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Research Article

General Health Status and Oral Health Status Description in Elementary School Age Children

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ABSTRACT: Oral health status among children has been proven of possessing strong relationship with general health status which is curently well documented. Oral health status illustrating periodontal tissues health might be affected by general health status actually associated with some diseases. This statement assumes that periodontal health is influenced by the diseases such as infection, chronic and degenerative diseases impairing general health status. Aim. The aim of this study was to examine oral health status and general health status among elementary students with age of 6-8 years old . Method. This study was descriptive with cross sectional method by selecting 44 students from several elementary school in Bandung City. Oral health status was established through determining oral hygiene index-simplified (OHI-S) and general health status was determined by using body mass index (BMI) through measuring body weight and height. The data gained was presented into tables. Result. The research results show that 70,45% respondents are male exhibiting the BMI mean of 13,22 with OHI-S mean of 1,12 meanwhile the female respondents is that 29,55% are having BMI mean of 12,67 and OHI-S mean is 1,58. Conclusion. Based on the data obtained, it can be concludes that the elementary students participated in this study either male and female are catagorized of having mild general health status showed by low BMI with mild oral health status indicated by moderate OHI-S

Key words : Oral health status, general health status, OHI-S, BMI

Introduction

Oral health status has a strong connection with general health status and is just as important as general health because oral health disorders will provide a considerable impact on general health which will further determine the quality of life. Good oral hygiene will give a big advantage to general health because in addition to improving the quality of life will also contribute to self-image and social interaction.[1] Oral health status is determined by the oral tissue health standards that may determined by oral hygiene index-simplified (OHI-S) are inseparable from general health status and its neglect may cause negative effects on the physical condition. Oral health status determined by the number of biofilms on tooth surfaces and among children should be special concern as it determines subsequent general health in the future.[2]

On the other hand, general health indexed by body mass index (BMI) has a considerable impact on oral health and even oral health can affect a person's general health. Many mediators have postulated this relationship such as infection, chronic inflammation, and genetics predisposition. Over the past decade, the role of underweight, overweight and obese children in subsequent development of general health status and oral health status is well documented, moreover some acute and chronic health conditions may worsen their clinical condition. In many recent research papers related to childhood weight loss, overweight and obesity are characterized through Body Mass Index (BMI) indicating that the condition of severe imbalance is a serious social and public health problem.[3]

The BMI is the most common way to assess whether a children is underweight, healthy weight or overweight. As children grow, their amount of body fat changes and so will their BMI. Some diseases are suffered by children affecting their BMI such as infection, chronic and genetic disease may influencing their oral health status. The role of body weight among children marked by body mass index (BMI) in subsequent health development has been well documented to show that the discrepancy between the two is closely related to the child's physical condition [4,5], for example obesity in children is frequently related to some physical impairment as well as oral health [6]. This epidemiological study is expected to be useful in assessing the oral health status among children in disclosing the predisposition of disease progression as well as in analyzing the factors that influence the pattern of oral diseases that may be related to general health status so that the precautions can be determined.

1. MATERIALS AND METHODS

The study was a cross-sectional with consecutive sample involving 44 children from 6 to 8 years of age as from elementary school in Bandung City. Determination of oral health status is conducted by using the Green-Vermillion simplified oral hygiene index (OHI-S). Children's parents and teacher were asked to fulfill informed consent prior to examination. Oral examination was performed by a single examiner using mouth mirror and community periodontal indeks of treatment needs (CPITN) probe. The scored tooth surfaces is 6 surfaces. The OHI-S was established by determination of the debris index and the calculus index representing on selected tooth surfaces. The 6 teeth surfaces scored were classified within 3 debris criteria; 0 – No debris or stain present, 1 – Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stains without other debris regardless of surface area covered, 2 – Soft debris covering more than one third, but no more than two third, of the exposed tooth surface and 3 – Soft debris covering more than two thirds of the exposed tooth surface[7].

