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Analysis of parental perceptions of dental and oral hygiene maintenance with oral hygiene condition of down syndrome in Surabaya: Cross-sectional

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Abstract
Background: The purpose of this study was to analyze the relationship between parental perceptions of maintaining oral hygiene with the condition of oral hygiene down syndrome in the Surabaya area.
Materials and Methods: This type of research is quantitative analytic observational with a cross-sectional design. Respondents involved were 100 parents with down syndrome and 100 children with Down syndrome. Data collection used a questionnaire instrument to measure parental perceptions of Down syndrome and dental examination sheets to measure oral hygiene conditions for down syndrome. Data analysis used the Spearman correlation test.
Results: Parental perception of down syndrome shows the same percentage of high and low scores (50%). Most oral Hygiene down syndrome conditions show a low value (54%). Spearman analysis showed a significant relationship between parents' perceptions of Down syndrome and the condition of oral hygiene down syndrome with a negative correlation (p-value = 0.000; r = -0.586).
Conclusion: The level of parental perception of down syndrome is significant with the condition of oral hygiene down syndrome.

Keywords: parents with down syndrome, perception of HBM, oral hygiene down syndrome

Introduction

Down syndrome is a congenital disease characterized by human chromosomal abnormalities and typically underlies some degree of cognitive impairment and certain types of somatic traits. Down syndrome population occurs between 1 in 400-1500 babies born in different populations [1]. Down syndrome is an intellectual disability caused by genetic factors [2]. Recent studies have found that the prevalence of Down syndrome is 8.72 per 10,000 population every year. Riskesdas reported that in 2013, the prevalence of Indonesian children aged 24-59 months with disabilities, including Down syndrome, was 0.13% [5]. Down syndrome has specific orofacial characteristics that can increase the risk of oral health problems [2]. Down syndrome has problems such as limitations in cognitive and motor development. Children with down syndrome often have the periodontal disease due to poor oral hygiene and dental plaque, debris, and calculus accumulation [6]. Inadequate oral hygiene can cause dental caries; some researchers are still controversial about the experience of dental caries in children with down syndrome. While some studies show that people with this syndrome have a lower caries experience than nonsyndromic individuals [7]. Parents and caregivers often face the problem of children's oral health care for down syndrome. Therefore, it is needed even though oral health care is needed comprehensively so that optimal treatment is achieved [8]. Good oral hygiene is essential in obtaining optimal dental and oral health conditions. Poor oral hygiene is characterized by plaque and calculus deposits that can cause periodontal disease [9]. One way to measure oral hygiene status is using the simplified Oral Hygiene Index (OHI-S) by measuring the amount of plaque and calculus on the representative teeth in each oral region. Then the plaque and calculus scores were accumulated to determine the OHI-S value, which describes the individual's oral hygiene status. Maintenance of oral hygiene recommended by dentists is fundamental to preventing periodontal disease [10]. Health problems resulting from poor oral hygiene are among the four most expensive preventable and treatable health conditions in many industrialized countries [11]. Viewed from the theory health belief models(HBM) from Becker & Rosenstostock in Glanz *et al*., individual health behavior is influenced by perceptions/beliefs of susceptibility to disease (Perceived susceptibility), perceptions of the consequences/ the seriousness of the disease (Perceived Severity), gains for engaging in the recommended health behavior (Perceived benefits), the magnitude of the obstacles encountered (Perceived barriers), readiness to run (Cues to action), and confidence to take action (Self-efficacy) [12]. Parental perceptions of oral health status, dental problems, and preventive dental care for children with special needs, including down syndrome very important. Their perceptions can significantly influence preventive care and treatment options [8]. The Health Belief model has been widely applied to various medical problems in health promotion research, but its application in dental and oral hygiene research still needs to be improved. Based on the existing phenomena and supported by the

results of the study, it is necessary to analyze the relationship between parental perceptions of maintaining oral hygiene and oral hygiene condition of down syndrome in Surabaya area Indonesia.

Materials and Methods

This is a type of observational quantitative analytic research with a cross-sectional research design. This study involved parents of children with down syndrome and down syndrome came from SLB schools throughout the city of Surabaya and the Association of Parents Down Syndrome (POTADS). A total of 100 subjects parents of children with down syndrome and 100 subjects of down syndrome. The sampling technique is done by simple random sampling. The inclusion criteria for this study included: 1) Parents who have children with down syndrome mild and moderate categories and are willing to be respondents; 2) Down syndrome levels are mild and moderate. Researchers firmly guarantee that the identity of research participants will be kept confidential and fully protected. This research has gone through ethical approval approved by the ethical commission of the Surabaya Ministry of Health Poltekkes with ethical number: EA/996/KEPK-Poltekkes_Sby/V/2022. This study used dental examination sheets to measure oral hygiene status with down syndrome and a questionnaire instrument that had been tested for validity and reliability to measure parental perceptions of maintaining oral hygiene with down syndrome. The data analysis used in this study is the Spearman correlation test.

Results

Table 1: Frequency of Conditions Oral Hygiene Down Syndrome and Perception Health Belief Model Down Syndrome Parents About Dental and Oral Hygiene Maintenance

Variable	Number	Percentage
HBM Perception		
- High	50	50
- Low	50	50
Oral Hygiene Condition		
- High	46	46
- Low	54	54

Based on table 1, the perceptions of parents who have children with down syndrome about maintaining dental and oral hygiene have the same score between low and high categories (50%), while the oral hygiene conditions for children with down syndrome mostly have low scores (54%). The value of oral hygiene down syndrome low in this study is an oral hygiene condition that is close to the excellent category status, where the higher the value of the oral hygiene condition, the worse the dental and oral hygiene status.

