



## Perception and knowledge of patients towards teeth whitening treatment

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### Abstract

**Background:** Aesthetics is the study of beauty and efforts to improve certain details of a static or dynamic object so as to make it more interesting. In general, the color of adult teeth is yellow, gray, white-gray, or yellowish-white.

**Purpose:** of this study is to find out about the perception and knowledge of patients about teeth whitening treatment.

**Method:** This study was an observational analytic study with a cross-sectional design survey method. The subjects chosen were 56 patients who came to Aesthetics. Data analysis was Pearson Chi-Square test.

**Results:** There was a significant correlation between age and patient's perception of the condition of the oral cavity ( $p = 0.030$ ), gender and tea/coffee drinking habits ( $p = 0.007$ ), age and patient's knowledge regarding the safety of the bleaching procedure ( $p = 0.018$ ), age and patient's knowledge about the price of bleaching ( $p = 0.018$ ), marital status and patient's knowledge about the length of bleaching procedure that has been done ( $p = 0.018$ ), work and patient's knowledge about bleaching products used at home ( $p = 0.018$ ), as well as education and origin patient knowledge about bleaching ( $p = 0.043$ ).

**Conclusion:** There is a significant relationship between age, sex, level of education, marital status, and type of work on the perception and knowledge of patients regarding teeth whitening treatment in patients who come to the Dental and Oral Hospital of Universitas Airlangga, Surabaya.

**Keywords:** perception, knowledge, teeth whitening treatment

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### INTRODUCTION

Aesthetics is the study of beauty and efforts to improve certain details of a static or dynamic object so as to make it more interesting. In general, the color of adult teeth is yellow, gray, white-gray, or yellowish-white. However, many people perceive that white teeth are a symbol of beauty and health (Hamdi, Hamama, & MDS., 2013). Tooth color is directly related to the aesthetics of each individual, therefore several studies have tried to describe the level of individual satisfaction concerning dental esthetics (Azodo & Ogbomo, 2014). A study in Malaysia said of 235 individuals, 52.8% were dissatisfied with the appearance of their teeth, and 56.2% were not happy with the color of their teeth (MM, N, & N., 2011). Another study conducted by Samorodnizky-Naveh showed 37.3% of patients seeking treatment were dissatisfied with the appearance of their teeth, and 90% complained about the color of their teeth (Mortazavi, Baharvand, & Khodadoust, 2014). Two other studies stated that general satisfaction with the appearance of teeth is influenced mainly by the

color of the teeth, then followed by the position of the overcrowded teeth, and dental caries (Asmawati et al., 2018; MM et al., 2011; Pasiga, 2018; Ghosh, 2018).

Discoloration of human teeth can occur in only one tooth, or several teeth at a time. Discoloration can also occur only on the surface of a tooth, or reach deep tooth structures (Kapadia & Jain., 2018). Tooth discoloration is influenced by extrinsic and intrinsic factors (Dewi, Susanto, & Rusyanti, 2019; Lubis & Laturiuw, 2018). Intrinsic factors can be caused by the use of teratogenic drugs such as tetracycline, as well as exposure to high amounts of materials such as fluoride and heavy metals during the tooth formation phase. While extrinsic color changes are caused by the habit of consuming colored drinks such as tea, coffee, and smoking (Alshara, Lippert, Eckert, & Hara, 2014; Primasari, Ria, & Sutadi, 2019).

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Tooth color changes and the patient's perception of the ideal tooth color will affect the level of satisfaction, confidence, and desire to seek treatment (Mulky, 2014; Nasution & Amatanesia, 2018). Dental bleaching treatment is one of the procedures that many patients choose to whiten their teeth. Bleaching procedures can be done at home, at the dentist's office, or a combination of both. A study conducted by dentists in New Zealand stated that there was more demand for teeth whitening treatment in women than men (Joshi, 2016). Studies in Hong Kong suggest that age is a factor influencing the increasing demand for teeth whitening (Chan et al., 2013).

