

Predisposing, Enabling, and Reinforcing Factors in the Utilization of Preschool Children's Dental Health Services in Surabaya

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ABSTRACT

Dental and oral problems remain highly prevalent among preschool children, yet the utilization of dental health services in this age group is still low. This study aimed to analyse the relationship between predisposing, enabling, and reinforcing factors and the utilization of dental health services for preschool children in Gubeng District, Surabaya. An analytical observational study with a cross-sectional design was conducted on 100 mothers of preschool children attending kindergartens, playgroups, daycare centres, and early childhood education units in Gubeng District, Surabaya, selected by simple random sampling with the sample size calculated using the Lemeshow formula. Data was collected using a validated and reliable questionnaire covering sociodemographic characteristics, predisposing factors (knowledge and attitude), enabling factors (availability, accessibility, and financing), reinforcing factors (social support), and the utilization of dental health services. Normality testing was followed by Spearman correlation analysis. Most respondents were categorised as having low knowledge, low attitude, low facility availability, low social support, and low utilization of dental health services, whereas accessibility was mostly categorised as high. Attitude ($r = 0.402$; $p = 0.000$) and financing ($r = 0.409$; $p = 0.000$) showed moderate positive correlations with utilization, while knowledge ($r = 0.221$; $p = 0.027$) and accessibility ($r = 0.225$; $p = 0.024$) showed weak positive correlations. Facility availability ($p = 0.513$) and social support ($p = 0.574$) were not significantly related. Predisposing and enabling factors are related to the utilization of dental health services for preschool children, whereas reinforcing factors are not.

Keywords: dental health service; enabling factors; predisposing factors; preschool children; reinforcing factors

INTRODUCTION

Dental health is an integral part of general health and is therefore a lifelong investment [1]. Early dental health care is one of the key factors in maintaining dental health throughout life [2]. Preschool-aged children are a group that is vulnerable to dental and oral diseases, particularly caries [3]. Data from the 2018 Basic Health Research (Riskesdas) showed that 37.61% of children aged 3–4 years in East Java Province had experienced tooth decay, cavities, or dental pain, indicating that dental and oral problems remain considerable in this age group [4]. A preliminary study conducted in Gubeng

District, Surabaya, revealed that 40% of preschool children had experienced dental pain, which suggests that dental problems in this district are also still high.

Dental caries is one of the most prominent dental health problems in preschool-aged children [5]. Caries is damage to the hard tissues of the teeth caused by acids produced through interactions between microorganisms, saliva, and food debris, and preschool children tend to prefer sweet foods that increase the risk of caries [6]. The process begins when microbial biofilm forms on the tooth surface

and converts free sugars from food and drinks into acid, which gradually dissolves the enamel and dentin. When free sugar consumption remains high, fluoride exposure is insufficient, and plaque is not removed routinely, the damage progresses into cavitation and pain that affects oral health-related quality of life [7].

One of the behaviours that determines dental health status is the utilization of dental health services [8]. Regular dental visits allow existing dental diseases to be identified and treated, enable early detection and timely intervention, and therefore reduce the disease burden as well as the cost of treatment [9]. Riskesdas 2018 recorded that approximately 41.58% of children aged 3–4 years in East Java Province experienced dental and oral problems, but only 4.65% of them received care from dental health professionals [4]. A population-based study in the same province also reported that only 9% of residents had received dental treatment during the previous twelve months, with a lower educational background and living in a district rather than a municipality acting as indicators of lower utilization [11]. A preliminary study in Gubeng District showed that 80% of mothers had never taken their preschool children to a dentist and none made routine visits every six months, making Gubeng the area with the lowest dental visit rate compared with Genteng (70%) as well as Mulyorejo and Tambaksari (60%). Dental health problems will continue to arise when individuals who need dental care do not utilize the services that are available [10].

The formation of health behaviour can be explained through the theory proposed by Lawrence Green, which states that the utilization of health services, including dental health services, is influenced by predisposing, enabling, and reinforcing factors. Predisposing factors include individual knowledge and attitudes, enabling factors encompass the availability, accessibility, and financing of dental health facilities, and reinforcing factors involve social support from the surrounding environment [10]. This indicates that the decision to visit a dentist is determined not only by individual factors but also by external factors, so that a comprehensive approach to increasing dental visit rates must consider all of these factors [12].

