142	47.5
	Cigarette	114	38.1
	Shisha	43	14.4
	Total	299	100.0

Do you drink tea or coffee ?

		Frequency	Percent
Tea/Coffee	No	52	17.3
	Yes	248	82.7
	Total	300	100.0

B-General public perception of their oral health

Over 300 respondents, the majority with 65.3% reported having good oral health, while 17.3% thought having an excellent oral health and 17.3% felt that they had poor oral health. Only nearly the third of the participants (32.3%) were happy about their teeth appearance. The rest of respondents who were dissatisfied with their teeth appearance reported various reasons, teeth color was the primary reason with a percentage of 46.3%, followed by decay in 13.7% of subjects and size (2.3%).

Only 7.7% reported being satisfied about their teeth color compared to the majority of participants in fact most respondents reported preferring B1 shade (82.5%), while the rest preferred other shade like A1 (6.4%), A2 (1.7%) and C1 (1.7%).

Table 3: oral health and teeth appearance
What do you think about your oral health?

		Frequency	Percent (%)
Oral health	Not good	52	17.3
	Good	196	65.3
	Excellent	52	17.3
	Total	300	100.0

		Frequency	Percent (%)
Teeth Appearance	Yes	97	32.3
	Appearance	16	5.3
	Color	139	46.3
	Decay	41	13.7
	Size	7	2.3
	Total	300	100.0

Table 4: Satisfaction about teeth color

		Frequency	Percent
Teeth Color	Yes	23	7.7
	A1	19	6.4
	A2	5	1.7
	B1	245	82.5
	C1	5	1.7
	Total	297	100.0

C-Knowledge of dental bleaching agents

Out of 300 participants interviewed, 250 (83.33%) heard about tooth bleaching. Figure 6 illustrate the reported sources of knowledge, advertisements seem to be the most popular source of information (65.2%), where 18.4% of subjects had their knowledge based on family/ friends recommendations and 14.8% on dentist recommendations, while articles formed a source in only 1.6% of the cases.

Figure 6: Source of knowledge about tooth bleaching

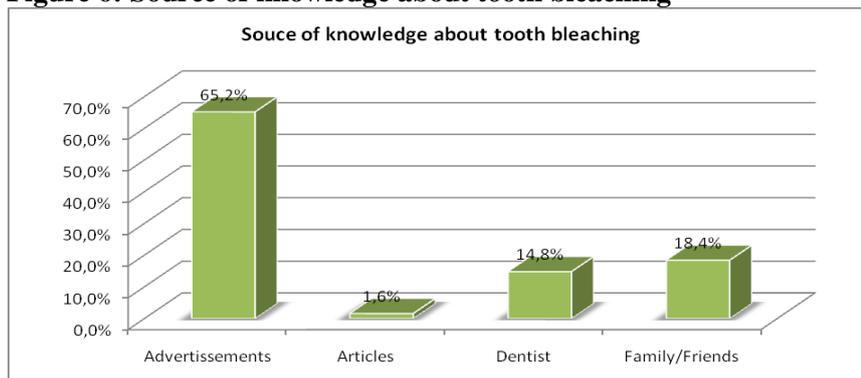


Table 6: Source of knowledge about tooth bleaching
Have you heard about tooth bleaching? How?

		Frequency	Percent
How Bleach	Do	50	16.7
	Advertisements	163	54.3
	Articles	4	1.3
	Dentist	37	12.3
	Family/Friends	46	15.3
	Total	300	100.0

Among 294 interviewed participants, 138 mentioned not using bleaching products. Figure 7 displays the reported places of tooth bleaching use, main respondents tried using bleaching products at home (86%), while only 9% undergone tooth bleaching treatment in dental clinics. Tooth paste was the most product used by consumers at home (90,1%), followed by dental gel (7,9%) and then white strips (2%).

