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Relationship of Sociodemography and Dental Visits With Dental Caries and Oral Hygiene At Kapuk 03 Pagi Public Elementary School in West Jakarta

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ABSTRACT

In Indonesia, children still have a high incidence of dental caries; among children aged 5 to 9 years, the rate was 92.6%, and among those aged 10 to 14 years, it was 73.4%. Risk factors contributing to childhood caries include child behaviour and dental care utilization, family dynamics, and environment. The health of teeth and mouths can be achieved with good oral hygiene. Oral hygiene can be influenced by gender, age, parental education, and dental visits. The study aimed to determine the relationship between sociodemography and dental visits with dental caries and oral hygiene at a public elementary school in West Jakarta. This research is a cross-sectional observational analytic using a questionnaire involving 174 respondents and direct examination of the oral cavity to obtain dental caries and oral hygiene. The results show that the p-values for the association between dental caries and gender, age, father's education, mother's education, and dental visits are 0.924, 0.588, 0.222, 0.172, and 0.115, respectively, all of which are greater than the significance level of 0.05. Similarly, the p-values for the association between oral hygiene and gender, age, father's education, mother's education, and dental visits are 0.231, 0.068, 0.064, 0.509, and 0.427, respectively, all exceeding the significance level of 0.05. In conclusion, the dental caries status of students at Kapuk 03 Pagi Public Elementary School is low, and their oral hygiene status is good. There is no correlation between dental caries and oral hygiene with gender, age, father and mother's education, and dental visits.

Keyword: age; caries; dental visits; gender; oral hygiene

Introduction

Dental and oral health is a major indicator of overall health. Dental and oral health is the condition of the oral cavity, including the teeth and supporting tissue structures, which is free from pain and disease that could affect a person's ability to perform various functions [1]. Maintaining good dental and oral hygiene is crucial since it's a way to improve health. The main problem that still occurs in the oral cavity is dental caries [2]. Based on the Indonesia Basic Health Research (RISKESDAS) 2018, dental caries reached 88.8%. The prevalence of caries in Indonesian children is still a high number, based on the age group of children 5-9 years, it reaches 92.6%, and for ages 10-14 years, it reaches 73.4% [3].

Dental caries is a disease that affects the hard tissue of the teeth, including enamel, dentin, and cementum. It is primarily brought on by four factors: the host, the microorganisms, the substrate, and time [4]. School-age children, particularly elementary school children, tend to be more susceptible to dental caries as they still exhibit behaviours that are not beneficial to good dental

health, such as fondness for sweet foods [5],[6]. The risk factors that play a role in caries in children include child-related factors such as behaviour and the utilization of dental and oral health services, as well as family and environmental influences. If dental caries are left untreated, it might eventually affect the child's ability to grow and develop [7].

According to research by Kiswaluyo, the prevalence of caries rises with age in children. This is likely caused by the longer the teeth are in the oral cavity, the more frequently they are exposed to factors that cause dental caries. Based on gender, boys are more likely to have dental caries than girls. This is because gender differences might affect how children behave when maintaining oral hygiene and their desired aesthetic needs [8]. Positive dental and oral health behaviours in children are mostly influenced by their parents, particularly their mother. Parental participation in maintaining children's dental and oral health can be implemented by paying attention to children's behaviour regarding dental and oral health and children's dietary habits [9]. Mothers' knowledge, attitudes, and behaviour significantly influence children's knowledge [10]. Parents taking their children to the dentist also positively impact the child's early introduction to dental care and monitor the development of the child's oral health. However, according to Abdat's research, 49% of mothers will only take their child to the dentist when they experience pain [11].

Dental and oral health can be achieved through good dental and oral hygiene. The mouth can be categorized as good oral hygiene if it is free of plaque and calculus. Plaque is a soft deposit resulting from the accumulation and metabolism of bacteria attached to the tooth surface. At the same time, calculus is a hard deposit originating from the mineralization process of plaque. The level of dental and oral hygiene can be measured using the Oral Hygiene Index Simplified (OHI-S), which is obtained by adding up the Debris Index (DI) and Calculus Index (CI) [12], [13].