Anthropometri measurement was used to determine the BMI. The student's body weight (kg) and height (cm) were assessed by using digital scale and a wall mounted measuring device. Body mass indeks (BMI) is the usual tool expressing body fat percentile and was calculated by dividing weight by squared height [8]. The data obtained was presented in table dan graph.

Ethical and legal considerations of the study

The project was approved by Scientific Ethic Committee (No: 979/UN6.C.10/PN/2017), Faculty of Medicine, Universitas Padjadjaran in Bandung, Indonesia. All of research's subjects were asked to sign an informed consent through their parents or teacher to comply with the ethical and legal aspects of the research.

1. RESULT AND DISCUSSION

The result of this study is presented in the table and graph below. The participants were 44 students of elementary school comprising 13 females and 31 males. From the overall population comprising female and male students, 8 female students have low BMI, 4 female students are having lowest BMI and 1 female student is having high BMI. The female students who have poor OHI-S only 2 students with low BMI.

Table. 1BMI and OH-S of Female Students

NO	Gender	Age	Code	Examination types			
				BMI	Debris Index	Calculus Index	OHI-S
1	F	7	S174	19.92	0.75	0.13	0.88
2	F	7	S. 1132	13.20	1.33	0.33	1.67
3	F	7		12.65	2.17	0.83	3.00
4	F	7	S84	12.63	0.67	0.42	1.08
5	F	7		12.50	1.25	0.13	1.38
6	F	8	A.40	12.23	1.00	0.20	1.20
7	F	6	S.18	12.03	0.50	0.00	0.50
8	F	6	G.14	11.96	1.50	2.00	3.50
9	F	7	A.4	11.89	0.80	0.75	1.55
10	F	7	K,238	11.79	1.83	0.50	2.33
11	F	6		11.54	1.17	0.58	1.75
12	F	7	A.11	11.25	0.80	0.30	1.10
13	F	8	N95	11.16	0.25	0.42	0.67
The mean				12.67			1.58

The table below shows that tha male students who have low BMI are 17, those who have the lowest BMI are 10 students, and the male students who are obese are 4 students. There is one male students among 31 who has a poor OHI-S.

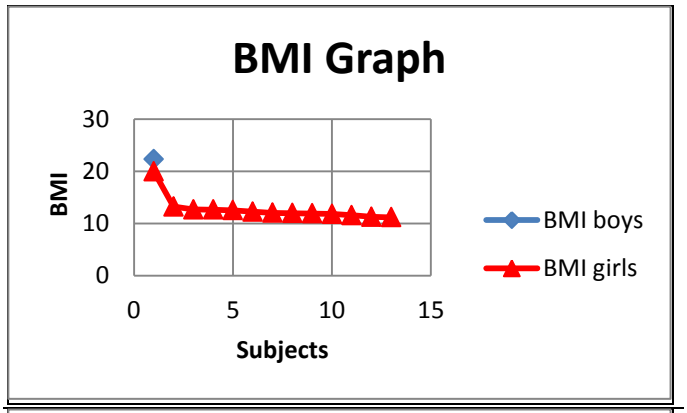
Table. 2 BMI Anda OHI-S of Male Students