Figure 7: Places of tooth bleaching use

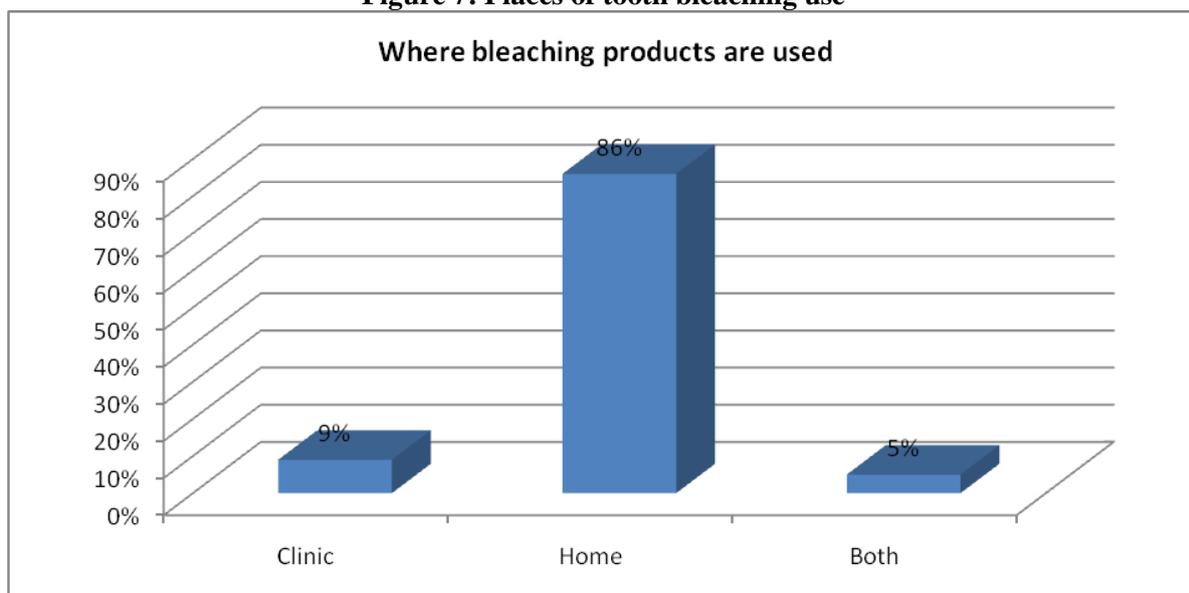
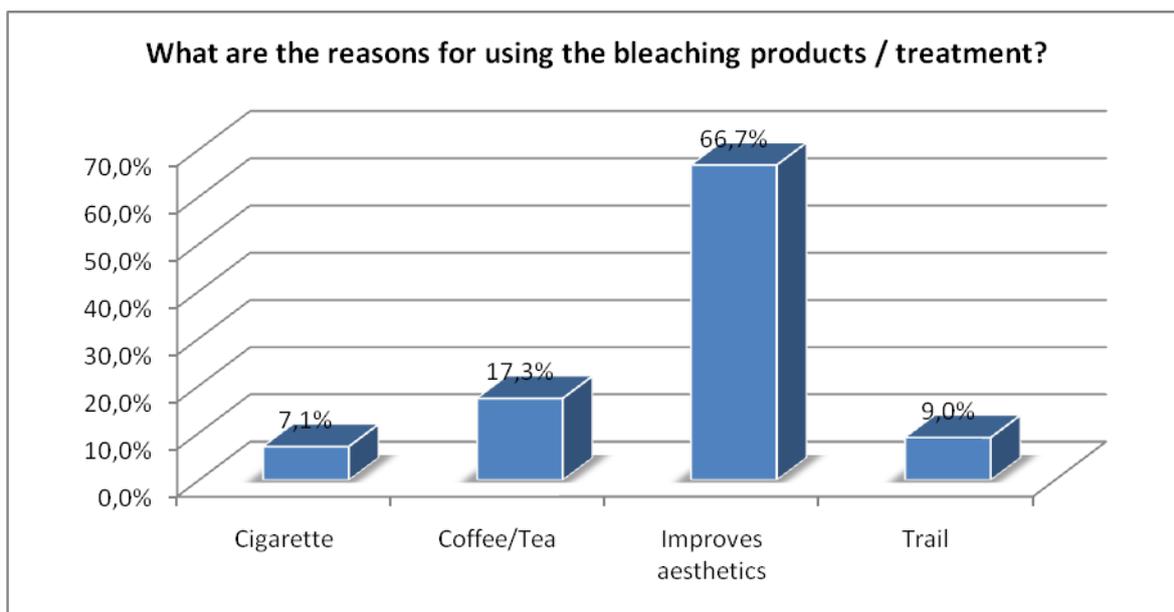


Table 7: The products used in home ?

		Frequency	Percent
Home Bleach	Toothpaste	136	90.1
	White strips	3	2.0
	Gel	12	7.9
	Total	151	100.0

Figure 8 shows the different reasons reported by 156 participants for using bleaching products / treatment. Nearly the two-thirds of studied subjects thought that bleaching products use improves esthetics (66.3%), when nearly the quarter tried bleaching treatment to remove coffee/ tea or cigarette staining (respectively 17.3% and 7.1%). In 9% of cases it was just a trial.