Research conducted by Oyedele shows a strong correlation between children's age and gender and their oral hygiene status. Oral hygiene status in the good category is higher at ages 8-12 than at ages over 12. Based on gender, it was discovered that the good oral hygiene category was higher in girls than boys [14]. According to Mbawalla's research, the father's lower level of education was associated with a higher frequency of poor oral hygiene [15]. The findings of Mallineni's study showed that children who regularly visited the dentist had fewer dental problems so these children also had better oral hygiene [16]. Therefore, this research was conducted to determine the relationship between sociodemographics and visit frequency to the dentist with dental caries and oral hygiene among children in grades IV, V and VI at SDN Kapuk 03 Pagi

Materials and Methods

This study employs an observational analytic design with a cross-sectional approach, conducted in November 2023 at SDN Kapuk 03 Pagi, West Jakarta. This research population is all grade 4-6 students in SDN Kapuk 03 Pagi school. This study uses the total sampling technique to obtain the sample size. There were 174 students involved in the sample, and each student must have approval from their respective parents through informed consent.

The data collected in this study included dental caries status, oral hygiene status, age, gender, father's education, mother's education, and dental visits in the last 12 months. Two data collection methods were used: first, a direct examination of the oral cavity to determine oral hygiene and dental caries status; second, students filled out questionnaires to provide sociodemographic information and the frequency of dental visits. Dental caries and oral hygiene examinations are carried out on each child in each class using Personal Protective Equipment (PPE), dental mirror, and flashlight. DMF-T and def-t index were used to examine dental caries, which will then be categorized into low (score ≤ 3) and high (score > 3) [17]. Oral hygiene examination is examined using the Oral Hygiene Index Simplified (OHI-S), which is obtained by adding up the Debris Index (DI) and Calculus Index (CI). Following that, the score will be divided into three categories: good (0.0-1.2), moderate (1.3-3.0), and poor (3.1-6.0) [18].

Students fill out the questionnaire with their age, gender, parents' last education level, and dental visits in the previous 12 months. Subsequently, the questionnaires will be collected and then summarized. The age is categorized into groups: 6-11 years old (middle childhood) and 12-14 years old (early adolescence) [19]. The father's and mother's education was categorized as low, moderate, or high. It is categorized by low education if they have no education, didn't complete elementary school, have completed elementary school or equivalent, or have completed junior high school or equivalent. It

is categorized by the moderate education category if they have completed high school or equivalent. It is categorized by high education if they have completed a university degree (diploma, bachelor's degree, master's degree, doctoral degree) [20]. The last category consists of those unaware of their parent's education level and those who no longer have parents. Dental visits during the last 12 months were divided into good and evil. If they have visited the dentist once, thrice, four times, or more in the past year, they are categorized as good. If they have never visited the dentist in the past year, have never received dental treatment, or are unsure or unable to recall, they are classified as bad [21].

After all the data has been collected and summarized, it will be processed through editing, coding, and tabulating processes, which entail entering the data in tabular form before proceeding with data analysis. Univariate analysis was carried out with the final data in tabular form. Using the Chi-Square test, bivariate analysis was carried out to determine the relationship between the independent variable and the dependent variable.

