



The Difference in The Level of Dental Caries Knowledge Based on Age and Gender Among Students Aged 13-15 Years

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ABSTRACT

According to Riskesdas 2018, caries or cavities show that 65.5% of children aged 12 years and 67.4% of children aged 15 years' experience this condition. Despite its high prevalence, reports regarding the status of dental caries and the importance of oral hygiene in adolescents are still limited. The Islamic boarding school where several teenagers live has an independent and self-caring nature, which causes oral and dental health to be neglected. This study aims to determine differences in the level of knowledge of dental caries based on age and gender in students aged 13-15 years at the Ma'ahid Kudus Madrasah Tsanawiyah (MTS) Islamic Boarding School. Analytical observational research with cross-sectional methods. The selection of respondents was carried out using a proportional stratified random sampling technique. There was a significant difference in the level of knowledge of dental caries with age ($p < 0.05$), and there was no difference based on gender ($p > 0.05$). Based on the research results, the level of knowledge about dental caries of students aged 13-15 years at the MTS Maahid Kudus Islamic Boarding School is mostly in the good category.

Keyword: Age 13-15 years; Caries Level Knowledge; Islamic Boarding School; Students

ABSTRAK

Karies atau gigi berlubang menurut Riskesdas 2018 menunjukkan bahwa 65,5% anak usia 12 tahun dan 67,4% anak usia 15 tahun mengalami kondisi tersebut. Meskipun prevalensinya tinggi, laporan mengenai status karies gigi dan pentingnya kebersihan mulut pada remaja masih terbatas. Pondok pesantren yang menjadi tempat tinggal beberapa remaja mempunyai sifat mandiri dan peduli diri sehingga menyebabkan terabaikannya kesehatan gigi dan mulut. Penelitian ini bertujuan untuk mengetahui perbedaan tingkat pengetahuan karies gigi berdasarkan usia dan jenis kelamin pada siswa usia 13-15 tahun di Pondok Pesantren Madrasah Tsanawiyah (MTS) Ma'ahid Kudus. Penelitian observasional analitik dengan metode cross-sectional. Pemilihan responden dilakukan menggunakan teknik pengambilan sampel proporsional stratified random sampling. Perbedaan yang signifikan terdapat pada tingkat pengetahuan karies gigi dengan usia ($p < 0,05$), dan tidak ada perbedaan berdasarkan jenis kelamin ($p > 0,05$). Berdasarkan hasil penelitian, tingkat pengetahuan tentang karies gigi santri usia 13-15 tahun di Pondok Pesantren MTS Maahid Kudus sebagian besar berada pada kategori baik.

Kata Kunci: Usia 13-15 tahun; Tingkat pengetahuan karies; Pondok Islamic boarding school; siswa



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1. Introduction

According to Riskesdas 2018 results, 65.5% of 12-year-olds and 67.4% of 15-year-olds experienced dental caries in Indonesia.[1] Dental caries, also known as cavities, is a condition characterized by damage to the enamel, dentin, and cementum or tooth tissue structures due to the presence of bacteria, leading to the formation of cavities. Furthermore, a total of 4 essential factors have been reported to facilitate the development of this condition, including microorganisms, dental or host, food, and time.[2] Machfoedz stated that dental caries is a significant health concern caused by the lack of knowledge and awareness of the importance of maintaining healthy teeth and mouth. This underscores the importance of providing awareness of dental and oral health and its implications at an early age, particularly during the school years.[3]

Maintenance of dental and oral hygiene is an essential effort in improving the overall health of the body. Although several reports have shown that the mouth is an entrance for food and drink, there are limited studies on its role in maintaining oral health and well-being.[4] The World Health Organization (WHO) has designated specific age groups for examinations, such as the age of 15 years, which is considered significant, as permanent teeth have been exposed to the oral environment for 3-9 years. Consequently, assessing dental caries within this demographic holds greater significance compared to the age of 12 years.[5]

Based on the results, there are limited studies on dental caries and oral hygiene among Indonesian adolescents, particularly those aged 14-15 years.[6] Islamic boarding schools, serving as residences for student learning religious knowledge and Islamic values from ustadz or kiyai, emphasizes cleanliness as a fundamental aspect of faith, including dental and oral hygiene. Despite, most of these schools have a low education of the importance of maintaining dental and oral health which potentially impacted the dental and oral health of students. The independent and self-care nature of Islamic boarding school system shows that many students can ignore the importance of their oral and dental health.[7]