Table 2: The result of spearman correlation test analysis statistic

Variable	Oral Hygiene Condition of down syndrom	
HBM Parental Perceptions	r	-0,586
	P value	0, 000
	number	100

Based on table 2, a significance value of 0.000 is obtained, indicating a very significant relationship between the perception of the HBM of parents with down syndrome regarding the maintenance of dental and oral hygiene with the condition of oral hygiene down syndrome. The Spearman correlation value is equal to the direction of negative correlation -0.586 which indicates that the direction of the negative correlation with the strength of the correlation is strong, the higher the perceived HBM value of the parents of down syndrome, the tendency of the value of the oral hygiene status of down syndrome to be low, the value of the low oral hygiene status means the better the oral status. respondent hygiene.

Discussion

Following the results of research conducted on children with down syndrome at SLB BCD Bandung Indonesia, it shows that the value of dental and oral hygiene debris index for children with down syndrome is in the moderate category (67%), while the index calculus is in a good category, overall the value of dental and oral hygiene is in medium category [13]. The majority of this research involves the down syndrome group of 20 years from various school-level backgrounds, ranging from elementary school to high school and above. When they were checked for oral hygiene using the Oral Hygiene Index Simplified (OHIS) dental hygiene index by discussing disclosing solutions on all index teeth, some were cooperative, and some had to be accompanied by their the class teacher or parents because down syndrome is a unique personality. Children with down syndrome aged less than ten years need more excellent supervision from adults, including parents or caregivers, in terms of oral hygiene practices. Some literature says that they cannot do toothbrushing activities independently [14]. As the age of down syndrome increases, there is an increase in the ability to chew food and in motor control of the tongue, which will affect the cleanliness of the teeth and mouth [15]. Research conducted by Scaloni *et al* involving all parents or

caregivers in the city of Juiz de Fora, Brazil, showed that 55.1% of parents/caregivers/adolescents with down syndrome had a positive perception of their child's dental and oral health, while parents/caregivers down syndrome aged between four and nine years have a more negative perception of the dental and oral health of their son/daughter [15]. In this study, that perception Health Belief Model down syndrome parents about maintaining oral hygiene can contribute to the value of the oral hygiene status of children with Down syndrome. There is a tendency towards a negative correlation between the perception of HBM and the oral hygiene status of down syndrome, where the higher the HBM perception value of the parents of down syndrome, the higher the value of the HBM perception of the parents. Oral hygiene down syndrome tends to be low, and status values oral hygiene lower means the better the oral hygiene status of the respondent. Perception Health Belief Model this study uses four domains consisting of perceived vulnerability, perceived severity, perceived benefits, and perceived barriers. The results showed that the perception of the vulnerability of parents with down syndrome children stated that they strongly disagreed and agreed that their children were vulnerable in terms of dental and oral hygiene. In the results of the statement on the perception of the severity of the parents of children with down syndrome, the majority stated that they strongly agreed that their children would experience severity due to dental and oral hygiene. On the perception of the benefits of the average parents of children with down syndrome, many stated that they strongly agreed and agreed in terms of maintaining oral and dental hygiene. Meanwhile, the perception of barriers, on average, stated that they strongly disagreed in terms of maintaining oral and dental hygiene. Health Belief Model is one of the essential models showing the relationship between health beliefs and behavior and is based on the assumption that prevention of action is a person's belief. Health Belief Model is individual behavior influenced by individual beliefs or perceptions about a disease and the existence of strategies to reduce the incidence of a disease. HBM is used for various health problems, including cervical cancer, osteoporosis, diabetes treatment, dental health, and dental plaque control [8].On the other hand, vidence also shows that HBM-based interventions effectively improve adherence to oral health care instructions among adults and schoolchildren. Previously, the emphasis on HBM-based health behaviors focused on vulnerability, severity, and benefit [14]. Similar research says that parental empowerment in brushing teeth and controlling sugar-free to prevent it from happening early childhood caries (ECC) uses the HBM approach, which is distributed to parents via short messages, SMS [14]. Ulfah.'s research shows that the mother's perception of the vulnerability of the mother's perception of the vulnerability, severity, and benefits of children's dental health down syndrome show a positive perception, and perceived obstacles show negative perception results [8]. The vulnerability and severity that a person feels have a strong understanding and depend on the individual's knowledge. A strong understanding of the vulnerability felt by the child's mother's down syndrome can raise the level of awareness of oral health care for their children [15].Perception Health Belief Model down syndrome parents regarding the maintenance of oral hygiene can play a role in determining the oral hygiene status of down syndrome. The perception of susceptibility, severity, benefits and barriers to dental health in down syndrome that parents already have will increase how important it is to maintain oral and dental hygiene in children with down syndrome. Down syndrome is an individual who is different from other typical children who can keep their teeth and mouth clean while down syndrome is an individual who is very susceptible to dental and oral diseases because they have. There are many limitations to maintaining oral and dental hygiene, so the full role of parents is needed even though they are adults.

Conclusion

Parental perceptions of down syndrome, both those with high and low perceptions, can contribute closely to the condition of oral hygiene with down syndrome. In this case, the condition of oral hygiene with down syndrome in the Surabaya area is primarily low, which is an oral hygiene condition close to the excellent category.

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