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THE CORRELATION OF FAMILY SOCIO-ECONOMIC, MAINTENANCE OF DENTAL HEALTH, AND PHYSICAL ENVIRONMENT FACTORS WITH DENTAL AND ORAL HEALTH

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ABSTRACT

Background: Dental and oral health problems in Indonesia continue to increase. Dental and oral health is part of the overall health of the body. Dental and oral health in adolescents is an essential and integral part of general health seen in the wider community. Junior high school students are teenagers who experience significant development in their lives, both physically, emotionally, socially, and behaviorally.

Purpose: To analyze the correlation of family socio-economic, dental health maintenance, and the physical environment factors with dental and oral health conditions in UPT SMP Negeri 1 Cempa students. **Material and Methods:** This study used an analytic observational method with a cross sectional research design. The sample was determined using the sample size correlation formula. The population were students of UPT SMP Negeri 1 Cempa as many as 414 people and the sample used was 40 respondents. **Results:** Spearman correlation test to determine the correlation between dental health maintenance and oral health obtained the value of Sig. 0.005 means that there is a correlation between the level of dental health maintenance with dental and oral health conditions ($p < 0.05$). There was no significant correlation between the socioeconomic level of the family (Sig. 0.167; $p > 0.05$) and the level of physical environmental conditions (Sig. 0.710; $p > 0.05$) with dental and oral health condition. **Conclusion:** There is a significant correlation between the level of dental health maintenance and dental and oral health conditions, while the socioeconomic level of the family and the physical environment does not have a correlation with dental and oral health conditions.

Keywords: Dental and oral health, Dental health maintenance, Physical environment, Socioeconomic.

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INTRODUCTION

The Global Burden of Disease Study 2017 estimates that oral disease affects nearly 3.5 billion people worldwide, with dental caries being the most common condition. Globally, an estimated 2.3 billion people suffer from caries in the permanent teeth and more than 530 million children suffer from caries in the primary teeth. According to the results of Basic Health Research 2018, the prevalence of dental and oral health problems in Indonesia continues to increase, namely 25.9% (2013) and 57.6% (2018). The prevalence of dental and oral health problems in South Sulawesi Province ranks second as the province with the

highest prevalence in Indonesia, which is 68.9%, especially in Pinrang Regency at 62.42%.^{1,2}

According to the World Health Organization (WHO), health is a state of complete physical, mental and social well-being and not merely the absence of disease and disability. Dental and oral health in adolescents is an essential and integral part of general health seen in the wider community.³ According to Basic Health Research 2018, dental and oral health problems that can be assessed through interviews are teeth that are damaged / cavities or tend to cause pain, missing / missing teeth, filling teeth, loose teeth, swollen gums / boils / pus (abscess), easily bleeding gums, recurrent canker sores at least 4 times a year, and canker sores

that persist and never heal for more than 2 weeks. The determinants of health according to Senterfiet (2013) are divided into 4, namely social and economic, habits, clinical care, and the physical environment.

Oral and dental health can be influenced by family socio-economic factors related to the family's ability to meet the needs of food intake and healthy lifestyle habits and the ability to pay for health services.⁵ The socio-economic status of the community can be seen from several factors that influence it, namely education, income, and type of work.^{1,5}

Dental and oral health maintenance related to tooth brushing habits is a preventive measure in maintaining oral and dental health. Clinical care by visiting the dentist aims to treat dental and oral health problems as a curative measure and monitor dental and oral health problems regularly as a preventive measure.^{6,7} Dental and oral health maintenance is part of oral health behavior which consists of individual and professional care, and which includes brushing, teeth, flossing, visits to the dentist, and diet.⁹

The environment has an important role in determining a person's health. The physical environment is everything around humans that is inanimate, such as the quality of air, water, soil, sewerage, waste management and so on.⁸ The health of the physical environment can be seen from the components of water, and sanitation.¹ Environment and behavior have a major (dominant) influence on the level of public health.^{8,10}

Based on environmental conditions, the research location that has been selected is UPT SMP Negeri 1 Cempa which is one of the junior high schools located in Cempa Village, Pinrang Regency, South Sulawesi Province. The Cempa Health Center is the only dental and oral health service provided by dentists in the Cempa Village area. The provision of education about dental and oral health in the community, especially junior high school age adolescents in Cempa Village is still lacking. During the Covid-19 pandemic, UPT SMP Negeri 1 Cempa did not carry out dental and oral health counseling. Based on the description above, the problem is the high prevalence of dental and oral health problems in South Sulawesi Province, namely 68.9%, and the prevalence of dental and oral health problems in Pinrang Regency is 62.42%.¹ Therefore, it is necessary to conduct research on the relationship between family socio-economic, maintenance of dental health, and the physical environment factors with dental and oral health conditions in UPT SMP Negeri 1 Cempa students.

MATERIAL AND METHODS

This type of research was analytic observational. The research design used was cross-sectional. This research will be conducted at UPT SMP Negeri 1 Cempa, Pinrang Regency, South Sulawesi Province in February-April 2021.