2. Methods and Materials

Ethical Clearance was obtained from the ethics committee of the Faculty of Medicine and Health Sciences, University of Muhammadiyah Yogyakarta. This was an observational analytic study using a cross-sectional method, and the respondents were selected using the probability sampling techniques, namely proportionate stratified random sampling, which comprised populations with strata proportionally.[8] In addition, Ma'ahid Kudus Islamic boarding school was one of the oldest Islamic educational institutions in Kudus, based on an interview with one of the caretakers, and the economic level of the students was at the lower middle level. The education center contained Islamic values, one of which was an Islamic boarding school, and the students were expected to have an understanding of cleanliness in accordance with Islamic teachings that "cleanliness was part of Iman". MTS Ma'ahid Kudus had 244 students aged 13-15 years consisting of sons and daughters. Based on Riwidikdo (2013) said that If the population or subject size is large, it can be taken 10-15% or 20-30% depending on the ability of the researcher[9]. If the population is small (<100) then all members of the population become a sample. From the population, 25% was taken and the number of samples was $25\% \times 244 \text{ students} = 61 \text{ students}$. A total of 25% of the sample size determination was selected to represent a sample from the population. The inclusion criteria were individuals willing to be respondents, students aged 13-15 years, and getting approval from parents or guardians. Meanwhile, the exclusion criteria were students who were sick during the study, and those who were allowed to go home during the procedures. This study was conducted at MTS Ma'ahid Kudus Islamic Boarding School in May 2021. The level of knowledge of the respondents was measured using a questionnaire through a Google form, consisting of 15 questions about the level of knowledge about caries. When students answered correctly, the individuals were given a score of 1 and a score of 0 when the answer was wrong. Knowledge was considered good when students answered 11-15 questions correctly (76% - 100%). The parameter was in the quite category when students answered 8-10 questions correctly (56% - 76%) and it was said to be less when respondents answered ≤ 7 questions correctly (<56%) [10]. The collected data was then processed and analyzed using descriptive analysis in the form of calculating the frequency of data presented in tabular form.

3. Results

Based on the results of the study, the following data were obtained:

Table 1. Characteristics of respondents based on the level of knowledge.

Level of Knowledge	Frequency(n)	(%)
Good	40	65.6
Quite	16	26.2
Less	5	8.2

Table 1 showed that 65.6% (40) of the respondents had a good level of knowledge.

Table 2. The frequency of knowledge levels by age

Age	Level of Knowledge				Total (%)
	Good (%)	Quite (%)	Less (%)		
13 years	15 (71.4%)	5 (23.8%)	1 (4.8%)	21	(34,42%)
14 years	14 (70.0%)	3 (15,0%)	3 (15.0%)	20	(32,78%)
15 years	11 (55.0%)	8 (40,0%)	1 (5.0%)	20	(32,78%)

Based on Table 2, the 13 years age category had the highest level of good knowledge, as seen in 15 respondents (71.4%)

Table 3. Frequency of knowledge levels by gender

Genre	Level of Knowledge				Total (%)
	Good (%)	Quite (%)	Less (%)		
Male	50.0 11 %	7 31.8%	4 18.2 %	22	(36,05%)
Female	74.4 29 %	9 23.1%	1 2.6%	39	(63,93%)

Table 3 showed that females had the highest level of good knowledge, accounting for 29 of the respondents (74.4%).

Table 4. Differences in knowledge based on age

Ages	Mean \pm SD	p value
13	7 \pm 7,21	0,001
14	6,67 \pm 6,35	
15	6,67 \pm 5,13	

Based on Table 4, a p-value < 0.05 (p=0,001031) was obtained, showing that there was the difference between the level of knowledge and age.

Table 5. Differences in knowledge based on gender

Gender	Mean \pm SD	P value
Male	7,33 \pm 3,51	0,202
Female	13 \pm 14,42	

Table 5 showed a p-value > 0.05 ($p=0.202376$), showing that there was no difference between the level of knowledge and gender.

4. Discussions

The results of the descriptive analysis showed that the Overview of the Level of Caries Knowledge in students with the age of 13-15 Years at MTS Ma'ahid Kudus Islamic Boarding School was mostly in the good category (65.6%), as shown in Table 3. This could be due to information obtained by students through books, neighborhoods, residences, or counseling. The role of parents in the boarding school was replaced by teachers because the students spent more time in the school environment compared to their parents. Furthermore, these factors provided them with more examples to promote dental and oral health from teachers.[7] According to a previous study, teachers were respected figures and role models in schools and their engagement in efforts to promote dental and oral health had a significant effect.[11]