Today, cosmetic dentistry is an important part of dentistry. This is caused by the patient's perception of the appearance of his teeth related to his overall health and life (Molek et al., 2016). Recent developments in the field of aesthetic and restorative dentistry have led to a wide selection of teeth whitening ingredients (Capt., 2016). The level of trust in these products is increasing globally because of their use under the care and supervision of dentists (Nomay, 2016). Also, this tooth whitening material is considered as a non-invasive procedure for treating tooth discoloration.

Patients' perceptions and expectations must be assessed before the patient gets teeth whitening treatment. Expected treatment outcomes must be clearly informed because differences often occur between patients' and dentists' perceptions of aesthetic care needs (Ahmad, Ariffin, Vengrasalam, & Kasim, 2005).

In Indonesia, there are no studies on patient perception and knowledge of teeth whitening treatment, including available procedures, products, and safety (Setijanto, Bramantoro, Palupi, & Hanani, 2019). Whereas many electronic media display advertisements of teeth whitening products that are available in the market so that it can affect people's perception and knowledge about this treatment.

Therefore, the purpose of this study is to find out the perception and knowledge of patients at the Dental and Mouth Hospital of Airlangga University, as well as to see the relationship between socio-demographic factors and respondents' perceptions and knowledge.

## METHOD

This study was an observational analytic study with a cross-sectional design survey method. Sample selection is based on two stages of convenience sampling technique. The first stage is the selection of research sites. The research location chosen was Airlangga University Dental Hospital, Surabaya. The second stage is the selection of research respondents. Selected respondents were patients who came to Airlangga University Hospital. The number of samples studied was 56 people. With the sample criteria are adult

patients (over 18 years) who come and register at Dental and Oral Hospital of Universitas Airlangga Surabaya. This research has been declared ethical by the Airlangga University Faculty of Dentistry Ethics Commission with certificate number 184 / HRECC.FODM / II1 / 2020.

Respondents were asked to sign an informed consent and fill out a questionnaire via Google form. The questionnaire contains a list of questions based on research conducted by R Ahmad, E.H.Z.M.Ariffin, I. Vengrasalam, N.H.A. Kasim et al (Ahmad et al., 2005). The questionnaire was modified to meet the research needs. The questionnaire consists of three parts:

Part A contains socio-demographic questions.

Part B contains questions about the patient's perception of oral health.

Part C contains questions about patient knowledge about teeth whitening ingredients

Each respondent's answer will be given a score according to a Likert scale and a nominal score. The data in the form of sentences will be converted into numerical or numeric. The data were then analyzed statistically with the Pearson chi-square test. The statistically significant relationship was expressed as  $p < 0.05$ .

## RESULTS

In this study, there was a significant relationship between the age variable and the patient's perception of the condition of the oral cavity ( $p = 0.030$ ), gender and tea/coffee drinking habits ( $p = 0.007$ ), age and patient's knowledge regarding the safety of the bleaching procedure ( $p = 0.018$ ), age and patient knowledge about the price of bleaching ( $p = 0.018$ ), marital status and patient knowledge about the length of bleaching procedure that has been done ( $p = 0.018$ ), work and patient knowledge about bleaching products used at home ( $p = 0.018$ ), and educational background and origin of patient knowledge about bleaching ( $p = 0.043$ ).

## DISCUSSION

Similar studies conducted in Malaysia, Sweden, and China showed different results, namely the variable knowledge and perceptions about bleaching have no relationship with age, sex, marital status, except for the patient's education level. However, a study in Saudi Arabia found that women's perceptions of bleaching were significantly better than those of men. This difference was obtained because the study was conducted in the general population in shopping centers while this study was conducted in dental and oral hospitals.

