

## MOTHERS' DENTAL HEALTH BEHAVIORS AND MOTHER-CHILD'S DENTAL CARIES EXPERIENCES: STUDY OF A SUBURB AREA IN INDONESIA

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### Abstract

Despite the importance of conducting regular epidemiological surveys to monitor dental health in lower socio-economic citizens especially of preschool children, only few papers were published respectively. The aims of this study were to describe preschool children's and their mother's dental caries experiences and to describe mothers' knowledge and behaviors' towards dental health in a suburb area near the capital city of Indonesia. The samples were 152 mother-child pairs with children age less than 5 years old. Intra oral examination by decay-missing-filling-teeth index was performed. Moreover, interviews were conducted to gain information regarding mothers' oral health behavior and knowledge. 70% children had caries with mean dmf-t = 3.7, consisting 100% of component decay. 90% mothers had caries with DMF-T=7.8, consisting 99% of component decay. More than 50% of mothers had low knowledge and behaviors towards dental health, which comprises of: (1) never checked their children's dental health, (2) starting to clean their child's teeth after child's age is more than 1 years old, (3) don't know that caries is an infectious disease, (4) frequently using same feeding and drinking equipments together with their children, (5) considering deciduous teeth are not important because it will be replaced with permanent teeth anyway. It could be concluded that the prevalence of dental caries in studied sample were high, these were relevant to the findings that the mother's knowledge and behaviors' towards dental health were low. The results of this study demonstrated that mothers might have a high contribution in their child's caries risk. Prevention should be undertaken at an early age and actively including caregivers is essential in planning and conducting any dental health interventions.

### Abstrak

**Perilaku Kesehatan Gigi Ibu dan Pengalaman Karies Gigi Ibu-Anak: Studi pada Kota Satelit di Indonesia.** Meskipun pentingnya melakukan survei epidemiologi untuk memantau kesehatan gigi terutama anak-anak prasekolah, hanya sedikit publikasi yang telah diterbitkan mengenai hal tersebut. Tujuan studi ini adalah untuk mendeskripsi pengalaman karies gigi pada anak-anak prasekolah dan ibunya serta untuk menggambarkan pengetahuan dan perilaku ibu terhadap kesehatan gigi di daerah pinggiran kota dekat ibu kota Indonesia. Sampel terdiri atas 152 pasang ibu-anak dengan usia anak kurang dari 5 tahun. Pemeriksaan intraoral dilakukan dengan panduan indeks gigi lubang-hilang-tambal. Selain itu, wawancara dilakukan untuk mendapatkan informasi mengenai perilaku dan pengetahuan kesehatan gigi ibu. 70% anak-anak telah menderita karies gigi dengan nilai dmf-t = 3,7, 100% diantaranya terdiri dari komponen gigi berlubang. 90% ibu telah menderita karies dengan DMF-T = 7,8, 99% diantaranya terdiri dari komponen karies gigi. Lebih dari 50% ibu-ibu memiliki pengetahuan dan perilaku rendah terhadap kesehatan gigi, dengan fakta yang terungkap diantaranya: (1) tidak pernah memeriksa gigi anak-anak mereka, (2) mulai membersihkan gigi anak mereka setelah usia anak lebih dari 1 tahun, (3) tidak mengetahui bahwa karies adalah penyakit menular, (4) sering menggunakan peralatan makan dan minum yang sama dengan anak-anak mereka, (5) menganggap gigi sulung tidak penting karena akan diganti dengan gigi tetap. Prevalensi karies gigi pada sampel yang telah dianalisa tinggi, hal ini relevan dengan temuan bahwa pengetahuan dan perilaku ibu terhadap kesehatan gigi rendah. Hasil studi ini menunjukkan bahwa ibu memiliki kontribusi terhadap risiko karies anak. Pencegahan karies gigi harus dilakukan pada usia dini dan peran aktif Ibu sangat penting dalam perencanaan dan intervensi kesehatan gigi.

*Keywords: behaviour, dental caries, epidemiology, Indonesia, oral health*

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## Introduction

It was reported that dental service utilization among Indonesians was low, and was influenced by some demographic and socio-economic factors.<sup>1</sup> Meanwhile there are rarely published papers regarding dental health status of Indonesians. Thus, it is important to regularly conduct epidemiological surveys to monitor dental caries status in lower socio-economic citizens especially of the preschool children due to their vulnerability to dental health problems.<sup>2</sup>

Dental caries can be defined as demineralization of tooth tissue consequent to a dental infection that is dependent on frequent exposure to fermentable carbohydrates and is influenced by saliva and fluoride and other trace elements. A very important role is attributed to the bacterium *Streptococcus mutans*-called "the window of infection", in that it is responsible for the primary oral infection in the first phase of dental caries in early childhood. Dietary habits are also deeply implicated in the development of early childhood caries, despite the fact that it is considered an infectious disease. Consumption of sweets with high concentrations of glucose, saccharine, or fructose, especially if taken in processed juices, and their prolonged intake play an important role in caries development in children with caries.<sup>3</sup>

