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**CORRELATION BETWEEN SOCIOECONOMIC STATUS OF PARENTS  
AND ORTHODONTIC TREATMENT NEEDS IN THE STUDENTS OF SMAN  
10 BANJARMASIN**

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**ABSTRACT**

**Background:** Malocclusion is defined as an occlusion deviation from the functionally normal conditions. Malocclusion in adolescents results in speech difficulties, masticatory disorders and social problems due to disturbed facial appearance. The purpose of orthodontic treatment needs is to overcome joint problems in the jaw and follow the lifestyle, one of which is aesthetic needs. The high rate of orthodontic treatment is due to the different mindset of adolescents based on their parents' education category and economic status. **Objective:** To analyze correlation between socioeconomic status of parents and orthodontic treatment needs in the students of SMA Negeri 10 Banjarmasin. **Method:** This research used analytic observational method with a cross-sectional approach. The samples were 80 students of SMAN 10 Banjarmasin. Data collection was using a socioeconomic status questionnaire, while the malocclusion was using IOTN-AC. **Results:** The orthodontic IOTN-AC measurement results in SMA Negeri 10 Banjarmasin were 36 people (45%) with a Grade C index category which is indicative of treatment. The socioeconomic status of parents is in the middle to lower income level with the highest frequency of 69 people (86.3%). Spearman correlation test results that the significance level of parents' education with orthodontic treatment needs was 0,000 ( $p < 0.05$ ) with the correlation coefficient of 0.469, and parental employment status of 0.003 ( $p < 0.05$ ) with the correlation coefficient of 0.326. The significance value of the income level was 0,000 ( $p < 0.05$ ) and the correlation coefficient was 0.540. **Conclusion:** There is a significant correlation between socioeconomic status of parents and orthodontic treatment needs in the students of SMAN 10 Banjarmasin.

**Keywords:** Socio-Economic Status, IOTN-AC, Adolescents, Orthodontic Treatment Need

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**INTRODUCTION**

Malocclusion is defined as an occlusion deviation from functionally normal condition. Based on Riskesdas data of malocclusion cases in the 15-18 years age group, it shows 12%, due to the low level of dental care awareness. Banjarmasin is a city that has a fairly high number of dental and oral health problems, amounting to 48.6%. The need for orthodontic treatment is increasing in the community, especially in the middle adolescent group who are more concerned with the appearance of teeth and face. Orthodontic treatment is a branch

of dentistry that works to improve dental health and oral cavity by correcting the position of teeth with malocclusion. The purpose of orthodontic treatment is to prevent abnormalities in the jaw joints, restore tooth function, and follow a lifestyle, one of which is aesthetic needs.<sup>1</sup>

The high number of orthodontic treatment needs is due to the different mindset of adolescents according to their education category and the socioeconomic status category. The demand for orthodontic treatment starts to increase significantly from the category of low to

middle socioeconomic class and above. One important factor in the choice of orthodontic treatment is financial factors.<sup>2,3,4,5</sup> There are various measurement methods in determining orthodontic treatment need in a population. One of the which is the Index of Orthodontic Treatment Need (IOTN). One of the goals of IOTN is to classify malocclusions based on individual dental problems or abnormalities and aesthetic imperfections. Measurements with IOTN raised by Brook and Shaw with valid and accurate results internationally. There are two types of IOTN components, including Aesthetic Components (AC) and Dental Health Components (DHC).<sup>2,3</sup>

One of the factors that influence orthodontic treatment need is socioeconomic status in social groups and in community members. Socioeconomic status is defined as the degree of an individual in a group of people. It is also defined by three types of economic activity consisting of education, employment and income.<sup>6,7</sup>

The level of socioeconomic status affects malocclusion, among others the level of education because of the low understanding needs of people to access health information, causing parents knowledge about malocclusion care is still not good. The level of work that parents with jobs lack caused dental treatment that has not yet been met. Most of them are satisfied with their condition and tolerant with the presence of malocclusion due to the level of income that affects the inability of parents to pay the cost of dental visits and orthodontic treatment which is relatively high.<sup>5,10,12</sup>

