THE RELATIONSHIP BETWEEN CHEWING FOOD AND SLEEPING DISORDERS CAUSED BY DENTAL AND ORAL DISEASES TO PRESCHOOL CHILDREN'S FOOD INTAKE

Hubungan Gangguan Mengunyah Makanan dan Tidur Akibat Penyakit Gigi dan Mulut terhadap Asupan Makan Balita

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ABSTRAK

Asupan makan merupakan faktor yang berpengaruh langsung dalam menentukan status gizi balita. Penyakit gigi dan mulut umumnya menimbulkan rasa sakit di gigi yang menyebabkan balita tidak mau makan dan tidur tidak nyenyak. Keadaan ini dapat mengakibatkan menurunnya asupan makan balita. Tujuan penelitian adalah menganalisis hubungan gangguan mengunyah makanan dan tidur akibat penyakit gigi dan mulut terhadap asupan makan balita. Penelitian observasional analitik dengan desain *cross sectional* pada balita 3-5 tahun di Kecamatan Ambulu, Jember sebanyak 102 sampel dengan metode *purposive sampling*. Variabel yang diteliti adalah gangguan mengunyah makanan dan tidur akibat penyakit gigi dan mulut (menggunakan indeks *ecohis*) serta asupan makan (menggunakan recall 24 jam). Analisis data menggunakan uji korelasi spearman. Hasil analisis menunjukkan bahwa terdapat hubungan negatif antara variabel gangguan mengunyah makanan dan tidur akibat penyakit gigi dan mulut dengan asupan makan. Semakin tinggi gangguan mengunyah makan dan tidur akibat penyakit gigi dan mulut maka semakin rendah asupan makan balita.

Kata kunci: gangguan makan, gangguan tidur, asupan makan

ABSTRACT

Food intake is a directly influential factor in determining nutritional status of preschool children. Dental and oral diseases generally cause pain in teeth which make them have difficulty to eat and sleep well. This situation can result in reduced food intake. The research objective was to analyze the relationship between chewing food and sleeping disorders caused by dental and oral diseases to preschool children's food intake. An analytic observational study with cross sectional design in preschool age children was conducted in District Ambulu, Jember Regency. A hundred and two samples were taken using purposive sampling method. The variables studied were chewing food and sleeping disorders considering oral diseases (using ecohis index) and food intake (using 24-hour recall). The data were analyzed using Spearman correlation test. The result showed that there is a negative correlation between the variables of chewing food and sleeping disorders in consequence of oral diseases to food intake. The more severe chewing food and sleep disorders caused by oral diseases, the lower the food intake of preschool children.

Keywords*: eating disorders, sleep disorders, food intake*

INTRODUCTION

Food intake is a factor that directly affects a person's nutritional status.[1] Malnutrition and poor nutrition status are still problems in Indonesia since there has been no significant decline in numbers of both matters down to date. Nationally representative survey shows a recent increase in the prevalence of underweight, from 17.9% in 2010 to 19.6 in 2013.[2]

Untreated dental caries results in increasingly severe caries and even arises abscess. Physical impacts of caries in children include pain in the teeth and the mouth, chewing disorders, as well as making children lazy to talk and to go to school. Physiological impacts include sleeping disorders, reduced learning ability which results in children IQ and unstable emotion. Children with poor oral health are 12 times more likely to have limitedness activities within a day compared with normal children. Toothache and infection can result in alterations in eating and sleeping habits, food intake, and metabolic processes. Expansion of carious lesions and pain in teeth would reduce chewing activity because of inconvenience since not all types of food can be chewed properly by the mouth. Diet alteration which tends to be in form of semisolid and solid can reduce appetite resulting in reduced food intake. Sleeping is disturbed because oral and dental diseases decrease glucosteroid production, and erythrocyte production in bone marrow which leads to decreased hemoglobin. Caries affects food intake, growth and weight. [3,4,5]

Some studies indicate that dental caries associated with low weight (underweight) in preschool children, as the results of a number of researches both in Turkey and Philippines concluded that preschool children who suffer from *rampant* caries have significantly lighter weight and lower height compared to the group without caries.[5,6] This study was aimed at analyzing the relationship between chewing food and sleeping disorders because of dental and oral diseases to preschool children's food intake. Dental caries is a chronic disease that most commonly occurs in preschool children.[7]

MATERIALS AND METHODS

An analytic observational study with cross sectional design in preschool children aged 3-5 years old was conducted in the Public Health Center of Ambulu District, Jember Regency. A hundred and two samples were taken using purposive method. The variables studied were chewing food and sleeping disorders attributable to oral diseases to preschool children's food intake. The data of chewing food and sleeping disorders resulting from oral diseases were obtained by using Ecohis index whilst the variables of food intake were collected by applying 24 hour recall method which was addressed to children's mothers/caregivers. Data were presented using the mode, deviation standard, and variance, and analyzed using *Spearman correlation test.*

RESULTS

Result showed the amount of 3 years old children is 14 children (13,7%), 4 years old children is 75 children (73,6%) and 5 years old children is 13 children (12,7%). Based on their gender, male children are 37 children (36,3%) and female children are 65 children (63,7%). The total of the children is 102 children (Table 1).