It is well-known that dental caries is a disease caused by acids produced by plaque bacteria, as a by-product of their metabolism of fermentable carbohydrates, which then diffuse into dental hard tissues and dissolve their mineral contents. However, the explanation as to why some young children develop dental caries is a complex one. In a recent systematic review of epidemiological studies, over 50 risk factors were found to be related to caries prevalence or severity affecting the primary dentition of children below the age of 5 years.<sup>4</sup> The main culprits include socio-demographic factors such as family income and parental education level, dietary factors particularly a high frequency of between-meal sugar intake and the use of bottle feeding, oral hygiene factors such as frequency of tooth brushing and plaque level, and the use of fluorides.<sup>4</sup> In fact, many of these factors are interrelated. For example, parental education level is related to the parents' oral health knowledge and how they look after the child's teeth such as feeding and oral hygiene practices.<sup>4</sup> Family income may affect the child's utilization of dental care services and receipt of preventive measures.<sup>4</sup> It is important to find out the main risk factors for dental caries in the preschool children in Indonesia so that appropriate oral health promotion and caries prevention strategies can be developed. The aims of this study were to describe preschool children's and their mother's dental caries experiences and to describe mothers' knowledge and

behaviors' towards dental health in a suburb area near the capital city of Indonesia.

## Methods

This study was approved by the institutional review board of The University of Indonesia on research ethics. The study populations were children under 5 years old in Serpong, a suburb area near the capital city of Indonesia. 152 children were randomly examined from four mother-child integrated health centers in February 2011 by eight calibrated examiners. Agreement to participate in the survey was obtained from each mother. Children with parental consent and in good general health were included in the study. Children with major systemic diseases or syndromes, and those who were not cooperative and refused examination were excluded.

The primary outcome estimate was the prevalence of children having dental caries experience in their primary dentition. The dmf-t index was employed to measure the number of decayed, missing and filled teeth in the primary dentition. Diagnostic criteria for dental caries followed WHO recommendations.<sup>5</sup> Active decay was detected at the cavitations level by careful visual inspection. A probe with a 0.5-mm ball tip was used to remove plaque and food debris that obstruct inspection, and to confirm the presence of a carious cavity when necessary.

Questionnaires on the mother's-child's oral health-related behaviors and knowledge were completed by the parents, within minutes before the intraoral examinations were conducted. The questions included: (1) age of child at which the mother started to clean or brush their children's teeth, (2) when the mothers start to check or notice their children's oral health condition, (3) whether the mothers know that dental caries is an infectious disease, (4) whether they use the same feeding and drinking equipments together with their child, (5) whether mothers considered that deciduous teeth are not important cause it will be replaced with permanent teeth anyway. The data collected were entered into a computer and analyzed using the SPSS Statistical Package. Bivariate t-test was employed with a  $p$ -value < 0.05.

## Results and Discussion

Only thirty percent of the children were caries free. The distribution of dmf-t scores are shown in Table 1. The mean dmf-t score of the affected children was 3.67. One hundred per cent of the dmf-t score was contributed by decayed teeth (dt). The result also showed the older the child become; the greater will be the dmf-t. The highest number of decayed teeth was in the 5 to 6 years old

group. Moreover, the female children had a slightly higher def-t score than the male's. Eighty per cent of the children who had dental caries had no perceived need for dental care (Table 2). These results are similar to the findings in Philippines and China.<sup>6</sup> Moreover, carious teeth were left unattended. Absence of a program to promote oral hygiene among preschool children and wrong feeding practices may be contributing for the high prevalence of caries observed.

The prevalence of caries in studied children was high. Seven out of ten children have caries with average in each child having three to four carries. The possible reasons for the relatively high caries prevalence found in this study are poor tooth cleaning habit (such as low tooth brushing frequency), limited accessibility to preventive services, unfluoridated water supply, dietary factors (such as bottle feeding and high frequency of between-meal sugar intake) and low dental health awareness of their parents.<sup>6</sup>

Parents with a positive dental attitude and better dental knowledge will probably build up better dental health habits in their children and look after the children's dental health.<sup>7</sup> Thus, it is of great importance to involve the parents in dental health promotion programs for preschool children.<sup>8</sup> In addition, no fillings were found. This might show the existence of economic and geographic barriers to dental care, causing them not being able to seek for dental health professionals help.<sup>2</sup> It is encouraged that the first visit to a dentist should be

**Table 1. dmft in Age Groups**

Variable	N	Proportion (%)	Mean dmft-t ± SD
Age group (in month)**			
0-12	11	7.23	1.64 ± 3.64
13-24	52	34.21	1.48 ± 2.51
25-36	38	25.00	4.34 ± 4.52
37-48	32	21.05	5.38 ± 4.19
49-60	19	12.50	6.63 ± 4.28
Gender			
Male	79	50.98	3.28 ± 4.16
Female	75	49.02	4.03 ± 4.22
Total	152	100	3.67 ± 4.19

Note: \*\*=significant at < 0.05

**Table 2. dmft-t Compare to Perceived Need for Dental Care**

Variable	N	Proportion (%)	Mean dmft-t ± SD
Perceived Need**			
Yes	30	19.60	5.63 ± 5.37
No	123	80.39	3.16 ± 3.71
Total	152	100	4.39 ± 4.54

Note: \*\*= significant at <0.05

at one year of age and all children should have at least two routine visits to a dentist each year. In this study's result it could be concluded that these children had never been to a dentist to get treatment for a dental problem. This confirms that these preschool children do not get adequate dental care. Results of this study emphasize the importance of strengthening community based dental care services for preschool children in Indonesia.

