

The Level of Oral Hygiene of Down Syndrome Patients in POTADS Foundation

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Abstract: *The level of oral hygiene is based on the oral cavity condition that is free from plaque and calculus accumulation measured by the oral hygiene index. Down Syndrome is a congenital disorder caused by trisomy in the 21st chromosome causing physical, motoric, and intellectual limitations with a large medical and social impact. The purpose of this study was to determine the level of oral hygiene in patients with Down Syndrome at the POTADS Foundation Bandung in 2018. This was an observational descriptive study on 30 children with Down Syndrome as subject, obtained by consecutive admissions technique. The degree of oral hygiene was based on the presence of plaque and calculus on the tooth surface measured by plaque and calculus index through clinical examination using disclosing solution. The result of the study showed the level of oral hygiene in patients with Down Syndrome in POTADS Foundation were: good OHI-S index in 18 of 30 children, moderate OHI-S index in 12 children, and none had bad OHI-S index. The level of oral hygiene of Down Syndrome children at POTADS Foundation were in good category.*

Keywords: Oral hygiene, Down syndrome, trisomy, chromosome

1. Introduction

Down Syndrome (DS) is a congenital disorder that might be followed by medical and social impacts caused by chromosomal trisomy 21.[1] DS is the most often found genetical disorder all over the world, and occurred on 1 of 400-1500 newly borns.[1] Based on the data from Riskesdas (2013) DS disorders were 0.12% in 2010 and increased to 0.13% in 2013.[2] A study on the frequency of DS in Priangan, West Java, found 459 persons had DS that was similar with 0.07% of the total population, consisted of 55.39% males and 45.11% females.[3]

The oral cavity of DS children usually have gap and fissure. The fissural forming of the tongue is a contribution of 'halitosis'. The palatum of DS children looked narrow with sharp basin that might have influence in speaking function and mastication.[4] Sometimes there is a delay of the primary teeth eruption, premature primary teeth, no lateral 'insisivus' teeth of the upper jaw, anomaly of the tooth form, periodontal diseases, malocclusion and prognathion of the lower jaw. [5]

Stefanovska et al (2010) stated that worse oral hygiene and the increasing periodontal diseases were the main problem in individuals with disabilities.[4] Age 0-9 years is a susceptible period in children upon the oral diseases, as they still need the help of the parents or family member in keeping the oral hygiene, and the same condition is found in handicapped children who have very high risk in their oral hygiene.[6,1] Several reports about the oral hygiene in DS children from Bosnia and Herzegovina in 2016 stated 43.9% had very good oral hygiene, 33.3% had good oral hygiene, 15.8% had bad, and 7.01% had very bad oral hygiene.[7]

Based on those reports, it was concluded that the level of oral hygiene of DS children is one of the problems to be attended. There had been several studies about the level of oral hygiene in DS children, but the data about the level of oral hygiene of DS children in POTADS Foundation Bandung is still unpublished. This makes the author(s)

intend to find out about the level of oral hygiene of DS children in POTADS Foundation Bandung.

2. Methods

This was a descriptive observational study. The subjects were Down Syndrome (DS) children in POTADS Foundation, Bandung City. The subjects were collected through consecutive admission technique when they came to have examination of their oral hygiene at RSGM Faculty of Dentistry UNPAD.

The materials used in this study were gloves, masks, sonde, mouthwash, alcohol 70%, informed consent, examination forms, stationary, dental unit. The study was carried out during December 2018 at RSGM Faculty of Dentistry Unpad after getting the ethical clearance No. 1265/UN6.KEP/EC/2018 from the Research Ethical Committee Unpad. The parents were firstly asked to fill in and sign the informed consent as their approval to carry out (to be involved in) the study. The patient was seated on the dental unit and the operators put on the mask and gloves. Clinical examination was done by applying the disclosing material on the surface of the teeth examined, or shed the disclosing solution under the tongue; let and wait for several seconds until the saliva were collected. Then the patient was asked to rinse the mouth using the collected saliva. The plaque and calculus index were noted on the examination form.

The collected data were noted, processed and analyzed using the descriptive data analysis to be performed in table forms.

3. Results

Table 1 shows the characteristics of the respondents.

Table 1: Characteristics of the respondents based on sex and age

Age (year)	Male	Female	Total	%
2-5	2	11	13	43.33
6-10	4	7	11	36.67
11-15	3	1	4	13.33
16-20	1	1	2	6.67
Total	10	20	30	100.00

Table 1 shows 13 of 30 respondents were 2-5 years old consisted of 2 males and 11 females (total 13 = 43.33%); 11 were 6-10 years old consisted of 4 males and 7 females (36.67%), and 4 (13.33%) were 11-15 years old consisted of 3 males and 1 female, and 2 (6.67%) were 16-20 years old consisted of 1 male and 1 female. Based on the result in Table 1 it was concluded that female respondents were more compared to males (2: 1).

Tables 2 and 3 show the plaque and calculus index of the respondents using the Oral Hygiene Index Simplified (OHI-S) for permanent teeth and Oral Hygiene Index-Simplified Modified (OHI-S Modified) for deciduous teeth.

Table 2: Distribution of Plaque Index of the Respondents

Plaque Index	Criteria	Male	Female	Total	%
0,0 – 0,6	Good	1	4	5	16.67
0,7 – 1,8	Medium	5	13	18	60.00
1,9 – 3,0	Bad	4	3	7	23.33
Total		10	20	30	100.00

Table 2 shows 5 (16.67%) of 30 respondents had good category of plaque index; 18 (60.00%) have medium criteria, and 7 (23.33%) had bad criteria of plaque index.

