PENELITIAN

ASSOCIATION BETWEEN KNOWLEDGE AND BEHAVIOR IN MAINTAINING ORAL HYGIENE WITH DENTAL CARIES AMONG CHILDREN IN GIANYAR

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ABSTRAK

Latar belakang: Prevalensi karies gigi pada anak-anak di Asia Tenggara, Indonesia, dan Bali berturut-turut adalah 95%, 72%, dan 22.5%. Karies gigi pada anak-anak dapat memicu komorbiditas diusia dewasa seperti diabetes dan penyakit kardiovaskular.
Tujuan: Penelitian ini bertujuan untuk mengetahui hubungan antara pengetahuan dan perilaku dalam menjaga kebersihan gigi dengan status karies gigi pada anak-anak di Kabupaten Gianyar, Bali.
Metode: Penelitian ini menggunakan desain potong-lintang analitik untuk mengetahu hubungan antar variabel. Sampel dalam penelitian berjumlah 70 yang terdiri dari siswa sekolah dasar negeri usia 7-8 tahun. Pengumpulan data dilakukan dengan pengisian kuesioner dan pemeriksaan intraoral. Studi ini menggunakan uji statistik bivariate dan multivariate.
Hasil: Studi ini menunjukkan bahwa 94.3% partisipan memiliki karies gigi. Tidak terdapat hubungan yang signifikan antara pengetahuan dalam menjaga kebersihan mulut dengan status karies gigi (P=0.743). Namun, terdapat hubungan yang signifikan antara perilaku menjaga kebersihan mulut dengan status karies gigi (P=0.011).
Kesimpulan: Tidak terdapat hubungan yang signifikan antara pengetahuan dan perilaku yang buruk dalam menjaga kebersihan mulut dengan adanya karies gigi pada anak. Dengan demikian tetap diperlukan edukasi dan praktik menjaga kebersihan mulut bagi kelompok dengan tingkat pengetahuan dan perilaku menjaga kebersihan mulut yang buruk.

Kata kunci: *def-t, karies gigi, kebersihan gigi.*

ABSTRACT

Background: *The prevalence of dental caries among children in South East Asia, Indonesia, and Bali was 95%, 72%, and 22.5%, respectively. Dental caries in children can lead to another serious comorbidity of systemic problem such as diabetes and cardiovascular disease. The development of dental caries among children is influenced by their knowledge and behavior in maintaining oral hygiene.*
Purpose: *The purpose of this study was to determine the association of knowledge and behavior in maintaining oral hygiene with dental caries status among children in Gianyar, Bali.*
Method: *A Cross-sectional analytic study design was used to determine the association between the variables. The sample size of this study was 70 and consist of 7-8 years old state elementary school children. Bivariate and multivariate statistical analysis was performed in this study.*
Results: *This study showed that 94.3% of the participant had dental caries. There is no significant association between knowledge in maintaining oral hygiene and dental caries (P=0.743). However, there is a significant association between behavior in maintaining oral hygiene and dental caries (P=0.011).*
Conclusion: *Poor behavior and knowledge in maintaining oral hygiene among children are not associated with the presence of dental caries. However, education and practice lesson in maintaining oral hygiene should be directed to the lower categories of each group.*

Keywords: *def-t, dental caries, oral hygiene*

INTRODUCTION

Dental caries is one of public health burden one of the main concern of oral condition due.[1] Children living in rural area are susceptible to dental caries so that resulting the high percentage in the world wide.[2–4]

Oral and dental diseases are suffered by many population.[5,6] Poor childhood oral health is related to poor adulthood oral health. Some studies have shown that poor oral health status leads to another health problem. For example, dental caries among children can lead to comorbidity of another health problem such as diabetes and cardiovascular disease.[7]

Up to 95% children in South East Asia are experiencing dental caries with the average of DMF-T index of 2.4 + 1.4.[8,9] While, Most of Indonesia's population are suffering dental caries.[10] In Indonesia 92.6% population are having dental caries.[11]

Children were exposed dental caries in range of 6-12 years old.[2,3,12] Research in Denmark shows that the percentage of deciduous that exposed dental caries among 7 and 8 years old children is 83,3%, while in China shows 8,7% deciduous are exposed to dental caries.[2,13]

Dental caries has also contributed to substantial disease burden in Indonesia. According to Indonesia's Basic Health Survey, the prevalence of dental caries among children were increased from 43.4% in 2007 to 53.2% in 2013.[14–16] More than 72% of children with dental caries live in rural area of Indonesia.[17–19] Furthermore, in 2012, 22,398 school children needed dental care related to dental caries and 11,624 children had received tooth extraction.[20] The prevalence of dental caries in Bali is about 22.5%.[14,15]