Figure 8: What are the reasons for using the bleaching products / treatment?



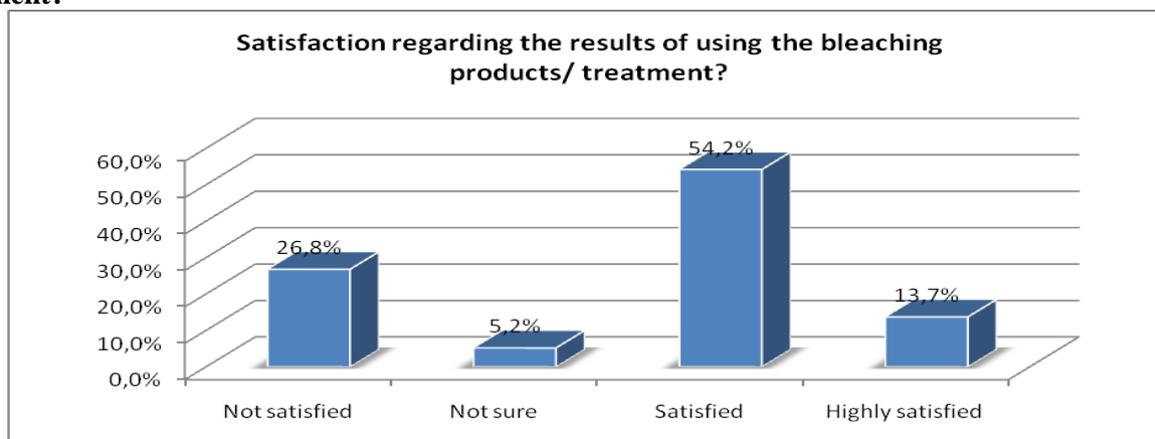
It can be seen from the table below that almost the third of respondents (30.1%) reported spending weeks before noticing results of bleaching products, where just over a quarter (26.9%) noticed the results after only days of use.

Table 8: How long did you use the products /treatment before you noticed the results?

		Frequency	Percent
Notic Change Bleach	Hours	27	17.3
	Days	42	26.9
	Weeks	47	30.1
	Months	26	16.7
	Years	14	9.0
	Total	156	100.0

On products/treatment satisfaction, a total of 54,2% (n= 83) were satisfied with the results against 26,8% of respondents who were not satisfied, while only 13,7% were highly satisfied.

Figure 8: How would you rate your satisfaction regarding the results of using the bleaching products/ treatment?



The table below shows that most of respondents in this study (46.2%) were not sure if the bleaching products are safe, where 23.7% thought that bleaching treatments are not safe ; however 30.1% of the subjects believed that

tooth bleaching products are safe.

Table 9: Do you think the bleaching products/treatment are safe?

		Frequency	Percent
Safe Bleach	No	37	23.7
	Not sure	72	46.2
	Yes	47	30.1
	Total	156	100.0

Most of studied subjects intend to use bleaching products in the future (70.6%). While the two thirds (66%) of participants thought that products' prices are reasonable, the quarter (25%) found them expensive. Of the people surveyed, nearly the three-quarters (73.7%) would recommend to their friends and family members to use these bleaching products and 26.3% would probably not.

Table 10: Do you intend to use any bleaching products/ treatment in the future?

		Frequency	Percent
Use Bleach Future	No	45	29.4
	Yes	108	70.6
	Total	153	100.0

Table 11: What do you think about the prices of these teeth bleaching treatment options?

		Frequency	Percent
Price Bleach	Cheap	14	9.0
	Expensive	39	25.0
	Reasonable	103	66.0
	Total	156	100.0

Table 12: Would you recommend to your friends and family to use these bleaching products / treatment?

		Frequency	Percent
Recomnd Bleach	No	41	26.3
	Yes	115	73.7
	Total	156	100.0

D-Cross-relation between Socio-demographic factors and knowledge, and use of bleaching

Pearson chi-square tests were performed to determine if there were any significant relationships between knowledge/use of bleaching and socio-demographic factors.