The population of this study were all students of UPT SMP Negeri 1 Cempa totaling 414 people. The sample in this study was determined using the correlation formula so that the minimum number of sample were 40 respondents.¹¹ The sample technique was simple random sampling and was in accordance with the inclusion and exclusion criteria. The inclusion criteria were UPT SMP Negeri 1 Cempa students who were willing to be respondents and the parents of these students have signed the permission letter given, students who have both parents and live together. The exclusion criteria were students who had systemic disease, students with special needs, and students who were receiving radiotherapy or chemotherapy treatment. The tools and materials used were mobile phones, writing utensils, informed consent links, research questionnaire links, masks, and internet networks.

The study was carried out by researchers by going directly to the research site and giving a letter of approval to students, which would be filled out and signed by the student's parents and witnesses as evidence of consent to be studied (respondents), then followed by filling out a questionnaire in google form. The four types of questionnaires will be contained: the dental and oral health questionnaires, the family's social economic levels, dental health care and physical environment. The mechanism for filling out the questionnaire is by clicking on the questionnaire link that has been shared by the researcher through the whatsapp group until a research questionnaire appears to be filled out. In turn, the filling of questionnaires regarding dental and oral health is filled out by researchers based on interviews whether online or directly in accordance with the conditions that allow for the research. Data from the questionnaires results from an univariant data analysis to know the images of each of the variables studied. Then a bivariate analysis was carried out using the SPSS application for the Spearman correlation test because the data were not normally distributed (non-parametric statistics) and used an ordinal scale, then conclusions could be drawn.

RESULTS

This research was conducted on 40 students as respondents by using a sampling technique that was simple random sampling technique.

Table 1. Description of Research Respondents by Gender

Gender	frequency(%)
Man	12 (30%)
Women	28 (70%)
Total	40 (100%)

Table 1 shows the majority of respondents with female as many as 28 people, while men as many as 12 people.

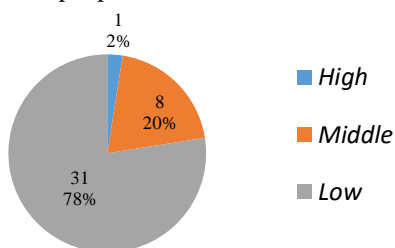


Figure 1. Socio-Economic Level Diagram of the Students of UPT SMP Negeri 1 Cempa

Based on Figure 1, it shows that the socio-economic level of the family of UPT SMP Negeri 1 Cempa students with the high category was 1 person (2%), the middle category was 8 people (20%), and the low category was 31 people (78%). Most respondents was in the low category and the least was in the high category.

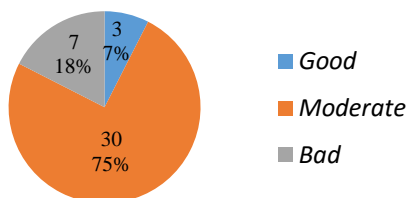


Figure 2. Diagram of the level of dental health maintenance for students of UPT SMP Negeri 1 Cempa

Based on Figure 2, the level of dental health maintenance of UPT SMP Negeri 1 Cempa students with good category was 3 people (7%), moderate category was 30 people (75%), bad category was 7 people (18%).

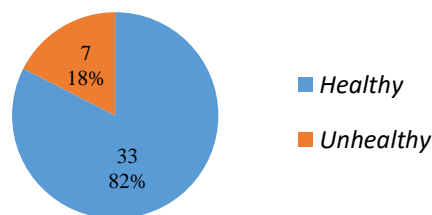


Figure 3. Diagram of the Level of Physical Environmental Conditions for Students of UPT SMP Negeri 1 Cempa

Figure 3 shows that the level of physical environmental conditions of UPT SMP Negeri 1 Cempa students with healthy categories as many as 33 people (82%) and 7 people (18%) in unhealthy categories.

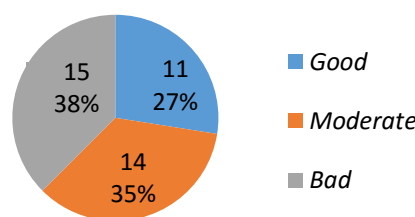


Figure 4. Diagram of Dental and Oral Health Levels of UPT SMP Negeri 1 Cempa students

Based on Figure 4, it shows that the level of dental and oral health of UPT SMP Negeri 1 Cempa students was in the bad category as many as 15 people (37%), the moderate category was 14 people (35%), and the good category was 11 people (28%). Most respondents were in the bad category and the least were in the good category.

Table 2. The Correlation of Family Socio-Economic Level with Dental and Oral Health Conditions of UPT SMP Negeri 1 Cempa Students

Dental and Oral Health	Family Socio-Economic Level (n)			n (%)
	High	Middle	Low	
Good	0	1	10	11 (27,5%)
Moderate	1	2	11	14 (35%)
Bad	0	5	10	15 (37,5%)
Total	1	8	31	40 (100%)

Based on table 2, students with the highest level of dental and oral health in the poor category were students with low socioeconomic family levels, namely 10 people (25%). From the results of the spearman test, a significance value of $p = 0.167$ ($p > 0.05$) showed that there was no correlation or

no relationship between the socio-economic level of the family and dental and oral health conditions.