A significant influential factor was the family environment, as it shaped the knowledge levels of children. The family environment served as the primary educational setting, where children initially received instruction, encouragement, affection, guidance, and attention. Furthermore, it played an essential role in laying the foundation for a child's educational journey. Based on previous studies, the family was a social unit bound by blood relations. Parents often educated children about the importance of dental health, including by reminding children to brush their teeth 2 times a day regularly namely in the morning after breakfast and night before going to bed. Children could apply these habits in Islamic boarding schools, thereby contributing to the level of knowledge about oral and dental health.[12]. According to Fitri *et al.*'s [13] study at the Salafiyah Al-Majidiyah Islamic boarding school, the role, knowledge, and attitudes of teachers about maintaining dental and oral health must also be improved, namely by providing counselling. Discipline about hygiene and maintenance of personal health as well as providing motivation to students must be applied by teachers at the Salafiyah Al-Majidiyah Islamic boarding school to improve the health of Islamic boarding school students. This could also be applied in the MTS Ma'ahid Kudus Islamic boarding school because the influence of people around the residence, namely parents and teachers had an important role. This was because the education provided by parents or teachers had an impact on a child's behaviour. According to experts, a person's level of education, the amount of information obtained, environmental conditions, experience, age, and economic status could affect knowledge. Knowledge was believed to influence a person's attitudes and actions to apply the information obtained in everyday life, leading to the development of a habit.[14]

Economic factors could also affect the knowledge of MTS Ma'ahid Kudus students. Previous studies showed that the level of knowledge of students was mostly in the good category. This was inconsistent with the theory of Wangsarhardja K., where people with high economic status had higher knowledge about oral and dental health. The majority of individuals with high economic status paid attention to dental and oral health by going to the dentist. Meanwhile, people with low salaries believed that dental care was not necessary, leading to low priority.[15] Many people did not have the cost to get proper treatment at dental clinics when experiencing pain [16]. The 2011 Household Health Survey stated that the number of dental and oral diseases in Indonesia reached 79.6%. The increasing cost of dental care was one of the major influential factors. Due to the high cost of dental health care today, people from low economic groups could not get proper healthcare services, leading to the decision to endure the loss of teeth rather than seek treatment.[16]

The results showed that there were different levels of caries knowledge based on age, as shown in Table 4. This was consistent with Notoatmojo who stated that a person's mindset and comprehension were influenced by age. As people grew older, their mindset and comprehension also developed, leading to an increase in the level of knowledge [16], as reported by Budiman and Riyanto. [15] The results of this study were inconsistent with Sumantri, *et al.* [17], where there were the significant differences in the level of knowledge of students aged 7-8 years at SD 17 Manggis Ganting and SD Negeri 03 Pulai Anak Air Bukittinggi after being given dental and oral health education using the dentistry education game method.[17]

Based on the results, there was no significant difference in knowledge based on gender, as shown in Table 5, and this was in line with Annisa's study. This was because the information obtained by students today was only to increase knowledge about dental and oral health, which was a direct impact of health education. This viewpoint had been deeply rooted since colonial times, but it was now irrefutable that, irrespective of an individual's gender, those who remained productive, educated, or experienced tended to possess a high level

of knowledge [18]. According to Nabila, there was no significant difference between men and women in this regard. The information acquired by students primarily served to enhance their understanding of dental and oral health, directly influenced by health education.[18] Students who lived in Islamic boarding schools were not allowed to bring communication devices, such as mobile phones and watch television during their stay. These communication devices were a source of information about oral and dental health and new things from social media. Furthermore, social media invited anyone interested to participate by providing open feedback, commenting, and sharing information in a fast and unlimited time. Several studies had shown that it had a great impact on a person's life.[19] Social media had evolved into an addiction, compelling users to open these platforms daily, a habit particularly prevalent among teenagers[20].

Experience also influenced a person's level of knowledge, and it could be gained from oneself or others. Personal experiences empowered individuals to gain insights from past events, enabling them to anticipate the recurrence of negative occurrences in the future. For instance, school-age children who had not observed others with dental caries or cavities tended to refrain from consuming sweets without brushing their teeth and were inclined to predict potential consequences associated with such activities.[21]

According to experts, a person's level of education, the amount of information obtained, environmental conditions, experience, age, and economic status of a person can affect the level of knowledge. This was because knowledge could influence a person's attitudes and actions in applying the information obtained in daily life, leading to the development of a habit [14].

5. Conclusions

In conclusion, there was the difference in the level of knowledge of dental health based on age, but there was no difference based on gender. The level of knowledge about dental caries in students aged 13-15 years at Islamic boarding school MTS Ma'ahid Kudus was mostly in the good category. In this study, 15, 14, and 11 respondents were aged 13 years (71.4%), 14 years (70.0%), and 15 years old (55.0%), respectively.

6. Acknowledgments

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7. Conflicts of Interest

The authors declare that there are no conflicts of interest to disclose concerning this study.

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