Dental problems in childhood affect not only the oral cavity but also the overall quality of life of children. Children with a high caries experience have been shown to have significantly disturbed general health conditions and daily performance, including chewing disorders, difficulty in maintaining oral hygiene, sleep disturbances, and emotional instability [13]. Untreated caries may cause mouth

pain, difficulty chewing hard foods, sleep disturbance, school absence, and difficulty concentrating in class [14]. Based on this background, research is needed to analyse the relationship between predisposing, enabling, and reinforcing factors and maternal behaviour in utilizing dental health services for preschool-aged children in Gubeng District, Surabaya.

MATERIALS AND METHODS

This study was an analytical observational study using a cross-sectional design, conducted in Gubeng District, Surabaya. The population consisted of mothers of preschool-aged children enrolled in kindergartens, playgroups, daycare centres, and early childhood education units in Gubeng District, Surabaya. A total of 100 respondents were selected using simple random sampling, with the sample size calculated using the Lemeshow formula.

Data were collected using a questionnaire that had been tested for validity and reliability. Instrument validity was tested using the Pearson correlation test, and reliability was assessed using Cronbach's alpha. The questionnaire consisted of items on sociodemographic characteristics, predisposing factors (knowledge and attitude), enabling factors (availability, accessibility, and financing of dental health facilities), reinforcing factors (social support), and the utilization of dental health services for preschool children. Responses were measured using Likert and ordinal scales depending on the variable, and the mean score of each variable was used as the cut-off point to classify the variable into low and high categories.

Data analysis began with a normality test. When the data were normally distributed, the Pearson correlation test was used to evaluate the relationship between variables, whereas the Spearman correlation test was used when the data were not normally distributed. The strength of the correlation was interpreted from the correlation coefficient, and the relationship was considered significant when the significance value was below 0.05. This research obtained ethical approval from the Faculty of Dental Medicine, Universitas Airlangga, under approval number 0802/HRECC.FODM/VII/2024.

RESULTS

The instrument used in this study was declared valid, since all items had a significance value of less than 0.05 in the Pearson correlation test, and reliable, since the Cronbach's alpha coefficients exceeded the critical value of 0.4438. The sociodemographic characteristics of the 100 respondents are presented in Table 1.

TABLE 1: Sociodemographic Characteristics of Respondents.

Sociodemographic characteristics	n	%
Maternal age group		
Late adolescence (17–25 years)	6	6
Early adulthood (26–35 years)	52	52
Late adulthood (36–45 years)	39	39
Early elderly (46–55 years)	3	3
Child's gender		
Male	47	47
Female	53	53
Maternal education		
Elementary school graduate	3	3
Junior high school graduate	12	12
Senior high school graduate	52	52
University graduate	33	33
Maternal employment		
Unemployed	53	53
Employed	47	47
Family income		
Below city minimum wage	64	64
Above city minimum wage	36	36
Childcare		
Cared for by mother	69	69
Cared for by relatives	25	25
Cared for by caregivers	6	6

Total = 100 respondents (100%) for each characteristic.

Table 1 shows that most mothers were in the early adulthood group (26–35 years) and had graduated from senior high school. The gender distribution of the children was almost balanced, most families had an income below the city minimum wage, and most

children were cared for directly by their mothers. The description of the predisposing, enabling, and reinforcing factors and the utilization of dental health services is presented in Table 2.

TABLE 2: Description of Predisposing, Enabling, and Reinforcing Factors and the Utilization of Dental Health Services.

Variable	Category	n	%
Knowledge	Low	59	59
	High	41	41
Attitude	Low	57	57
	High	43	43
Availability	Low	75	75
	High	25	25
Accessibility	Low	49	49
	High	51	51
Financing	Low	53	53
	High	47	47
Social support	Low	74	74
	High	26	26
Utilization of dental health services	Low	53	53
	High	47	47

Total = 100 respondents (100%) for each variable; the mean score of each variable was used as the cut-off point.

Based on Table 2, most respondents had low levels of knowledge, attitude, facility availability, social support, and utilization of dental health services, while accessibility was mostly categorised as high.

The results of the correlation analysis between the three groups of factors and the utilization of dental health services are presented in Table 3.

TABLE 3: Relationship Between Predisposing, Enabling, Reinforcing Factors and the Utilization of Dental Health Services.

