Identifikasi *Caries Risk Assessment* Pada Anak Tunadaksa Usia 6-12 Tahun di SLB Negeri 1 Bantul Yogyakarta

Caries Risk Assessment Identification In Orthopedically Handicapped Children Aged 6-12 years old at SLB Negeri 1 Bantul Yogyakarta

Alfini Octavia[1]

Chairunnisa Istiqomah[2]

Dosen PSKG FKIK UMY[1], Mahasiswa PSKG UMY[2]

Abstract: *Dental caries is the sixth highest health problem in Indonesia. This has huge impact on disturbance in the quality of life, therefore we need to reduce caries by identifying the risk of caries. School-age children is a group that has high caries risk especially children with orthopedically handicapped. Due to orthopedically handicapped children has a dependence in the process of cleaning their teeth and mouth. The aim of this study is to know caries risk assessment in orthopedically handicapped children aged 6-12 years in SLB Negeri 1 Bantul Yogyakarta.*

The method of this study is descriptive observational with total sampling technique. The population of this study were all orthopedically handicapped children aged 6-12 years in SLB Negeri 1 Bantul Yogyakarta and 19 students were chosen by inclusion and exclusion criteria. Caries risk is measured by the Caries Assessment Tool (CAT) of the American Academy of Paediatric Dentistry (AAPD).

The results were obtained from 19 students data showed that 18 students had high risk of caries and 1 student with low risk of caries. The conclusion of this study is orthopedically handicapped children aged 6-12 years old in SLB Negeri 1 Bantul Yogyakarta have high risk of caries.

Keyword*: Caries risk, orthopedically handicapped children, aged 6-12 years old*

Abstrak: Karies gigi merupakan masalah kesehatan tertinggi keenam di Indonesia. Hal ini memiliki dampak yang luas pada gangguan kualitas hidup, maka diperlukan upaya untuk mengurangi karies dengan mengetahui risiko karies. Usia anak sekolah merupakan salah satu golongan yang memiliki risiko karies tinggi khususnya pada anak berkebutuhan khusus tunadaksa. Penyebabnya karena anak tunadaksa memiliki ketergantungan dalam proses membersihkan gigi dan mulutnya.Tujuan dari penelitian ini adalah untuk mengetahui *caries risk assessment* pada anak berkebutuhan khusus tunadaka usia 6-12 tahun di SLB Negeri 1 Bantul Yogyakarta.

Metode penelitian yang digunakan adalah deskriptif observasional dengan pengambilan sampel menggunakan teknik *total sampling*. Populasi dari penelitian ini adalah seluruh anak tunadaksa

usia 6-12 tahun di SLB Negeri 1 Bantul Yogyakarta dan didapatkan sampel sebanyak 19 siswa yang sesuai dengan kriteria inklusi dan eksklusi. Risiko karies diukur dengan *Caries Assessment Tool* (CAT) dari *American Academy of Pediatric Dentistry* (AAPD).

Hasil yang diperoleh dari 19 data siswa yang diperiksa adalah 18 siswa memiliki risiko karies tinggi dan 1 siswa dengan risiko karies rendah. Kesimpulan dari penelitian ini yaitu anak berkebutuhan khusus tunadaksa usia 6-12 tahun di SLB Negeri 1 Bantul Yogyakarta memiliki risiko karies tinggi

Kata kunci: Risiko karies, anak tunadaksa, usia 6-12 tahun

INTRODUCTION

Caries is a hard tissue disease of the teeth, namely email, dentine, and cementum, which is caused by the activity of a microorganism in a carbohydrate that can be fermented. It can be known by demineralization of hard tissue teeth then it is followed by the damage of the organic material. It causes bacterial invasion, so there will be the deployment of infection to the periapical tissue and causing pain[1]. The research showed that dental caries is the sixth most common health problem in Indonesia[2]. The prevalence of dental caries in Indonesia ranks first among other dental diseases namely 45.3% [3].

Dental caries has a broad impact on life quality disorders so it needs efforts to reduce the risk of caries in individuals[4]. The caries risk is the possibility of developing caries in a certain period[5]. School-age children have high caries risk. School age is the age range of 6 to 12 years that is often called a vulnerable period because of the period of change of primary teeth to permanent teeth, so that the teeth will be susceptible to damage[6].