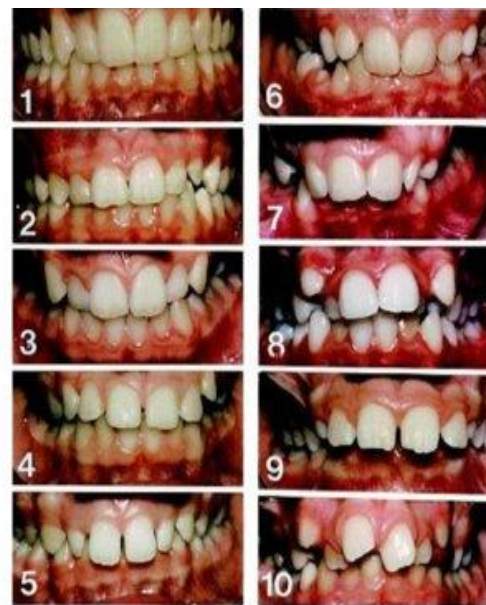
SMA Negeri 10 Banjarmasin is one of the state high schools in South Banjarmasin Subdistrict, located in Kelayan Selatan Sub-District. This school has its own School Health Unit (UKS) but lacks of dental health services, especially in malocclusion cases.<sup>7</sup> Based on the results of a preliminary study in 10 students of SMAN 10 Banjarmasin, 70% were experiencing malocclusion, and some of them had a lower-middle sosioeconomic status. This makes the researchers set this school as a research location due to its high rate of malocclusion and also inadequate economy.

**METHODS**

This study has obtained research permission and ethical eligibility issued by the Health Research Ethics Commission of the Faculty of Dentistry, Lambung Mangkurat University No. 019 /KEPKG-FKGULM/ EC /I /2020. This research used an observational analytic method with a cross-sectional approach. The collection of research data was taken at one particular point of time.

The population in this study were 584 high school students at the age of 15-18 years. The sample selection is done using simple random sampling technique which is carried out randomly and selected according to the inclusion and exclusion criteria. Based on formula calculations, the sample size in this study was 80 people.

The instrument used in this study was a questionnaire to measure the level of socioeconomic status of parents. The questionnaire contained 21 questions in the form of multiple choice questions and the Aesthetic Component examination sheet in the form of patient's direct assessment.



**Gambar 1.** Aesthetic Component IOTN

**RESULTS**

**Table 1.** Characteristics of respondents by age

Age	Frequency	Percentage (%)
18	19	23,8 %
17	22	27,5%
16	31	38,8%
15	8	10,0%
<b>Total</b>	<b>80</b>	<b>100%</b>

Table 1. shows that the highest percentage, was 16 years old respondents (38.8%) as many as 31 students, and the lowest percentage was age 15 years respondents (10.0%) as many as 8 students.

**Table 2.** Characteristics of respondents by gender

Gender	Frequency	Percentage (%)
Male	35	43,8 %
Female	45	56,3%
<b>Total</b>	<b>80</b>	<b>100%</b>

Based on the table 2 above, the sample size in the study was 80 students with 45 women (56.3%) and 35 men (43.8%).

**Table 3.** Distribution of respondent frequencies based on parents' level of education

Level Of Education	Frequency	Percentage (%)
High Education	2	2,5 %
Moderate Education	28	35,0%
Low education	50	62,5%
<b>Total</b>	<b>80</b>	<b>100%</b>

Based on the table 3, there are 2 people (2.5%) that highly educated, 28 people (35%) with moderate education and 50 people (62.5%) with low education.

**Table 4.** Frequency distribution of respondents based on the parents' level of work

Level of Work	Frequency	Percentage (%)
High Socio-Economic Work	2	2,5 %
Moderate Socio-Economic Work	31	38,8%
Low Socio-Economic Work	47	58,8%
<b>Total</b>	<b>80</b>	<b>100%</b>

**Table 7.** Correlation between parents' level of education with orthodontic treatment needs

Level of Education	Index Of Orthodontic Aesthetic Component (AC)						Total		
	IOTN								
	GRADE A		GRADE B		GRADE C		N	%	
Higher Education	N	%	N	%	N	%	N	%	
Moderate Education	9	32,1%	13	46,4%	6	21,4%	28	100%	
Low Education	3	6%	17	34%	30	60%	50	100%	
<b>Significance</b>						0,000*			
<b>Correlation coefficient</b>						0,469			

Based on the Table 4 above, there are 2 people (2.5%) which have jobs with high socioeconomic status, 31 people (38.8%) with moderate socioeconomic status, and 47 people (58.8%) with low status.

**Table 5.** Distribution of respondent frequencies based on the level of parents' income

Level of Income	Frequency	Percentage (%)
High Income	3	3,8 %
Moderate income	8	10,0%
Low Income	69	86,3%
<b>Total</b>	<b>80</b>	<b>100%</b>

Table 5 shows that there were 3 people (3.8%) with high income, 8 people (10%) have moderate income and the most frequency is 69 people (86.3%) with low income.

