



## Perception of the Aesthetics of a Smile in Patients Post Using Orthodontic Treatment Based on Characteristics

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### ARTICLE INFO

#### Keywords:

Smile aesthetics  
Perception  
Age  
Gender  
Education

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All authors have reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/AMCR.v2i2.22>

### ABSTRACT

Aesthetics is a philosophy of the concept of beauty which is the reason people take orthodontic treatment. One of the factors that influence aesthetics is a smile. Apart from personal experiences and social environment, the patient's perception of the aesthetics of the smile after orthodontic treatment can be influenced by characteristics. This study aims to determine the perception of smile aesthetics in post-orthodontic patients based on characteristics. This type of research is descriptive-analytic with a cross-sectional design. The study population was patients who were recorded in medical records at the practice of drg. Josep Ginting, Sp. Ort in Pontianak, West Kalimantan Province with a sample size of 30 people. Collecting data by distributing questionnaires containing nine aesthetic indicators of smiles through the WhatsApp application. Data were analyzed using the Mann-Whitney test. Based on the results of the study, it was seen that there were differences in the aesthetic perceptions of respondents' smiles based on age ( $p = 0.017$ ), gender ( $p = 0.004$ ), and education ( $p = 0.015$ ). The conclusion of this study is that there are differences in patient perceptions of an aesthetic smile after orthodontic treatment based on the characteristics in the practice of drg. Josep Ginting, Sp. Ort in Pontianak, West Kalimantan.

### 1. Introduction

Aesthetics is a philosophy regarding the concept of beauty that is assessed through feelings and thoughts.<sup>1</sup> In the last few decades, the concept of aesthetics has become a commercial aspect that plays an important role in society, including the reason why people carry out orthodontic treatment, one of which is influenced by aesthetic factors.<sup>32,2</sup> To get an aesthetic smile, many factors play a role, including teeth, lips, and gingiva.<sup>33,34,3</sup> Teeth with a neat arrangement and a charming smile will have a positive effect. On the other hand, irregular teeth give negative suggestions, causing detrimental effects on social interactions.<sup>4</sup>

The smile curve is said to be aesthetically pleasing if the maxillary incisor edge is parallel to the border of the lower lip when smiling.<sup>3</sup> Flat or inverted smile curves are considered less aesthetic.<sup>12,5</sup> The public is increasingly aware of their dental health, especially

the problem of irregular tooth arrangement. These problems will greatly affect the masticatory, digestive, and articulation systems.<sup>6</sup>

Dental irregularities can be treated with orthodontic treatment. Orthodontic treatment is associated with poor tooth function.<sup>7</sup> Several research results indicate that orthodontic treatment affects the aesthetics of the smile, especially in the smile line and buccal corridor.<sup>8</sup>

One of the components used in orthodontic treatment is wire.<sup>9</sup> Orthodontic wires or also known as "stirrups" have started to be known by many Indonesians since 2001. There are several types of orthodontic wire, namely nickel-titanium, stainless steel, CuNiTi, and beta-titanium, each of which has characteristics. different.<sup>10</sup>

Comfortable use is one of the reasons for the many uses of stainless steel wire. In addition, the advantages of stainless steel orthodontic wire are due



to the more affordable price and the development of better properties when compared to the gold orthodontic wire that has been used previously.<sup>11</sup> Most of the patient's perception of wanting an attractive smile as a result of orthodontic treatment.<sup>12,2,13</sup> Orthodontic patients residing in Japan and Korea prefer narrow or moderate buccal corridors after orthodontic treatment.<sup>14</sup>

Based on the results of research by Oliveira et al (2012)<sup>15</sup>, orthodontists, adults, and adolescents have different perceptions that ceramic brackets are more acceptable in terms of smile aesthetics than metal brackets. Other studies suggest that braces made from epoxy coated metal are considered the most aesthetic choice by ordinary people. In India, research results reveal that metal braces will increase the attractiveness of a person's smile).<sup>16</sup> There are differences between these studies<sup>17</sup> argues that the aesthetics of the smile after orthodontic treatment are uncertain. Therefore, a more valid and evidence-based study is needed. Based on the description above, the researcher was interested in conducting further research on "Perceptions of Smile Aesthetics in Post-Orthodontic Patients Based on Respondent Characteristics".

## 2. Methods

This type of research is descriptive-analytic with a cross-sectional design that aims to determine the self-perception of the aesthetics of the smile after using orthodontic wire. The location of this research is the practice of drg. Josep Ginting, drg, Sp. Ort in Pontianak, West Kalimantan.