Table 13: Socio-demographic factors*knowledge of bleaching

Factors	No. of Respondents	Knowledge of bleaching N (%)	Pearson Chi-square value (p-value)
Gender	Male	200	166 (83)
	Female	100	84 (84)
	Total	300	250 (83,3)
Age (years)	15 - 25	77	56 (72.7)
	26 - 35	117	103 (88)
	36 - 45	70	60 (85.7)
	46 - 55	27	22 (81.5)
	56 - 65	9	9 (100)
Nationality	Indian	2	2 (100)

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	Jordanien	15	15 (100)	
	Lebanon	18	18 (100)	
	Palestine	6	6 (100)	
	Saudi	189	189 (100)	
	Sudanese	24	21 (87.5)	
	Syrian	22	19 (86.4)	
	Yemni	24	18 (75)	
Marital Status	Married	215	185 (86)	4.022 (0.045)
	Single	85	65 (76.5)	
Education	Primary	18	17 (94.4)	2,052 (0.562)
	Highschool	77	64 (83.1)	
	Intermediate	8	6 (75)	
	University	197	163 (82.7)	
Occupation	Government employee	91	76 (83.5)	13.392 (0.203)
	Private sector employee	69	61 (88.4)	
	Student	60	46 (76.7)	
	Retired	9	9 (100)	
	Banker	7	6 (85.7)	
	Dental technicien	3	3 (100)	
	Driver	6	6 (100)	
	Lecuterer	6	3 (50)	
	Receptionist	4	4 (100)	
	Security	2	2 (100)	
	Teacher	43	34 (79.1)	

Marital status

Table 14: Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.116	.045
	Cramer's V	.116	.045
N of Valid Cases		300	

Age groups

Table 15: Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.185	.036
	Cramer's V	.185	.036
N of Valid Cases		300	

There is a significant relationship between age and marital status, and knowledge about bleaching products (respectively $p=0.036$ and $p=0.045$), however this relation is weak (respectively Cramer's $V=0.185 < 0.5$ and Cramer's $V=0,185 < 0,5$).

Table 16: Socio-demographic factors*Use of bleaching

Factors		No. of respondents	Use of bleaching N (%)	Pearson Chi-square value (p-value)
Gender	Male	200	103 (52.6)	0.061 (0.804)

	Female	100	53 (54.1)	
	Total	300	156 (53.1%)	
Age (years)	15 - 25	77	37 (48.1)	8.965 (0.062)
	26 - 35	117	73 (63.5)	
	36 - 45	70	32 (47.8)	
	46 - 55	27	11 (40.7)	
	56 - 65	9	3 (37.5)	
Nationality	Indian	2	1 (50)	23.819 (0.001)
	Jordanien	15	15 (100)	
	Lebanon	18	12 (66.7)	
	Palestine	6	4 (66.7)	
	Saudi	189	97 (52.4)	
	Sudanese	24	12 (50)	
	Syrian	22	10 (45.5)	
	Yemni	24	5 (22.7)	
Marital Status	Married	215	106 (50.7)	1.594 (0.207)
	Single	85	50 (58.8)	
Education	Primary	18	6 (33.3)	10.482 (0.015)
	Highschool	77	38 (49.4)	
	Intermediate	8	1 (12.5)	
	University	197	111 (58.1)	
Occupation	Government employee	91	50 (56.8)	14.041 (0.171)
	Private sector employee	69	39 (58.2)	
	Student	60	28 (46.7)	
	Retired	9	3 (33.3)	
	Banker	7	5 (71.4)	
	Dental technicien	3	3 (100)	
	Driver	6	3 (50)	
	Lecuterer	6	3 (50)	
	Receptionist	4	0	
	Security	2	0	
	Teacher	43	22 (52.4)	

Nationality**Table 17: Symmetric Measures**

		Value	Approx. Sig.
Nominal by Nominal	Phi	.285	.001
	Cramer's V	.285	.001
N of Valid Cases		294	

Education**Table 18: Symmetric Measures**

		Value	Approx. Sig.
Nominal by Nominal	Phi	.189	.015
	Cramer's V	.189	.015
of Valid Cases		294	

There is a significant relationship between nationality and education, and use of bleaching products (respectively $p=0.001$ and $p=0.015$), however this relation is weak (respectively Cramer's $V=0.285 < 0.5$ and Cramer's $V=0.189 < 0.5$).