**Table 6.** Distribution of respondent frequencies by the level of orthodontic treatment need

Level of Orthodontic Treatment	Frequency	Percentage (%)
No/Little Need	14	17,5 %
Moderate Need	30	37,5%
Great Need	36	45,0%
<b>Total</b>	<b>80</b>	<b>100%</b>

Table 6 shows that the highest percentage was found in "great need" category with 36 people (45%), while the many as 30 people (37.5%) have moderate need and then the category of little need treatment frequency was 14 people (17.5%).

Table 7. shows the correlation of parental education with the level of orthodontic treatment needs at SMA Negeri 10 Banjarmasin. The number of students that the parents have a tertiary education and require only mild treatment (Grade A) was 2 people (100%). Students whose the parents have secondary education and including in the category do not or mild need of treatment (Grade A) were 9 people (32.1%), while those in the moderate treatment category (Grade B) were 13 people (46.4%) and the treatment indication category (Grade C) were 6 people (21.4%). The students with their parents had a low level of education and the category of do not or mild need for treatment

(Grade A) were 3 people (6%). The category of the moderate need for treatment (Grade B) was 17 people (34%) and the category of the need for treatment or indication of care (Grade C) was 30 people (60%). The Spearman correlation test results in Table 7 note that the significance value of the education level of parents with orthodontic treatment needs was 0,000 ( $p < 0.05$ ), which meant there is a relationship between education and the level of orthodontic treatment needs. Correlation coefficient of 0.469 means that the correlation coefficient is of sufficient strength and positive value, the relationship of education with the direction of orthodontic treatment needs is unidirectional, meaning that the lower the level of education, the higher the need for orthodontic treatment.

**Table 8.** Correlation between parents level of work and orthodontic treatment needs

Level of Work	Index of Orthodontic Aesthetic Component (AC) IOTN						Total	
	GRADE A		GRADE B		GRADE C		N	%
	N	%	N	%	N	%		
High Socio-Economic Work	1	50%	1	50%	0	0%	2	100%
Moderate Economic Work	8	25,8%	14	45,2%	9	29%	31	100%
Low Socio-Economic Work	5	10,6%	15	31,9%	27	57,4%	47	100%
<b>Significance</b>	0,003*							
<b>Correlation Coefficient</b>	0,326							

Table 8 shows the correlation between parental work and the level of orthodontic treatment needs at SMA Negeri 10 Banjarmasin. The number of students that the parents have high level of socio-economic work and the category of do not or mild need for treatment (Grade A) was 1 person (50%). The category of the moderate need of treatment (Grade B) was 1 person (50%). Students whose the parents have moderate socioeconomic job in the category do not or mild need for treatment (Grade A) were 8 people (25.8%), while the category required moderate treatment (Grade B) were 14 people (45.2%) and the category of the need treatment or indication of care (Grade C) was 9 people (29%). The students which their parents had a low socioeconomic jobs and the category of do not

or mild need for treatment (Grade A) was 5 people (10.6%), while those in the moderate treatment category (Grade B) were 15 people (31.9%) and the category of the need treatment or indication of care (Grade C) was 27 people (57.4%).

The Spearman correlation test results in table 8 note that the significance value of the work status of parents with the level of orthodontic treatment need was 0.003 ( $p < 0.05$ ) which means that there is a correlation between work with the level of orthodontic treatment need. The correlation coefficient value was 0.326 with the meaning of strong sufficient and positive value and the lower the level of work, the higher the need for orthodontic treatment.

**Table 9.** Correlation between parents' level of income and orthodontic treatment needs

Level of Income	Index Of Orthodontic Aesthetic Component (AC) IOTN						Total	
	GRADE A		GRADE B		GRADE C		N	%
	N	%	N	%	N	%		
Upper Income	2	66,7%	1	33,3%	0	0%	3	100%
Moderate Income	7	87,5%	1	12,5%	0	0%	8	100%
Lower Income	5	7,2%	28	40,6%	36	52,2%	69	100%
<b>Significance</b>	0,000*							
<b>Correlation coefficient</b>	0,540							

Table 9 shows the correlation between the level of income of parents and the level of orthodontic treatment needs in SMA Negeri 10 Banjarmasin. The number of students that the parents with an upper income in the category do not or mild need for treatment (Grade A) was 2 people (66.7%) while those the moderate treatment category (Grade B) there was 1 person (33.3%). The students which their parents had a middle income and the category of do not or mild need of treatment (Grade A) were 7 people (87.5%). Student whose the parents have low income and the category of do not or mild need for treatment (Grade A) were 5 people (7.2%), while the category of the moderate need for treatment (Grade B) was 28 people (40.6%) and the category of the need treatment or indication of care (Grade C) was 36 people (52.5%).