The population of this study was patients who were recorded in medical records at the practice of drg. Josep Ginting, Sp. Ort in Pontianak, West Kalimantan Province. The determination of the number of samples is based on Roscoe's theory in Sugiyono (2015) which states that the proper sample size in the study is between 30 and 500. Based on this theory, the sample used in this study was 30 respondents who fit the inclusion and exclusion criteria.

Inclusion criteria: Patients who have had orthodontic treatment, Patients who are willing to be respondents, Patients aged 18 - 25 years

The exclusion criteria were patients who were undergoing orthodontic treatment

The tools and materials in this study are as follows: Pens, Gadgets, Questionnaires, Photos

## 3. Results and Discussion

Based on the characteristics of the respondent's age, the results of the research in table 1. above show that the majority of the respondents' age was included in the adolescent category (18 years-19 years), with as many as 19 people (63.3%), while the adult category was only 11 people (36.7%). . In terms of gender, the majority of respondents were male as many as 20 people (66.7%), while only 10 women (33.3%). According to the level of education, the majority of respondents' education level is higher education, namely as many as 18 people (60%), while low education is only 12 people (40%).

Perception of smile aesthetics based on age, the results of the study in table 2. above show that the mean value of aesthetic perception of the smile in adolescent patients is  $6.8 \pm 0.84$  and in adult patients is  $7.45 \pm 1.04$ . According to gender, the mean smile aesthetic perception in male patients was  $6.20 \pm 1.02$  and for women  $7.25 \pm 0.42$ . Furthermore, the average perception of an aesthetic smile in patients with low education was  $6.50 \pm 1.17$ , while patients with high levels of education had an aesthetic perception mean of  $7.50 \pm 0.62$ .

The definition of the lip line is that it is formed from the incisal edges of the anterior teeth and the maxillary canine is connected to the lower lip when smiling. The Lip Line is divided into 3 parts, namely High Lip Line, Medium Lip Line, and Low Lip Line. A high Lip Line is the part of the gum that looks wider when we smile. Then, Medium Lip Line is where the gingival margin and lip line are in the same position, while Low Lip Line is where the motility of the upper lip shows no more than 75% of the anterior teeth, without the appearance of the gingival tissue.

The results of the research on respondents' perceptions of the aesthetics of the smile after orthodontic treatment based on the characteristics, the results of the above research indicate that the majority of respondents prefer the Medium Lip Line, then the High Lip Line, and the Low Lip Line.



Based on the results of the Mann-Whitney test, the results in table 4. above indicate that there are differences in the aesthetic perceptions of respondents' smiles based on age ( $p = 0.017$ ), and gender ( $p = 0.004$ ), and education ( $p = 0.015$ ). From

the results of this study, it can be stated that there are differences in the aesthetic perceptions of the patient's smile after orthodontic treatment based on the characteristics in the practice of drg. Josep Ginting, drg, Sp. Ort in Pontianak, West Kalimantan.

Table 1. Characteristics of respondents

Characteristics	N	%
<b>Age</b>		
Adolescents	19	63.3
Adult	11	36.7
<b>Gender</b>		
Male	20	66.7
Female	10	33.3
<b>Education</b>		
Low	12	40.0
High	18	60.0
<b>Total</b>	30	100.0

Table 2. Value of aesthetic perception of the smile by age

Characteristics	The aesthetic perception of the smile
	Mean $\pm$ SD
<b>Age</b>	
Adolescents	6.58 $\pm$ 0.84
Adult	7.45 $\pm$ 1.04
<b>Gender</b>	
Male	6.20 $\pm$ 1.02
Female	7.25 $\pm$ 0.42
<b>Education</b>	
Low	6.50 $\pm$ 1.17
High	7.50 $\pm$ 0.62

Table 3. Respondents' desire to smile after orthodontic treatment

The respondent's desire to smile after orthodontic treatment	Lip line					
	High		Medium		Low	
	n	%	n	%	n	%
<b>Age</b>						
Adolescents	7	36.8	7	36.8	5	26.3
Adult	2	18.2	7	63.6	2	18.2
<b>Gender</b>						
Male	7	35.0	8	40.0	5	25.0
Female	2	20.0	6	60.0	2	20.0
<b>Education</b>						
Low	4	36.4	4	36.4	3	27.3
High	5	26.3	10	52.6	4	21.1



Table 4. Differences in aesthetic perceptions of smiles based on characteristics

Characteristics		P-value
Age	Adolescents	0.017
	Adult	
Gender	Male	0.004
	Female	
Education	Low	0.015
	High	

This study aims to determine the perceptions of smile aesthetics in patients after using orthodontic wire based on the characteristics of the respondent. Differences in perceptions about smile aesthetics after using orthodontic wires based on age, differences in perceptions about smile aesthetics after using orthodontic wires based on gender, and differences in perceptions about smile aesthetics after using orthodontic wires based on educational level.