Table 3. The Correlation between Dental Health Maintenance Levels and Dental and Oral Health Conditions of Students at UPT SMP Negeri 1 Cempa

Dental and Oral Health	Dental Health Maintenance (n)			n (%)
	Good	Moderate	Bad	
Good	1	10	0	11 (27,5%)
Moderate	2	11	1	14 (35%)
Bad	0	9	6	15 (37,5%)
Total	3	30	7	40 (100%)

Based on table 3, the highest dental and oral healthy rates in those with moderate dental maintenance rates were 9 people (22.5%). From the results of the Spearman test, a significant value was $p = 0.005$ ($p < 0.05$) which indicated a correlation between the level of dental health maintenance and dental and oral health conditions. The direction of positive correlation means that when dental care improves, the condition of the dental and oral will also improve. The strength of the correlation was 0.437 so the correlation between the two variables was moderate..¹²

Table 4. The Correlation between Physical Environment Conditions with Dental and Oral Health Conditions of UPT SMP Negeri 1 Cempa Students

Dental and Oral Health	Physical Environment (n)		n (%)
	Healthy	Unhealthy	
Good	9	2	11 (27,5%)
Moderate	11	3	14 (35%)
Bad	13	2	15 (37,5%)
Total	33	7	40 (100%)

Table 4 shows that the students with the highest level of dental and oral health in the poor category were students with the level of environmental conditions in the healthy category, namely 13 people (32.5%). A significance value of 0.710 ($p > 0.05$) was obtained from the Spearman correlation test. This means that there is no

relationship between the level of physical environmental conditions with dental and oral health conditions.

DISCUSSION

The results of research conducted at UPT SMP Negeri 1 Cempa showed that students with the highest socioeconomic family level were in the low category. The results of this study are in accordance with the results of a survey by the Central Statistics Agency of Pinrang Regency in 2020 which stated that the economy of Pinrang Regency in 2020 has decreased. The Covid-19 pandemic which was also experienced by Pinrang Regency had an impact on several aspects of the Pinrang Regency economy.⁴ Based on the results of the spearman correlation statistical test, there is no relationship between the socioeconomic level of the family with dental and oral health conditions. The socioeconomic level of the family can be measured based on education, income and occupation. The results of this study are in line with research conducted by Tjahja and Ghani (2010) that there is no relationship between education and work with dental and oral hygiene status that supports dental and oral health.^{14,16}

The highest level of dental health maintenance are in the moderate category. The level of health maintenance can be influenced by knowledge, motivation, and health behavior. This results is in line with the study conducted by Rahayu et al (2014) which stated that a person's knowledge affects the maintenance of dental and oral hygiene that supports one's dental and oral health.^{13,14} Based on the results of Basic Health Research data from South Sulawesi province in 2018, the prevalence of tooth brushing behavior among adolescents aged 15 years who brushed their teeth every day was 98%, while those who brushed their teeth at the right time were only around 10.34%.¹ The Spearman correlation statistical test results show that there is a correlation between the level of dental health maintenance and dental and oral health conditions with a significant value was $p = 0.005$ ($p < 0.05$). Dental health maintenance is assessed from the habit of brushing teeth, the habit of consuming sweet foods, and visits to the dentist. The results of this study are in line with research conducted by Cahyadi et al (2018) which stated that there is a relationship between tooth brushing behavior and consuming sweet foods and drinks with the occurrence of dental health problems in the form of dental caries.⁶

Most students were in a physical environment with a healthy category. The location of the research was carried out in Cempa Village which is still a rural environment. This study is also in line with Health Profile of South Sulawesi Province 2016 which explained that the percentage of healthy

homes in Pinrang district was 65.28% or around 30,831 of 79,184 households that still did not meet the criteria for healthy homes.¹⁵ There is no correlation between physical environmental conditions with dental and oral health conditions according the spearman correlation statistical test. The physical environment can be measured based on the condition of the house, water sources, sewerage, and waste management. The physical environment that tends to affect a person's health, especially dental and oral health, is a polluted environment. Exposure to a polluted environment that enters the body through food and drink will cause dental and oral health problems.⁸

Most of the students's dental and oral health conditions were in the bad category. The results of this study are in line with the results of Basic Health Research 2018 data which stated that South Sulawesi Province is the second ranked province with the highest prevalence of dental and oral health problems.¹ This research was conducted in Cempa Village which showed that students with the most dental and oral health conditions were in the bad category (82.5%).

This study encountered several obstacles, including the process of filling out online questionnaires that were difficult for students to understand. The problem of filling out questionnaires directly by students at school cannot be done due to the implementation of learning from home due to covid-19, so researchers have to go to the respondent's house. In addition, the sampling technique is not in accordance with the simple random sampling technique and this study still lacks 1 respondent. .

Based on the results of this study, it can be concluded that there is a relationship between dental health maintenance and dental and oral health conditions. However, there is no relationship between family socioeconomic and physical environment factors with dental and oral health conditions.

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