Poor oral health is one factor that contribute to occurrence of the dental caries. The condition that reflect poor oral hygiene in children including brushing frequency, diet intake, and dental health promotion program.[21–24] Research shows that knowledge and behavior in oral health play an important role in maintaining good oral health thus preventing dental caries.[25,26] Studies show that lack of awareness of oral hygiene among children 6-12 years old are averagely low since of low education and their capabilities in maintaining oral hygiene.[27] A research in India shows that children with poor of oral hygiene knowledge has poor oral hygiene status, so does vice versa.[28]

The high burden of dental caries reflects the need to improve dental caries prevention strategy through oral health education. Poor oral health in children contribute significantly to poor adulthood oral health and may leads to another health problem such as diabetes and cardiovascular disease.[7] To assist policy maker in determining and improving dental caries prevention strategy, particularly in health education program, it is important to provide scientific evidence regarding association between knowledge and behavior with dental caries in children. However, there is still limited study measuring the association of these factors to dental caries in Indonesia. This study aims to measure the association between knowledge and behavior of oral hygiene to dental caries among state elementary school children aged 7-8 years old In Kelusa, Gianya, Bali.

METHODS

An observsional analytical study was conducted using cross-sectional design. The study population were seven and eight year's old student in four state elementary school due to high prevalence of dental caries. Kelusa, the sub province of Gianyar, Bali, Indonesia was chosen in this study. Data collection was conducted on September 2nd, 2017. The total sample size was 70 respondents. Convinient sampling was used in this study due to easy access of each school. The data of knowledge and behavior in maintaining oral hygiene were collected using self-administered questionnaire. Informed consent was administered to the school's principle.The dental caries was examined by dentistry student of Udayana Univeristy using dental diagnostic instrument such as excavator, mouth mirror, and curved sonde with the help of sunlight lightning. The sample inclusion criteria were the participant whose willing to fill the inform consent. The exclusion criteria were the subjects who didn't completed the whole steps of this study. This study has approved by the Research Ethic Commission, Faculty of Medicine Udayana University/ Denpasar Sanglah General Hospital No. 2207/UN.14.2/KEP/2017.

In this study the criteria of knowledge and behavior is divided into good and poor. The determination of the criteria was using the mean value. The mean value was chosen since the data is distribute normaly and to resists the fluctuation between different samples.[29] Subjects who got the score above or equal to the mean is determined as good and subjects who got the score under the mean is determined as poor. The dental caries was recorded using DMF-T and def-t index according to WHO determination.[30] While the dental caries status was divided into two categories (presence and absence) of dental caries. Subjects who has at least 1 dental caries (decay, exfoliation, and filling) belonged to presence of dental caries. While subject who has zero dental caries (no decay, exfoliation, and filling) belonged to absence of dental caries. The data was analyzed using SPSS 16.0 through chi-square.

RESULTS

The participants included 70 children of whom 38 were boys and 32 were girls, with a mean age of 7.6 + 0.49 years. All participants had completed the questionnaire. Information related to demographic characteristics is shown in Table 1.

Diagnosis and Dental Caries Status

Every child in this study was diagnosed with def-t index. For primary teeth index, decayed exfoliation filling teeth (def-t) index was used to determine the severity of dental caries. The mean def-t of the population was 5.31 ¬+ 3.26.

Table 1. Children's demographic characteristics (n=70)

Items	n	%
Sex		
Boys	38	54
Girls	32	46
Age (years old)		
7	28	40
8	42	60
Oral health score		
<1.2	14	20
1.2-1.6	27	39
2.7-4.4	16	23
4.5-6.5	12	17
>6.5	1	1

Knowledge and Behavior in Maintaining Oral Hygiene

The highest precentage of correct answer of knowledge in maintaining oral hygiene was "What does cause tooth cavity?" at 90% and the highest precentage of incorrect answer of knowledge in maintaining oral hygiene was "What is the function of fluoride?" at 74%.

While the highest precentage of correct behavior in maintaining oral hygiene was "Brushing teeth after having breakfast" at 93% and the highest precentage of incorrect behavior in maintaining oral hygiene was "Using one toothbrush with another household" at 66%.

74% of the participants had ever known how to maintain oral hygiene. 26% of them got information from television.

The Association between Demographic Characteristics and Dental Caries Status

The association between demographic characteristic and dental caries status is shown in Table 2. There is no significant difference between sex and def-t score mean. Boys' def-t score mean was 5.87 and girls' def-t score mean wa

s 4.66.