Group of factors	Independent variable	r	p
Predisposing factors	Knowledge	0.221	0.027*
	Attitude	0.402	0.000*
Enabling factors	Availability	0.066	0.513
	Accessibility	0.225	0.024*
	Financing	0.409	0.000*
Reinforcing factors	Social support	0.057	0.574

*Dependent variable: utilization of dental health services for preschool children; r = Spearman correlation coefficient; p = significance value; *significant at $p < 0.05$.*

Table 3 shows that maternal knowledge, attitude, accessibility, and financing were significantly related to the utilization of dental health services for preschool children. Attitude and financing showed moderate positive correlations, whereas knowledge and accessibility showed weak positive correlations.

The availability of dental health facilities and social support did not show any significant relationship with the utilization of dental health services. The relationship between sociodemographic characteristics and predisposing factors is presented in Table 4 and Table 5.

TABLE 4: Relationship Between Maternal Age, Maternal Education, Family Income, and Predisposing Factors.

Dependent variable	Statistic	Maternal age	Maternal education	Family income
Knowledge	r	0.075	0.345	0.310
	p	0.460	0.000*	0.002*
Attitude	r	-0.094	0.088	0.099
	p	0.351	0.385	0.328

*r = Spearman correlation coefficient; p = significance value; *significant at $p < 0.05$.*

TABLE 5: Relationship Between Child's Gender, Maternal Employment, Childcare, And Predisposing Factors.

Dependent variable	Statistic	Child's gender	Maternal employment	Childcare
Knowledge	r	0.322	0.304	0.324
	p	0.500	0.901	0.098
Attitude	r	0.374	0.294	0.348
	p	0.376	0.925	0.761

r = Spearman correlation coefficient; p = significance value; no correlation was significant at $p < 0.05$.

Table 4 and Table 5 show that maternal education and family income had weak but significant positive correlations with maternal knowledge, while maternal age was not significantly correlated with knowledge. None of the sociodemographic characteristics examined was significantly related to maternal attitude, and the child's gender, maternal employment, and childcare pattern were not significantly related to either knowledge or attitude.

DISCUSSION

According to Lawrence Green, individual health behaviour is influenced by predisposing factors, including knowledge, attitudes, traditions, and

health-related beliefs, which shape decision-making by affecting the perception of the importance and the benefit of health services [10]. A mother with adequate knowledge and a positive attitude towards her child's dental health is therefore more likely to utilize dental health services. The present analysis showed that maternal knowledge was significantly related to the utilization of dental health services, although the correlation was weak. This finding is in line with several studies that identified knowledge as a predisposing factor influencing health behaviour, including the maintenance of dental and oral health [15,16,17]. The weak correlation indicates that knowledge alone is not sufficient and

must be accompanied by a positive attitude and concrete action so that behaviour related to dental health services becomes optimal [18]. Both components are modifiable, since dental health promotion delivered either at school or through home visits has been shown to improve the knowledge of parents and caregivers effectively, with the school-based model producing a greater improvement in their attitude [19].

The attitude variable was significantly correlated with the utilization of dental health services with a moderate strength of association. A positive attitude towards health services influences the decision to use dental services, because such behaviour reflects a deliberate decision based on the perceived benefits and drawbacks of the service [20]. This result is consistent with previous studies that demonstrated a correlation between attitude and health-related behaviour, including the utilization of dental health services [21,22]. Although attitude reflects readiness to act, the realisation of that readiness into actual behaviour is still influenced by other factors such as socioeconomic status, knowledge, and the accessibility of services.

Enabling factors play an important role in the utilization of dental health services for preschool children, particularly the availability, accessibility, and affordability of the services. The availability of dental health facilities, including dental health personnel, infrastructure, and types of services offered, supports procedures such as filings and extractions, and a discrepancy between community needs and available facilities may hinder optimal service delivery [23]. Despite this, the present study found no significant relationship between facility availability and the utilization of dental health services. This result differs from previous reports [24] but is consistent with the finding that facility availability does not always determine service utilization [25], since factors such as affordability and the accessibility of the location may override the limitations of the facility itself [26].

Accessibility, which encompasses the physical and non-physical ease of reaching health facilities, showed a weak but significant relationship with service utilization. This finding is supported by a study reporting that respondents without transportation problems were more likely to visit dental clinics [27], and by the fact that accessible information about the available services can increase utilization. Innovations that shorten the distance between families and dental professionals, such as smartphone-based teledentistry screening, have also been reported to be capable of detecting caries and determining treatment needs in children aged 4–6 years, so they may serve as an alternative when physical access to a dental facility remains an obstacle [28]. Proximity to health facilities is likewise an essential factor, since a shorter distance facilitates more frequent visits [29,30].