The children who have high caries risk in this case are children with special needs who need to get more attention. Some studies stated that children with special needs have high rates of dental caries namely deafness, physical disability, and mental retardation due to inability in carrying out daily activitiy[7]. In this case, children with special needs, especially in children with physical disabilities namely handicapped, they have limitation to do oral cleaning procedures and they need help from other people[5]. Physical disability is a damaged or disturbed condition as a result of a disruption of shape or resistance to the bones, muscles, and joints in their normal function[8]. This dependence can increase the risk of caries on physical disability children.

The caries risk possessed by each individual varies depending on the balance of trigger factors and inhibitors of caries[5]. The measurement tool that can be used to determine caries risk is to use the risk assessment caries. Caries-Risk Assessment (CRA) serves to assess the high risk of caries[9]. CRA is important in guiding doctors to determine diagnosis, prognosis and treatment recommendations for patients[10]. By circling the conditions of each factor such as biological factors, protective factors, and the clinical findings listed on the CRA sheet will help practitioners and patients/ parents understand the factors that contribute to caries. The categories for this assessment are

low, medium and high risk[9]. To know the risk level of caries in children with physical disability, this tool can be applied in schools, one of which is SLB. The aim of this study is to know how the results of the risk assessment caries on physical disability children aged 6-12 years old at SLB Negeri 1 Bantul Yogyakarta.

MATERIAL AND METHOD

This study was an observational descriptive study to find out the risk of caries in children with physical disabilities aged 6-12 years old that was conducted at SLB Negeri 1 Bantul Yogyakarta. This research was conducted in January 2019 - February 2019. The population of this study was all students with physical disabilities aged 6-12 years in SLB Negeri 1 Bantul Yogyakarta. The sampling used total sampling technique with inclusion and exclusion criteria. The inclusion criteria included students with physical disabilities at SLB 1 Bantul Yogyakarta, children who were 6-12 years old in January 2019, cooperative children, and ready to take part in the study. While the exclusion criteria included students who were absent during the study, who had other physical disabilities, children who had systemic diseases, and children with certain drug therapies. There were 19 children who appropriate with the inclusion criteria.

The CRA used was from the American Academy of Pediatric Dentistry (AAPD). The way to find out caries risk with CRA AAPD is to fill in the form. In the form, there was an intra-oral examination that was conducted by using a diagnostic set, 10 ml measuring tube, and funnel and interview.

Before conducted the interview, parents or guardians filled informed consent. If it was approved to conduct the research, then it proceed with filling out a questionnaire with the questions listed on the CRA AAPD. After that, an intraoral examination was carried out with a salivary rate examination with no stimulation technique, if the saliva examination result was <0.1 ml/ minute, then the child can be stated that he had a low salivary rate.

Each question had different quality in determining the level of caries risk. The caries risk category was divided into: 1) Low risk, with criteria: patients brushed their teeth every day with fluoride toothpaste, got additional treatment namely xylitol, patients took care to the dentist every 6 months, patients consumed drinking water with optimal fluoride, patients got additional fluoride protection. 2) Moderate risk, with criteria: patients had damaged restorations, patients used intraoral devices, patients with special needs, and patients were immigrants in the near future. 3) High risk, with criteria: had interproximal lesions, had email damage (white spot lesion), had a low salivary flow rate, patients consumed sweet snacks> 3 times a day, and had low economic status.

RESULTS

Table 1. Results of caries risk assessment

Level of caries risk	F	%
Low	1	5,3
Moderate	0	0
High	18	94,7
Total	19	100

Table 1 shows caries risk assessment level of physical disorder children, from 19 students (100%), there are 18 students have high risk (94,7%) and 1 student has low risk (5,3%).

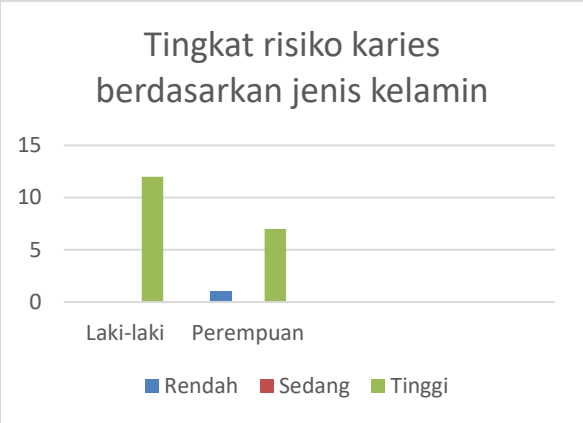

Fig 1. Caries risk assessment results based on gender

Fig 1 shows that caries risk assessment level based on gender, male students have higher risk (63,2%) than female students (36,8%) and only one female student has low risk (5,3%).