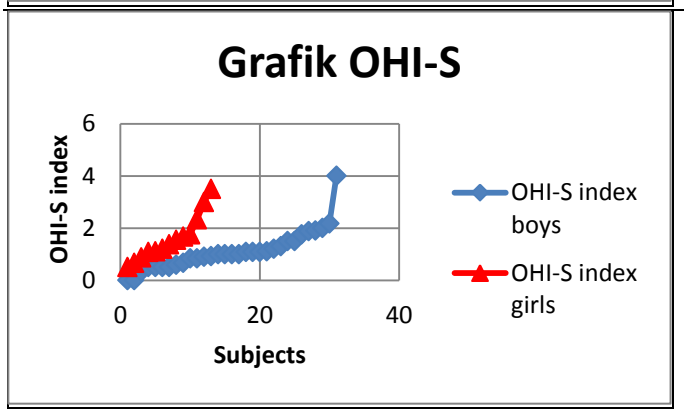
NO	Gender	Age	Code	Examination types			
				BMI	Debris Index	Calculus Index	OHI-S
1	M	7	M.27	22.30	1.08	0.00	1.08
2	M	6	F150	20.95	1.00	0.00	1.00
3	M	7	E65	19.89	1.08	0.00	1.08
4	M	7	A.10	19.03	0.90	0.00	0.90
5	M	8	M110	13.26	0.67	0.00	0.67
6	M	8	S251	13.08	1.00	0.00	1.00
7	M	7	M,246	13.04	2.00	2.00	4.00
8	M	7		13.01	1.90	0.00	1.90
9	M	7	D.25	13.04	1.42	0.75	2.17
10	M	6	R.16	12.99	0.50	0.00	0.50
11	M	7	M76	12.99	0.00	0.00	0.00
12	M	7		12.93	0.92	0.00	0.92
13	M	7	D237	12.87	0.92	0.17	1.08
14	M	7		12.85	0.50	0.00	0.50
15	M	6	M53	12.76	0.00	0.00	0.00
16	M	6	R60	12.76	0.83	0.17	1.00
17	M	6	D.39	12.68	0.90	0.40	1.30
18	M	6	R.6	12.64	1.00	0.75	1.75
19	M	7	I111	12.63	0.58	0.00	0.58
20	M	9	R.31	12.56	0.50	0.00	0.50
21	M	6	R.23	12.27	0.83	0.00	0.83
22	M	8		12.24	0.80	0.40	1.20
23	M	7	N.43	12.21	1.00	0.00	1.00
24	M	7	J220	12.11	1.50	0.00	1.50
25	M	6	M.30	12.11	0.17	0.17	0.33
26	M	7	D,233	12.10	1.50	0.00	1.50
27	M	7	R,252	11.75	2.00	0.00	2.00
28	M	7	A.20	11.49	0.83	0.00	0.83
29	M	7	A.13	11.46	0.50	0.00	0.50
30	M	8	A.41	8.43	0.90	0.20	1.10
31	M	7	A.35	5.48	1.63	0.25	1.88
The mean				13.22			1.12

Based on the table of the mean of BMI and OHI-S below, it can be assumed that the male and female students have low BMI and a mild OHI-S.

Table. 3 The Mean of BMI and OHI-S Among Male and Female Students

Gender	Percentage	The mean of BMI	The mean of OHI-S
Male	70.45	13.22	1.12
Female	29.55	12.67	1.58





In children body weight influences mediator like adipocytokines that have been traditionally tought to be involved in inflammatory process which furthermore may be a risk for development of any systemic diseases evidently will determine general health status [9]. Various studies have proven that the nutritional status of a child who can be identified through BMI determination is very influential on oral health status including dental health status and periodontal health status identified by debris index and calculus index [10]. Ekuni et al conducted the study showing that BMI as presentation of general health status has strongly connection with periodontitis exhibiting oral health status represented by OHI-S [11].

BMI is the index used to describe the condition of the body whether included into a lean body or obesity determined by body weight divided by height squared. This index is very useful to monitor obesity but in children can not be linked directly because of the growth process. However, BMI in children may be associated with a significant rate of obesity risk later in life [12]. Obesity in children has been proven to increase chronic diseases prevalence among children such as type 2 diabetes and high blood pressure and this general health condition will disrupt the oral health status [13]. As well as obesity, a lean body that is identified by underweight will affect oral health status otherwise poor oral health status will lead to malnutrition indicated by low BMI. Malnutrition can alter homeostasis which can further lead to many disorders of oral health10. Hence, it seems that the general health status has been confirmed to have a very close relationship with oral health conditions. However, the data obtained above does not exhibit conformity with this statement possibly due to restricted sample thus it is suggested to redo the investigation with more larger samples.

CONCLUSION

The research concludes that the elementary students participated in this study either male and female are catagorized of having mild general health status showed by low BMI with mild oral health status indicated by moderate OHI-S

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