Table 12: Socio-demographic factors and Use of bleaching

Factors		No. of respondents	Use of bleaching	Pearson Chi-square value (p-value)
			N (%)	
Tea/Coffee	No	51	29 (56.9)	0.358 (0.550)
	Yes	243	127 (52.3)	
	Total	294	156 (53.1)	
Smoker	No	139	65 (46.8)	5.086 (0.079)
	Cigarette	112	64 (57.1)	
	Shisha	42	27 (64.3)	
	Total	293	156 (53.2)	

There is no significant relationship found between lifestyle factors (smoking and tea/coffee consuming), and use of bleaching products (respectively $p=0.079 >0.05$ and $p=0.550 >0.05$)

DISCUSSION

In order to fix stained teeth, people, nowadays, use many ways of teeth bleaching at home or by professionals that should be used properly.

For many people, especially smokers and those who drink regularly tea, coffee and hot chocolate, yellow and stained teeth could be embarrassing and even lead to a lack of self-confidence.

Whitening toothpastes could only help in removing surface stains, they don't contain bleach and therefore the teeth color can only be lightened by about one shade, while dental bleaching conducted in dentist's office can be more efficient and teeth could be until eight shades lighter⁽¹⁾. The American Dental Association explained that bleaching products/treatment include peroxide that helps remove intrinsic and extrinsic teeth stains². Present in many bleaching products, Carbamide peroxide breaks down into hydrogen peroxide (the active bleaching agent) and urea. However, in their survey⁽³⁾, (2006) and other studies^(4,5) Marcelo Giannini et al. reported that peroxide-based bleaching agents cause not only surface enamel alterations as side effects, but also loss of microhardness and strength, inorganic and organic changes, therefore, patients and users should be cautioned about the repeated use and/or the long term use of bleaching treatments and teeth whitening is recommended to be done under dentist supervision. Hydrogen peroxide is a common household product for tooth bleaching, it is liberated after the break down of Carbamide peroxide in water-based solution or used diluted in water and spat after few seconds, however in her latest advice about teeth whitening, the specialist dental division

(DDU)⁽⁶⁾ reported that tooth whitening products containing or releasing up to 6% hydrogen peroxide are legal while respecting the following conditions:

-Subjects should be aged 18 years old and more

-Products should be sold to dental practitioners

-First, treatment is administrated by the professional or under the direct supervision of the dental practitioner to make sure of the level of safety.

People should always refer to a dentist to choose their best options for dental bleaching and be rightly informed about their teeth health.

Porcelain laminate veneers could be a best alternative to dental bleaching.

Nicotine damage quickly teeth enamel and cause the yellow color, with discoloration, nicotine use can also cause gums problems and even oral cancer, most smokers are not aware and should be warned and educated in order to quit cigarettes.

People should take care of their oral hygiene as a way of preventing yellow teeth color, good oral hygiene includes brushing teeth after meals twice a day and also to make sure to use dental floss to clean up between the teeth.

-83,3% of population have knowledge about teeth bleaching, while only 53,1% are using teeth bleaching.

-Nearly the two-thirds of studied subjects thought that bleaching products use improves esthetics (66,3%).

- Almost the half: 54,2% (n= 83) were satisfied with bleaching results.

-Knowledge of bleaching in Riyadh City is not related to gender, nationality, education and occupation.

-Not only the teeth appearance is important, also individuals should keep a good oral health. Bleaching products and treatment could be a fast and efficient alternative for teeth super white color but personal and society efforts should be conducted to promote

good oral health and warn of wrong and excessive use of bleaching which can damage teeth enamel.

-In comparison to our last study, general public patients perceptions and knowledge on tooth bleaching are less than dental patients perceptions and knowledge on tooth bleaching with 83% of the general public patients knew that bleaching is a treatment option to improve dental aesthetics in contrast, 98% of dental patients are aware.

-Also, 82% are selecting the whitest shade B1 as the preferable shade in contrast 70% are selecting shade B1.

-67 % of the patients were not happy with the appearance of their teeth, the main complaint being the color.

-When given choice to select the desired shade large majority picked the shade B1 as the whitest shade!

-83% of the patients knew that bleaching is a treatment option to improve dental aesthetics , and those who knew only 50% had tried some form of treatment.

-Bleaching toothpastes were the preferred method (90%) and also showed medium satisfaction levels while 26% were not satisfied.

CONCLUSION

- Limitation of this survey is that it included only samples from Riyadh City.
- Large majority of patients were not happy with the appearance of their teeth, the main complaint being the color.
- Large majority of patients have preferred to select the desired shade B1 as the whitest shade!
- Most of the patients knew that bleaching is a treatment option to improve dental aesthetics , and

those who knew the half only who tried the treatment.

- Bleaching toothpastes were the preferred method and also showed medium satisfaction levels.
- More efforts are needed by the dental professions.

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