Standard deviation (SD) of the variable mode of chewing food and sleeping disorders is 0.58, the variance is 0.34, whilst the food intake variable indicates the value of mode 3, SD is 0.49, the variance is 0.24. The value of mode 3 in variable of food intake indicates that most preschool children have sufficient food intake, whilst the value of mode 4 in the variable of chewing food and sleeping disorders caused by oral disease shows that most preschool children rarely have chewing food and sleeping disorders because of dental and oral diseases (Table 2).

Spearman correlation analysis results a probability value of significance (p) of 0.021 that is smaller than α (0.05) and a correlation coefficient of -0.2, meaning that there is a

Table 1. Characteristic of Respondents

Characteristics	n=102	%
Age		
3 years old	14	13,7
4 years old	75	73,6
5 years old	13	12,7
Gender		
Male	37	36,3
Female	65	63,7

Table 2. Mode Value, StandardDeviation, and Variance in both Variables

Variable	Mode	Standard Deviation	Variance
Chewing food and sleeping disorder	4	0,58	0,34
Food Intake	3	0,49	0,24

Table 3. Spearman Correlation Test of Eating and Sleeping Disorders of Preschool Children

Variable	p-value	Correlation Coeficient	Description
Eating and Sleeping Disorder-Food Intake of Preschool Children	0.021	-0,2	Significant

relationship between chewing food and sleeping disorders in consequence of dental and oral diseases to preschool children's food intake with a negative tendency implicating that the more severe chewing food and sleeping disorders considering oral diseases, the lower the food intake of preschool children (Table 3).

DISCUSSION

The results of study showed that there is a relationship between chewing food and sleeping disorders attributable to dental and oral disease to the food intake of preschool children with a negative impulse, the more severe eating and sleeping disorders experienced by preschool children as a result of gum disease, the lower their food intake. Pain in the teeth and discomfort when chewing may cause dietary alterations. Preschool children seem hardly to eat, tend to prefer liquid and semi-liquid food instead, even when it comes to solid food, they will reduce the duration of chewing. Such situation will impair children's food consumption which then mark down their nutrient intake and absorption.[3,4,5,8]

This is relevant with the research which was conducted by Marss *et al* (2011) which mentioned that three year old children with caries weigh about 1 kg lower than those without caries.9Sheiham (2006) stated that preschool children who suffer from *rampant* caries have significantly lighter weight and lower height than those in the comparison group, i.e. the group without caries.5A survey in Philippines found similar results, in which there is a relationship between dental caries and low weight (underweight) in preschool children. A prospective cohort study in children aged 5 years old in the United States reported that children with tooth decay experienced slower increases in weight and height compared to those without tooth decay.[6]

In addition to physical disability (chewing disorders), oral diseases can cause mental disorders, i.e. sleeping disorders.[10] A sleeping disorder is generally described as the difficulty to sleep, waking frequently at night and adversity to get asleep again, waking up too early, and having no refreshing sleep which all together referred as insomnia. Preschool children who suffer from gum disease tend to experience disturbances during sleeping because of the pain and discomfort.[3,11]Sleeping disorders also prove to affect nutrient intake. A research in India proves that the intake of vitamin B12 in the insomnia group is lower than the group who has normal sleeping time.[12]Sleeping disorders at night may increase the secretion of glucocorticoids, thus greatly affects the hormones (inhibits the release of growth hormone). In the other hand, a decrease in hemoglobin of erythrocyte production in the bone marrow. Hormonal changes at night influence eating habits in the morning and afternoon.[3,4,5,13,14,15]

CONCLUSION AND RECOMMENDATION

The conclusion is a relationship between chewing food and sleeping disorders caused by dental and oral diseases to preschool children's food intake. The more severe chewing food and sleeping disorders, the lower the preschool children's food intake. The recommendation is find-

ings could be used as one of the programs to help prevent malnutrition in children under five years old and improving the integration of services at the public health center

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