Table 1. Caries risk assessment results based on age

Usia	Risiko Karies		
	Rendah	Sedang	Tinggi
6	-	-	-
7	-	-	-
8	-	-	2
9	-	-	3
10	-	-	6
11	1	-	2
12	-	-	5
Total	1	-	18

Table 2 shows caries risk assessment level based on age, students age 10 years old have higher risk (31,6%) than the other age and there is one student with low risk (5,3%). There is no student with moderate risk.

DISCUSSION

The results of the examination showed that the level of risk of caries in children with special needs from the age of 6-12 years in SLB Negeri 1 Bantul Yogyakarta in accordance with the assessment of the form. The level of caries risk of the most students, both male and female students had an average high risk with a percentage of 94.7%. From the 19 subjects, it only found 1 student with low caries risk level. A research stated that DMF-T status in children with physical disabilities was in the high category[7]. It is well known that caries risk is the possibility of the people caries development or a change in health status that supports the occur of caries[5]. From this statement, it can be concluded that caries risk has a correlation with DMF-T status.

The conditions of Children with special needs are different of the normal children and they need more protection than the possibility of tooth decay. In addition, children with physical disabilities have limitations in their mouth cleaning procedures and they need help from other people. This dependence can increase predisposing factors for high caries[11]. Children with special needs have high caries and periodontal disease rates. This is due to limitations in doing oral hygiene. In children with motoric limitations, the difficulty is found in closing their mouth, chewing, and swallowing reflexes which causes long periods of food contact with the teeth. Because teeth take longer to come into contact with food, it can lead to high caries

risk. In addition, children with motoric limitations also have deviations in the activity of muscle mastication, swallowing, lip and cheek muscles[12].

Other factors that were found in the AAPD questionnaire also influenced the results of high risk of caries. The biological factor namely socioeconomic level influenced the risk of individual caries. The poor population has a risk of experiencing caries 1.4 times greater than the rich population. The frequency of sweet foods consumption also affected the level of caries risk, based on a research that was conducted by Holbrook stated that children who consumed sugary foods or drinks four or more times or children who ate snacks three times per day or more increased caries scores[13]. Protective factors namely giving fluorine can affect the level of risk of caries in individuals, giving fluorine can be in various ways such as drinking water, toothpaste, and applied by a dentist. Based on a research in 1970, there was a nearly 50% reduction in caries of areas that receiving fluoridation of drinking water compared to those without fluoridation[14].

In Picture 1, it shows that the magnitude of caries risk in children with physical disability aged 6-12 in SLB Negeri 1 based on gender, from the results of the study showed that the number of male students who were examined was greater than 12 female students, but the results showed that all male students who were examined had high caries risk with a percentage of 63.2%. Whereas in female students totaling 7 students, it was found that 6 students with high caries risk and 1 student with low caries risk. It shows that boys have a higher risk of caries than girls. It can be caused by variations in gender can affect the pattern of children's behavior in maintaining dental and oral hygiene and the desired aesthetic needs[16]. However, the results of this study were not in accordance with Suwelo's (1992) statement that the prevalence of dental caries in girls is higher than in boys because in girls the teeth erupt faster so that the teeth of girls are longer in the oral cavity and are longer exposed by causes of caries. The same thing was stated by Zandona (2013) that the risk of dental caries of girls was higher than that of boys. It can be examined by several things such as the speed of saliva flow, hormonal fluctuations, dietary habits, genetic variation, and behavior in the family. In this study, it could be seen that the results of higher caries risk in male students could be due to the unbalanced of male and female students number that were examined[17].

In the table 2, it shows the high risk of caries for children with special needs of physical disabilities for the aged 6-12 years in SLB Negeri 1 Bantul Yogyakarta that were divided by age. The results showed, children aged 6-12 years in each period had the same risk with high risk, involving only 1 student at the age of 11 who had a low caries risk. Setiawan et al. (2016), stated the risk of caries in children aged 6-12 years had an average at a high risk level. The similar thing was also conducted in the research at SDN 161 Palembang with the results of the caries prevalence of children aged 6-12 years reaching 100%. It can be caused by the diet of elementary school students who prefer sweet food, it can trigger the caries. In addition, children's knowledge, awareness, and independence in health and hygiene were still low, children still depended on their parents. In this case, parents' awareness was needed in maintaining healthy teeth and mouth by carrying it for dental check-ups[19].