Moreover, caries experience increased with age.<sup>9-11</sup> At the age of four years old, a child could have six to seven teeth decayed. It could be explained by a number of factors which include the time span since eruption of primary teeth and the change of dietary habits as the children grow older. It was also suggested that caries resulted from peri-natal malnutrition.<sup>12-13</sup> Dental pain is consistently associated with high levels of caries experience.<sup>1</sup> It is important to find out the main risk factors for dental caries in the preschool children in Indonesia so that appropriate dental health promotion and caries prevention strategies can be developed. The limitation of this study is, due to study population not representing the entire country finding of this study cannot be generalized as national figures.

**Table 3. Mother's Oral Health, Behavior and Knowledge**

Variable	Proportion (%)
Oral Health	
Mothers with decay (Mean DMF-T of Mothers which comprise of component D)	90.0
Behavior	
Mothers who started to clean their children's teeth on the age more than one years old	62.0
Mothers who never notice their children's oral health	59.5
Mothers who use the same feeding and drinking equipments together with their child	48.4
Mothers who use the same toothbrush with their children	20.3
Knowledge	
Mothers who did not know that dental caries is an infectious disease	66.1
Mothers who considered that deciduous teeth are not important cause it will be replaced with permanent teeth anyway	54.3

The low dental health of children were accordance to that of their mothers'. 90% mothers had caries with DMF-T=7.8, consisting 99% of component decay. These high prevalence of dental caries shows the importance of paying special attention to oral hygiene and treatment of caries and by including mothers or caregivers in planning, conducting and evaluating dental health care preventive intervention programs.<sup>14</sup> Improvements in the delivery of dental care services and community-based dental health promotion activities are crucial. Special dental programs should be made available to children from lower socio-economic classes because they are the high risk groups for caries.

There is a high level of negligence in the oral hygiene of children. The importance of the primary dentition of oral health promotion must be focused on the education of mothers to motivate their children for oral hygiene. Unfortunately, we found "bad conviction" of mothers regarding primary teeth that they will be replaced, thus neglecting the care for children's teeth (Table 3). Cooperation of mothers is very important in overcoming the belief that the deciduous dentition can be neglected.

The lack of value of baby teeth and negative parental experiences are factors underlying health beliefs and behaviors. Therefore, understanding caregivers issues surrounding children's oral health is important to develop successful tailored made guidance to provide for a public health intervention in a high caries rate population. Arousing interest of mothers in learning about new preventive strategies to reduce dental disease is an initial step to promote child's dental health.

In a study of a multicultural community, only several new mothers reported that they actively sought out parenting information during their initial pregnancy.<sup>15</sup> It was also reported that aversive parental experience and disregard for primary dentition were identified as serious obstacles to be addressed in order for any new program to be effective.<sup>15</sup> Having new mothers open to information and strategies to reduce the prevalence of early childhood caries is considered an important factor of a success and sustainable oral health promotion.

Brushing teeth twice a day is an important mode of preventing dental caries. Effective brushing will remove dental plaques, which is the first step in dental decay. Using a tooth paste containing fluoride reduces decay by making enamel more resistant.<sup>16</sup> This study results showed high prevalence of dental caries in the studied population. This was in line with their tooth brushing behavior, where tooth brushing was not commenced at very young age. Despite that the high prevalence of dental caries in the presence of inadequate oral hygiene practices, these could also points towards wrong feeding practices as the cause. A study conducted in the same area revealed a high prevalence of wrong feeding

practices, like overnight feeding beyond two years of age and adding sugar to formula milk.<sup>16</sup> The accumulation of the negative behavior towards oral health, causing the process of dental caries beginning at very early age and progress steadily thereafter. An interventional program aimed at improving oral hygiene among preschool children is needed urgently.

## Conclusions

Dental caries among young children are a global problem. Scant attention is paid towards primary teeth, leading to high prevalence of dental caries. There are only few published studies done in Indonesia, addressing oral hygiene among preschool children that also relates to the mothers oral health behavior. Scientific evidence is in need to persuade authorities to establish a program promoting oral hygiene among preschool children. This study concluded that the prevalence of dental caries in studied sample were high, these were relevant to the findings that the mother's knowledge and behaviors' towards dental health were low. These in turn, demonstrated that mothers contributes greatly in their child's dental health. There for, prevention should be undertaken at an early age and it is very essential that mothers ought to be actively included in planning and conducting any dental health interventions.

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