In this study, tooth color was one of the main reasons for a patient's dissatisfaction with the appearance of their teeth with a percentage of 60.71%. Not many patients have ever tried bleaching treatment, only

**Table 1.** Sociodemographic description of the respondents (Part A)

Variable	Category	N	Percentage (%)
Age	18-30	49	87.5
	31-40	1	1.79
	41-50	1	1.79
	51-60	5	8.93
	>60	0	0
	<b>Total</b>	<b>56</b>	<b>100</b>
Gender	Male	21	37.5
	Female	35	62.5
	<b>Total</b>	<b>56</b>	<b>100</b>
Marital Status	Married	22	39.29
	Not Married	35	60.71
	<b>Total</b>	<b>56</b>	<b>100</b>
Job	Employee	22	39.29
	Civil servant	1	1.79
	Businessman	7	12.5
	Military	1	1.79
	Etc.	25	44.64
	<b>Total</b>	<b>56</b>	<b>100</b>
Educational Background	Elementary School	0	0
	Junior High School	0	0
	High School	5	8.93
	Bachelor	48	85.71
	Master	3	5.36
	Doctor degree /Professor	0	0
	<b>Total</b>	<b>56</b>	<b>100</b>

**Table 2.** Description of respondents' perceptions of their oral health conditions (Part B)

Variable	Category	N	Percentage (%)	Mean ± SD	Significance value (P)				
					Age	Gender	Marital Status	Job	Educational Background
Perception towards oral health conditions	Very good	5	8.93	1.98 ± 0.447	0.03	0.234	0.583	0.819	0.382
	Good	45	80.36						
	Poor	6	10.71						
	<b>Total</b>	<b>56</b>	<b>100</b>						
Feel happy about the appearance of teeth (color, shape, size)	Yes	33	58.93	1.41 ± 0.498	0.812	0.183	0.275	0.812	0.567
	No	23	41.07						
	<b>Total</b>	<b>56</b>	<b>100</b>						
The satisfaction of tooth color	Satisfied	22	39.29	1.61 ± 0.493	0.521	0.672	0.719	0.147	0.977
	Unsatisfied	34	60.71						
	<b>Total</b>	<b>56</b>	<b>100</b>						
Smoking habit	Yes	3	5.36	1.95 ± 0.227	0.895	0.283	0.318	0.179	0.768
	No	53	94.64						
	<b>Total</b>	<b>56</b>	<b>100</b>						
The habit of consuming tea/coffee	Yes	46	82.14	1.18 ± 0.386	0.871	0.007	0.139	0.126	0.449
	No	10	17.86						
	<b>Total</b>	<b>56</b>	<b>100</b>						

14.29% even though the majority of patients have heard about the treatment before. Of the several patients who knew about bleaching care, the source of knowledge from advertisements, articles, dentists, family/friends had a nearly equal percentage distribution. Sources of knowledge from dentists are slightly higher with a percentage of 33.93%. Dentists need to increase patient knowledge more effectively about the availability, advantages, disadvantages of various bleaching treatments. Knowledge itself is a very important domain in shaping one's actions. Knowledge is the result of knowing and occurs after people have sensed a certain object. Experience and research have proven that behavior based on knowledge will last longer than behavior that is not based on knowledge (Notoatmodjo, 2010).

In this study, the primary goal of patients receiving bleaching treatment was to improve the aesthetics of their teeth. Patients who have a smoking habit of 5.36% and habit for tea/coffee consumption is quite high at 82.4%. These habits can cause stains on teeth. The stain is an aesthetic problem that can give a negative impression in terms of appearance which is a person's perception and assessment of his physical appearance about how he looks in front of others. However, the results obtained show that only 25% of patients have received bleaching treatment to remove stains produced by tea/coffee. No patient chose cigarette stains as a reason to receive bleaching treatment. This can show that the patient's perception of bleaching treatment can not eliminate stains such as from tea, coffee, and cigarettes. This information must be conveyed by the dentist to change the patient's perception and raising