CONCLUSION

Based on the result and discussion of the research identification of caries risk assessment in children with special needs for the aged 6-12 years in SLB Negeri 1 Bantul Yogyakarta, it can be concluded that the majority of children with special needs of the aged 6-12 years in SLB Negeri 1 Bantul Yogyakarta had caries risk high.

SUGGESTION

It can be conducted a research by using several caries risk assessment to determine the right CRA for children with special needs with a balanced sample based on ages and based on gender

Daftar Pustaka

1. **Kidd, Edwina A. M.** *Essentials of Dental Caries.* New York : Oxford University Press, 1987. Vol. Third Edition.

2. *Studi Tingkat Pengetahuan Ibu Tentang Karies Gigi Pada Anak Usia Pra Sekolah.* **Riesmiyantiningdyah**. 2016, Akademi Keperawatan Kerta Cendekia Sidoarjo, pp. 7-9

3. **Riskesdas.** *Laporan Nasional Riskesdas 2018.* Jakarta : Badan Penelitian dan Pengembangan Kesehatan Kementrian Kesehatan RI, 2018.

4. **Tis'atan, Nisful Laili.** *Identifikasi Faktor Risiko Karies Dengan Metode Kariogram Pada Siswa-Siswi usia 11-12 tahun di SDNN Megaluh Kecamatan Megaluh Kabupaten Jombang.* Yogyakarta : FKIK UMY, 2010.

5. *Pencegahan Primer Pada Anak Yang Beresiko Karies Tinggi.* **Angela, Ami.** 2005, Departemen Pedodonsia Fakultas Kedokteran Gigi Universitas Sumatera Utara, pp. 130-134.

6. **Potter and Perry.** *Buku Ajar Fundamental Keperawatan Konsep, Proses, dan Praktik.* Jakarta : EGC, 2005. Vol. 2.

7. *Gambaran Status Karies Pada Anak Berkebutuhan Khusus di SLB YPAC Manado.* **Tulangow, Gita J., Pangemanan, Damajanty H. C. and Parengkuan, Wulan G.** Manado : Jurnal e-Gigi, 2015, Jurnal e-GiGi (eG), Volume 3, Nomor 2, Vol. 3, pp. 610-615.

8. **Somantri, Sutjihati.** *Psikologi anak luar biasa.* Bandung : PT Refika Aditama, 2006.

9. *Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents.* **American Academy of Pediatric Dentistry.** 2014, Clinical Practice Guidelines, pp. 142-149.

10. *CAMBRA: Best Practices in Dental Caries Management.* **Hurlbutt, Michelle.** 2011, PenWell, pp. 1-15.

11. **Welbury, Richard, Duggal, Monty S. and Hosey, and Marie Thérèse.** *Paediatric Dentistry.* 3rd. Inggris : Oxford University Press, 2005.

12. *Peran Dokter Gigi Dalam Tumbuh Kembang Anak Berkebutuhan Khusus.* **Titien, Indah.** 2012, Maj Ked Gi, pp. 176-180.

13. *Pengaruh Penyediaan Air Minum Terhadap Kejadian Karies Gigi Usia 12-65 Tahun di Provisinsi Kep. Bangka Belitung dan Nusa Tenggara Barat.* **Musadad, Anwar and Irianto, Joko.** 2009, Jurnal Ekologi Kesehatan, Vol. 8, pp. 1032-1046. 3.

14. *Fluor dan Kesehatan Gigi.* **Agtini, Magdarina Destri, Sintawati and Tjahja, Indirawati.** 2005, Media Litbang Kesehatan, Vol. XV, pp. 25-31.

15. **Heasman, P.** *Master Dentistry.* Philadelphia : Churchil Livingstone, 20013.

16. *The Impact of Gender on Caries Prevalence and Risk Assessment.* **Zandona, Andrea Ferreira and Mier, E. A Martinez.** 2013, Dental Clinic North America, pp. 301-315.

17. *Penilaian Status Risiko Karies Gigi pada Murid Kelas I dan V di SDN Cinunuk Bandung.* **Setiawan, Asty Samiaty.** 2007, Kedokteran Gigi Universitas Padjajaran, pp. 73-80.

18. **Suwelo, Ismu Suharsono.** *Karies Gigi pada Anak Dengan Berbagai Faktor.* Jakarta : EGC, 1992.