The Spearman correlation test results in table 9 note that the significance value of parents' income with the level of orthodontic treatment need was 0,000 ( $p < 0.05$ ), which means there is a correlation between income and the level of orthodontic treatment need. The correlation coefficient value was 0.540 which meant that the correlation coefficient was strong and positive value. The correlation of income and the direction of orthodontic treatment needs is unidirectional. The lower the income, the higher the need for orthodontic treatment.

## DISCUSSION

According to the level of parental education and orthodontic treatment need, these results indicate that the majority of people in the area to get a higher level of education is very low because they prefer to work rather than formal schooling. It can affect one's understanding of health information access to parents' knowledge about malocclusion care is still not good.<sup>10</sup> In line with Laturiuw's research (2017) that the higher the level of one's formal education, the better the parents' knowledge about dental and oral health care.<sup>11</sup>

According to the level of parents employment based on the highest frequency that had jobs with low socioeconomic status. because the average job is small traders and laborers, which can affect the maintenance. This statement is in accordance with Hansu's study, which obtained a score of 95.1% of the orthodontic treatment needs in the low occupational status group. Some of the population shows that people with low occupations have dental health services that have not yet been fulfilled. Most of them are satisfied with their situation and tolerant of malocclusion.<sup>12,13</sup>

This is due to financial limitations that are less than the minimum wage so that people with low-income economic status then look for alternative ways to get orthodontic treatment at a low cost. The results of the study were reinforced by Oley (2015) that parents with less income would find it difficult to meet their basic needs, to provide health services to their families by visiting dentists and orthodontic treatment costs that were classified as high, making parents unable to pay.<sup>5</sup>

The distribution of orthodontic treatment needs the most research results from the Grade C category or an indication of orthodontic treatment needs around 36 people (45%). This is in line with Badrana's research (2014) which stated that were 34 people who indicated high treatment at low economic status due to the lack of those who get treatment then cause orthodontic treatment at low economic status to become a priority whose needs are still low.<sup>12,14</sup>

Based on the results of the study, it was found that the correlation between education status of parents and orthodontic treatment needs, show that the low level of parents education that the highest category of treatment indication (Grade C) were 30 people (60%). This is in accordance with the statement of Sumanti (2013) in his research, concluded that the low education level affects a person's knowledge, where most respondents have basic education and do not know when the right time to check their dental health.<sup>15</sup>

According to the level of parents jobs and orthodontic treatment need, the results of this study are reinforced by Tampi (2016) which stated that there is a correlation between work and the orthodontic treatment needs because someone whose job is lower-middle has a lower tendency to take advantage of dental and oral health treatment, especially in orthodontic treatment compared to someone who has an adequate jobs.<sup>16</sup> The results of research by Rezalinoor (2017), which states that someone with anadequate job will fulfill all maintenance need, the higher the level of jobs of the parents, the level of orthodontic treatment needs.<sup>13</sup>

Students with middle upper income parents with the category of the needing care or indication care (Grade C) were 36 people (52.2%). The results of this study are in accordance with Basavaraj (2011) which stated that there is a relationship of income and the level of orthodontic treatment needs with the IOTN-AC due to higher levels of dental problems at low economic income. It will result in premature loss, molar gear drifting, crowding and number of abnormalities, shape and size of teeth and tooth decay early on.<sup>17</sup> This is

consistent with the statement of Laturiuw (2017), that higher economic income makes parents able to prevent dental problems in children further by coming to the dentist early.<sup>11</sup>

One of the factors that influence orthodontic treatment need is socioeconomic which consists of education, employment, and income. The closely related dental and oral health is indispensable to foster a good lifestyle for dental care. Based on the results of research that the lower the socioeconomic status, the higher the need for orthodontic treatment. Parents with high levels of education, employment, and income will tend to dig up information and understand well about dental problems and then will increase children's dental care participation.<sup>18</sup> Someone who is at a low socioeconomic level is difficult to get dental care because of the ability to pay for dental care while someone with a high level of education has a positive attitude about health and adopts healthy behavior in caring for oral health.<sup>19</sup> Based on this results of the research, it can be concluded that there is a significant correlation between socioeconomic status of parents and orthodontic treatment need in the students of SMA Negeri 10 Banjarmasin.

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