Based on age, respondents were dominated by patients aged 18 years – to 25 years. This is in line with the results of research by Riska (2015) which states that the age of the respondents he chooses his 18-23 years old. According to this study, the 18-23 year age group performed more orthodontic treatment and they paid more attention to the aesthetics of their smile compared to other age groups. The appearance of a smile can also be used to assess a person's personality or to assess a person's psychological characteristics, the appearance of a person's smile can change more aesthetically with the influence of tooth color and neat tooth arrangement, one of which is by using orthodontic tools. For this reason, there is no doubt that nowadays every individual is seeking orthodontic treatment primarily for aesthetic reasons and to improve the appearance of a smile in order to provide benefits in social life.

In this study, it was found that the mean value of aesthetic perception of the smile in adolescent patients was  $6.8 \pm 0.84$  and in adult patients was  $7.45 \pm 1.04$ . From these results, it can be seen that the more adults are, the more the aesthetic perception of the smile increases. This result is in line with the theory put forward by several previous studies that age affects a person's perception of the smile appearance of others. Perceptions of smile

aesthetics will increase with age.<sup>2</sup>

The conformity of the results of this study with research conducted<sup>18</sup> concerning self-perception of smile aesthetics will increase with age, where in the first semester students who are relatively young tend to have negative perceptions of the aesthetic appearance of teeth. them, compared to students who are relatively older. However, the results of this study differ from the research<sup>19</sup> that at a relatively younger age they are more satisfied with the aesthetic appearance of their teeth compared to older ages.

In addition to age, people's perceptions about the aesthetic assessment of a smile can also be influenced by factors of gender, socioeconomic status, education level, occupation, cultural aspects, and mass media.<sup>15,35</sup> Based on the results of the study, it was found that the average perception of smile aesthetics in male patients was  $6.20 \pm 1.02$  and in female patients was  $7.25 \pm 0.42$ . From the results of this study, it can be seen that female patients who undergo orthodontic treatment pay more attention to the aesthetics of their smiles compared to male patients. This study shows the same thing as the research conducted that women are more sensitive and more aware of their own appearance compared to men.<sup>19</sup>

A person's education also affects the aesthetic perception of a smile.<sup>20</sup> From the results of this study, it was found that the average perception of smile aesthetics in patients with low education was  $6.50 \pm 1.17$ , while patients with high levels of education had an average perception of smile aesthetics of  $7.50 \pm 0.62$ . From these results, it can be seen that the higher the level of education of patients undergoing orthodontic treatment, the more the aesthetic perception of the smile will increase. Positive perceptions of smile aesthetics shown in orthodontic patients can also be seen in research conducted



which proves that education level affects perceptions and attitudes regarding the aesthetics of their teeth and smile.<sup>21</sup>

The results of this study are slightly contradictory to the research conducted which states that the smile curve that is considered aesthetically pleasing is the smile curve that does not cover the incisal edges, so that differences in the sample under study will produce sufficient differences. means which in this case is the aesthetic of a smile.<sup>22,23</sup>

Orthodontic treatment seems to change the curve of a smile. Based on the elaboration of several previous research results which show that the smile curve can have an influence on the aesthetics of a smile.<sup>24,25,26,27,28,29,30,31</sup> The perception of aesthetic smiles from a dentistry point of view requires a more detailed examination and can be influenced by many factors.<sup>29</sup>

In this research, the aesthetic perception of a smile was determined by age, gender, and level of education. Based on the results of the study, it was found that there were differences in the aesthetic perceptions of respondents' smiles based on age ( $p = 0.017$ ), gender ( $p = 0.004$ ), and education ( $p = 0.015$ ). From the research results, it can be stated that there are differences in patient perceptions of an aesthetic smile after orthodontic treatment based on characteristics in the practice of drg. Josep Ginting, drg, Sp. Ort in Pontianak, West Kalimantan. An anesthetic smile has a subjective value and is relatively dependent on a person's perception. Smile aesthetic standards can provide guidance to dentists in carrying out treatment plans in order to obtain satisfactory treatment results for patients.<sup>29,31</sup>

#### 4. Conclusion

There are differences in patient perceptions of an aesthetic smile after orthodontic treatment based on the characteristics in the practice of drg. Josep Ginting, drg, Sp. Ort in Pontianak, West Kalimantan.

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