Financing capacity was significantly related to service utilization with a moderate correlation.

Families with stable economic conditions are better able to bear the cost of dental health services, including transportation and medical expenses [31]. Health insurance also plays a critical role in reducing the financial burden and therefore encourages individuals to utilize health services more frequently, and membership in insurance programmes such as the national health insurance scheme has been shown to significantly affect the utilization of health services [32].

Social support plays a role in influencing the utilization of dental health services, since it includes physical, emotional, and financial assistance from family, friends, and the community, such as providing transportation, relevant information, motivation, or financial aid [33]. Nevertheless, the present study found no significant relationship between social support and service utilization, which contrasts with previous studies that identified social support as a significant factor [34,35]. The low level of social support observed among the respondents may explain this inconsistency, because in the absence of adequate support mothers tend to rely on personal motivation or economic conditions in making decisions. Support originating from outside the family may compensate for this condition, as oral health promotion programmes that simultaneously involve children, teachers, and parents consistently produce more favourable oral health behaviour and status than programmes directed at children alone [36].

The analysis also showed that maternal age was not significantly related to predisposing factors. This finding contradicts a study stating that experience and knowledge tend to increase with age [37], and the discrepancy may be explained by the fact that memory and the ability to process information tend to decline with age, particularly when physical barriers such as hearing and vision impairment are present [38]. In contrast, maternal education level showed a significant positive correlation with knowledge related to dental health services. Education plays a crucial role in enhancing the ability to acquire, understand, and process information, which produces differences in comprehension and level of knowledge [39], and mothers with a lower level of education tend to face difficulties in understanding health messages compared with those with a higher level of education [40]. Apart from formal education, the channel of information also matters, since social media has become a primary source through which mothers seek information about their children's dental health, although the content obtained still needs to be evaluated critically before being used as a basis for decision-making [41]. Conversely, no significant relationship was found between maternal education and maternal attitude, which may be due to other factors such as personal experience or the values held by the mothers [37].

The childcare pattern adopted by the mothers, whether care was given directly, with the assistance of a caregiver, or by relatives, was not significantly

related to maternal knowledge and attitude regarding the utilization of children's dental health services. This finding is consistent with a study that also showed no significant difference in health behaviour among mothers with different childcare patterns [42]. mothers explain this outcome is the relatively high educational level of the mothers, which enables them to understand their child's health condition and to convey the information to caregivers so that it is applied in daily childcare.

Maternal employment was likewise not significantly related to maternal knowledge and attitude. Employment may have both positive and negative impacts on children's health behaviour, since working mothers who play a dual role as homemakers and career women may face time constraints that limit their direct involvement in their children's lives and reduce opportunities to motivate and supervise health behaviour such as visiting dental facilities [43]. This is supported by a study stating that homemakers tend to support optimal child development because they are constantly present in their children's lives and can therefore quickly notice abnormalities in growth and development [44]. Family income, which is closely related to employment, was significantly related to maternal knowledge although with a weak correlation. Occupation determines social status, which in turn affects access to basic needs such as food, housing, and medical care, and parents with stable financial conditions are better able to provide quality health services for their children [45]. This finding is in line with a study reporting a link between income and health service utilization, in which respondents with higher family income tended to utilize health services more frequently [31].

This study has several limitations. The cross-sectional design does not allow causal relationships between the studied factors and the utilization of dental health services to be established, and the data were obtained through self-reported questionnaires filled in by the mothers, so recall bias cannot be excluded. The study was also limited to one district, which restricts the generalisability of the findings to other areas. Future research is recommended to use a longitudinal design, to involve a wider area, and to include health service provider factors as well as the perception of need, so that the determinants of dental health service utilization in preschool children can be explained more comprehensively.

CONCLUSIONS

Predisposing factors in the form of maternal knowledge and attitude and enabling factors in the form of accessibility and financing are significantly related to the utilization of dental health services for preschool children in Gubeng District, Surabaya, whereas the availability of facilities and the reinforcing factor of social support are not. Maternal education and family income are weakly but significantly related to maternal knowledge, but none of the sociodemographic characteristics is related to maternal attitude. Efforts to increase the

utilization of dental health services in this area therefore need to be directed towards improving maternal knowledge and attitude as well as strengthening financial support, with special attention given to mothers with a lower level of education and income.

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CONFLICT OF INTEREST

The authors declare that there is no potential conflict of interest with respect to the research, authorship, and publication of this article.

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