The Association between Knowledge in Maintaining Oral Hygiene and Dental Caries Status

The association of knowledge in maintaining oral hygiene and dental caries status is shown in Table 3. This study shows that poor knowledge in maintaining oral hygiene is not significantly associated with the presence of dental caries. Good habit in maintaining oral health and the function of fluoride are two knowledge variables which significantly associated with dental caries status (P = 0.001; P = 0.001).

The Association between Behavior in Maintaining Oral Hygiene and Dental Caries Status

The association of behavior in maintaining oral hygiene and dental caries status is shown in Table 4. This study shows that poor behavior in maintaining oral hygiene is significantly associated with the presence of dental caries. In this study using fluoride contain toothpaste is significantly associated with dental caries status (P = 0.001).

Table 2. Demographic analysis towards def-t score

Items	def-t score		P
	Mean	Mean SD	
Sex			0.99029
Boys	5.868421	3.325904	
Girls	4.65625	3.057873	
Age (years old)			0.94323
7	5.892857	3.384199	
8	4.928571	3.119775	

Logistic Regression of Knowledge and Behavior in Maintaining Oral Hygiene to Dental Caries Status

The association between knowledge and behavior in maintaining oral hygiene with dental caries were not significant (P = 0.4; P = 0.976). This means that on 5% percent of significant level Ho is failed to be rejected. In addition, it means that those variables have no influence tor dental caries. In other way, a simultant analysis using Hosmer and Lemeshow was performed and showed (P = 0.893). This means that on 5% of

significant level, that model is not match for this case.

DISCUSSION

In this study boys are more than girls also the older participant aged 8 years old is over the 7 years old. Participant with good knowledge in maintaining oral hygiene has higher amount in presence of dental caries. While participant with good behavior in maintaining oral hygiene has lower amount in presence of dental caries.

Table 3. Crosstabulation analysis between knowledge in maintaining oral hygiene with dental caries status

		Frequency n(%)	Dental Caries Status n(%)		*P value**
			Presence	Abscence	
Knowledge Categories	Poor	32(100)	31(97)	1(3)	0.734
	Good	38(100)	35(92)	3(8)	

Table 4. Crosstabulation analysis between behaviors in maintaining oral hygiene with dental caries status

		Frequency n(%)	Dental Caries Status n(%)		*P value**
			Presence	Abscence	
Behavior Categories	Poor	54(100)	51(94)	3(6)	0.011
	Good	16(100)	15(94)	1(6)	

According to WHO determination, the average dental caries in population of 5.31 is classified as high.[30] A descriptive research was conducted by the National Institute of Dental and Craniofacial Research shows that boys have higher caries index than girls.[31] Shaffer shows different result where girls 6-11 years old have higher index of dental caries then boys in the same age group. This is since girls are more often visiting dentist than boys.[32]

According to the study whose conducted by Arifah, good level of knowledge is related to good dental health status.[33] Another research whose conducted by Folayan et al., Castilho, and National Institute of Dental and Craniofacial Research show that knowledge of children aged 7-11 years old in maintaining oral hygiene so that they can be spared of dental caries is influenced by their parents behavior, sugar diet, and the frequencies of brushing teeth.[31,34,35] Leghari tells that dental caries is directly proportional to father's education level.[36] In this study, parents' level education, parents' knowledge, and sugar diet were not assessed.

Arifah shows the presence of relationship between good behavior in maintaining oral hygiene with good dental health.[33] Brushing teeth twice a day with fluoride contained tooth paste, consuming low sugar, using dental floss once a day, and not smoking are good behavior in maintaining dental health.[34,37]

This study shows a not significant relationship between knowledge in maintaining oral hygiene with dental caries status. However, there is a significant relationship between behaviors in maintaining oral hygiene with dental caries status.

Castilho tells that parents' behavior in maintaining oral health can influence their kid's dental health.[35] Early childhood education of dental caries prevention is important and should be given in the way of motivating the children to maintain their oral hygiene.[38,39] Maintaining oral hygiene is not only to prevent the development of dental caries but also improving the quality of live.[40]

In this study intra-observer, inter-observer, and Kappa statistic was not performed. Intra-observer, inter-observer, and Kappa statistic helps improving the reliability of intra oral examination.

CONCLUSION

According to the result of this study, it can be concluded that knowledge and behavior in maintaining oral hygiene have no significant relation to dental caries status. It means that good knowledge in maintaining oral hygiene is not enough to prevent the development of dental caries without followed by good behavior in maintaining oral hygiene.

ACKNOWLEDGMENTS

Author would like to express gratitude to the Head Major of School of Dentistry, author's lectures, examiners, and beloved enumerator.

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