Table 3: Distribution of Calculus Index of the Respondents

Calculus Index	Calculus	Male	Female	Total	%
0,0- 0,7	Good	10	20	30	100.00
0,8-1,8	Medium	0	0	0	0.00
1,9-3,0	Bad	0	0	0	0.00
Total		10	20	30	100.00

Table 3 shows that all of the 30 respondents (100%) had good criteria of calculus index.

Table 4 shows that the index of oral hygiene is the total of plaque index added with calculus index.

Table 4: Distribution of Oral Hygiene Index of the Respondents

OHI-S	Male	Female	Total	%
Good	5	13	18	60.00
Medium	5	7	12	40.00
Bad	0	0	0	0.00
Total	10	20	30	100.00

Table 4 shows 18 (60%) of 30 respondents had good index of OHI-S, 12 (40%) had medium index, and none (0%) had bad OHI-S index.

Table 5 shows the rate of plaque index, calculus index and the index of oral hygiene of the respondents.

Table 5: The rate of Plaque Index, Calculus and OHI-S Index of the respondents

Index	Average	Criteria
Plaque	1,29	Medium
Calculus	0	Good
OHI-S	1,29	Good

Table 5 shows the rate of plaque index of the respondents is 1.29 medium criteria; the rate of calculus index is 0 good criteria, and the rate of OHI-S index is 1.29 good criteria. Based on those results, the level of oral hygiene of the respondents were in good category.

4. Discussion

Table 1 shows the characteristics of the respondents based on sex and age; consisted of 20 (66.67%) females and 10 (33.33%) males. The comparison of female and male respondents was 2:1. This shows that the total of female DS patients in POTADS Foundation Bandung is more than males. Some literatures revealed that the comparison of male and female Down Syndrome patients was not significant.

Table 2 shows that most of the respondents (60.00%) were DS patients with medium plaque index. This means that most of the respondents were unable to care their oral hygiene. The level of oral hygiene could be seen through the process of plaque forming. Plaque is the main etiologic factor in caries forming and pedodontal diseases, because plaque has pathogenic bacteria's stuck on the surface of the teeth and gingiva. Preventing and eliminating the plaque accumulation might become an effort to prevent oral diseases and to increase the oral hygiene.[8] Plaque accumulation might be prevented by daily care of the oral hygiene. The plaque accumulation might be controlled by mechanically control of the plaque, namely the right way to brush the teeth and chemically control the plaque by applying topical material that might prevent bacterial stuck on the surface of the teeth.[6] Uncleansed plaque might then cause damage of the periodontal network and tooth caries.[10] Parents' or caregivers' assistants is needed in brushing the teeth of DS patients.[11,12]

Table 3 shows that all of the respondents (100%) were Down Syndrome patients with good criteria of calculus index. Calculus is a hard deposit that is formed by mineralisation of the plaque and covered by unmineralized plaque.[13,14] Calculus forming could be prevented by cleaning the formed plaque as soon as possible. Tooth brushing is the most effective way to prevent the plaque as well as the calculus forming. The frequency of daily tooth brushing may be variable. The recommended time to brush the teeth is after the meals and before bed-times.[15,16]

The fast calculus forming for mineralization needs about 12-13 days and slow calculus forming is about 20 days. This result showed that the respondents had unmineralized plaque to become calculus, and made the respondents show the calculus index in good criteria (100%).

Table 4 shows that most of the respondents (18 = 60.00%) were DS patients with good criteria of oral hygiene. Some reports about the oral hygiene of DS patients in Bosnia and

Herzegovina stated that 43.9% had very good oral hygiene, 33.3% had good, 15.8% had bad, and 7.01% had very bad oral hygiene.[7] The result of this study is similar with the study by Chrisly et al (2017) in Manado that found out 75% DS patients had oral hygiene in good criteria, 16.7% medium criteria, and 8.3% bad criteria.[4] This condition shows that nowadays the oral hygiene in DS patients is good. This might be influenced by several factors such as microdontia that makes gap between the teeth (diastema), konus formed tooth, have macroglossia, and consistently flow of the saliva that makes the oral cavity wet, and have self cleansing function that inhibit the growing of the plaque.[17,18]

Table 5 shows the rate level of oral hygiene of the respondents had the OHI-S index criteria of good (1.29); the rate of plaque index of medium (1.29, and calculus index of good (0). One of the factors influencing the oral hygiene of DS patients is the slower development compared with normal children, one of which is the resistancy of motoric ability. The slower development makes difficulties for the DS patients to care their oral hygiene.[19] A good teamwork of all sides is needed to get a successful result in oral caring of DS patients and the dentists understand the Pedodontic Treatment Triangle. Pedodontic Treatment is a picture of a triangle components in pedodontic treatment that have a strong relationship; the child position on the top of the triangle, and, the parents and the dentists on each of the triangle sides. The lines show the two-way communication from each component as a two-way relationship. The child becomes the focus of the dentists and assisted by the parents. The parents must teach or embed discipline in caring the oral hygiene since early. The dentists also have important role in educating the parents about the importance of caring the oral hygiene to get better condition of their oral hygiene. [4]

5. Conclusion

Based on the result of the study on Down Syndrome children at POTADS Foundation, Bandung City, it was concluded that the level of oral hygiene of DS patients at POTADS Foundation, Bandung City is generally in good category.

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