**Table 3.** Description of respondents' knowledge regarding teeth whitening treatment (Part C)

Variable	Category	N	Percentage (%)	Mean ± SD	Significance value (P)				
					Age	Jenis Kelamin	Status perkawinan	Pekerjaan	Tingkat Pendidikan
Knowing information about teeth whitening treatment	Yes	48	85.71	1.14 ± 0.353	0.353	0.115	0.053	0.602	0.727
	No	8	14.29						
	<b>Total</b>	<b>56</b>	<b>100</b>						
Information source about teeth whitening treatment	Advertisement	12	21.43	2.55 ± 1.060	0.129	0.084	0.916	0.693	0.043
	Articles	13	23.21						
	Dentist	19	33.93						
	Family/friends	12	21.43						
	<b>Total</b>	<b>56</b>	<b>100</b>						
Experience using teeth whitening products	Yes	8	14.29	1.86 ± 0.353	0.5	0.43	0.372	0.682	0.459
	No	48	85.71						
	<b>Total</b>	<b>56</b>	<b>100</b>						
The place to get teeth whitening treatment	Health services	5	62.5	1.38 ± 0.518	0.315	0.206	0.673	0.315	0.817
	At home	3	37.5						
	ETC	0	0						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Tooth whitening products used at home	Toothpaste	4	66.67	1.25 ± 2.315	0.641	0.346	0.346	0.018	0.841
	3D Crest white	0	0						
	White gel	0	0						
	Miradent O2	0	0						
	Lainnya	2	33.33						
	<b>Total</b>	<b>6</b>	<b>100</b>						
Reasons to get / use teeth whitening products	Coffee/tea	2	25	0.75 ± 1.389	0.074	0.587	0.449	0.209	0.294
	Smoking	0	0						
	Stain	0	0						
	Aesthetics	6	75						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Duration of using teeth whitening products	Hours	3	37.5	2.38 ± 1.408	0.276	0.411	0.018	0.084	0.956
	Days	2	25						
	Weeks	0	0						
	Months	3	37.5						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Frequency of using/getting teeth whitening products	Once in <6 months	1	12.5	0.50 ± 0.926	0.641	0.346	0.346	0.641	0.841
	Once in 6-12 months	2	25						
	Once in >12 months	5	62.5						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Satisfaction with teeth whitening treatment results	Extremely satisfied	1	12.5	2.75 ± 0.886	0.202	0.659	0.292	0.438	0.992
	Satisfied	5	62.5						
	Unsatisfied	1	12.5						
	Undescribed	1	12.5						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Safety use of teeth whitening products	Yes	6	75	1.50 ± 0.926	0.018	0.346	0.346	0.108	0.817
	No	0	0						
	Not sure	2	25						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Plan to use teeth whitening products	Yes	5	62.5	1.38 ± 0.518	0.315	0.206	0.673	0.915	0.817
	No	3	37.5						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Opinions about the price of teeth whitening treatment	Expensive	1	12.5	1.88 ± 0.354	0.018	0.537	0.537	0.386	0.817
	Reasonable price	7	87.5						
	Cheap	0	0						
	<b>Total</b>	<b>8</b>	<b>100</b>						
Plans for recommending teeth whitening products/treatments	Yes	6	75	1.25 ± 0.463	0.169	0.346	0.346	0.641	0.817
	No	2	25						
	<b>Total</b>	<b>8</b>	<b>100</b>						

awareness to prevent stains on the teeth by avoiding risk factors. And also explanations of how whitening product works in improving dental aesthetics.

The majority of patients who have previously used teeth whitening ingredients have only tried toothpaste, and are not sure and motivated to try products such as gels, pens, strips, and other products. Patients who use whitening toothpaste are satisfied (62.5%) with the results obtained so that it can show that most commercially available products on the market can work

effectively. Some patients try other whitening ingredients that are known from advertisements. 75% of respondents think that bleaching products are safe to use. Dentists can play a role in expanding patient knowledge about products that can be used as bleaching ingredients and explaining the level of safety and effectiveness of each ingredient. Thus reducing the number of patients who try products that are not guaranteed from advertising or on the market. In this study, 87.5% of the majority of patients thought that the

price of teeth whitening treatment was still reasonable and 75% of patients would recommend bleaching treatment to others. This shows the positive response of patients to teeth whitening treatment (bleaching).

## CONCLUSION

There is a relationship between the variables of age, sex, level of education, marital status, and type of work to the perception and knowledge of patients regarding teeth whitening treatment in patients who come to the Dental and Oral Hospital of Universitas Airlangga, Surabaya.

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