Results and Discussion

Table 1.
Frequency distribution of respondents based on gender, age, father's education, mother's education, and dental visits

Variable	Frequency	Percentage (%)
Gender		
Male	96	55,2
Female	78	44,8
Age (years)		
6-11	79	45,4
12-14	95	54,6
Father's education		
Low	19	10,9
Moderate	15	8,6
High	53	30,5
No adults at home & don't know	87	50
Mother's education		
Low	46	26,4
Moderate	48	27,6
High	9	5,2
No adults at home & don't know	71	40,8
Dental visits in the last 12 months		
Bad	97	55,7
Good	77	44,3

Table 2.
Distribution of respondents based on dental caries status

Dental caries status	Frequency	Percentage (%)
Low	93	53,4
High	81	46,6

Table 3. Results of the statistical correlation test between gender, age, father's education, mother's education, and dental visits with dental caries status

Variable	Dental caries status				*p-value*
	Low		High		
	N	%	N	%	
Gender					0.924
Male	51	29,31	45	25,86	
Female	42	24,14	36	20,69	
Age (years)					0.588
6-11	44	25,29	35	20,11	
12-14	49	28,16	46	26,44	
Father's education					0.222
Low	8	4,59	11	6,32	
Moderate	5	2,87	10	5,75	
High	29	16,67	24	13,80	
No adults at home & don't know	51	29,31	36	20,69	
Mother's education					0.172
Low	21	12,07	25	14,37	
Moderate	32	18,39	16	9,19	
High	4	2,30	5	2,87	
No adults at home & don't know	36	20,69	35	20,11	
Dental visits					0.115
Bad	57	32,76	40	22,99	
Good	36	20,69	41	23,56	

Table 4.
Distribution of respondents based on oral hygiene status

Oral hygiene status	Frequency	Percentage (%)
Good	115	66,1
Moderate	7	4
Poor	52	29,9

Table 5.
Results of the statistical correlation test between gender, age, father's education, mother's education, and dental visits with oral hygiene status

Variable	Oral hygiene status						*p-value*
	Good		Moderate		Poor		
	N	%	N	%	N	%	
Gender							0.231
Male	62	35,63	32	18,39	2	1,14	
Female	53	30,45	20	11,49	5	2,87	
Age (years)							0.068
6-11	45	25,86	30	17,24	4	2,29	
12-14	70	40,23	22	12,64	3	1,72	
Father's education							0.064
Low	10	5,74	9	5,17	0	0	
Moderate	7	4,02	6	3,44	2	1,14	
High	37	21,26	16	9,19	0	0	
No adults at home & don't know	61	35,06	21	12,06	5	2,87	
Mother's education							0.509
Low	27	15,52	16	9,19	3	1,72	
Moderate	35	20,11	13	7,47	0	0	
High	5	2,87	3	1,72	1	0,57	
No adults at home & don't know	48	27,59	20	11,49	3	1,72	
Dental visits							0.427
Bad	68	39,08	40	14,94	3	1,72	
Good	47	27,01	41	14,94	4	2,29	

Based on Table 1, it can be seen that the frequency of males is higher, with 96 individuals (55.2%), while females account for 78 individuals (44.8%). In terms of age groups, the frequency of the 12-14 year age group is higher, with 95 individuals (54.6%), while the 6-11 year age group has 79 individuals (45.4%). Regarding the father's education, the highest frequency is observed among respondents who do not know, totalling 87 individuals (50%), while the lowest frequency is at the moderate education level, with only 15 individuals (8.6%). Regarding mother's education, the highest frequency is among respondents who do not know, comprising 71 individuals (40.8%), while the lowest frequency is at the higher education level, with just 9 individuals (5.2%). Additionally, based on dental visits in the last 12 months, the frequency of the bad category is higher, with 97 individuals (55.7%), whereas the good category includes 77 individuals (44.3%).

Table 2 shows the distribution of dental caries status among students at SDN Kapuk 03 Pagi. The frequency of low dental caries status is higher, with 93 individuals (53.4%), while the frequency of high dental caries status is 81 individuals (46.6%).

Table 3 shows that concerning gender, among males, the low dental caries status category is higher, with 51 individuals (29.31%). Similarly, in the high dental caries status category, there are more males than females, with 45 individuals (25.86%). The results of the Chi-Square statistical test show a p-value of 0.924, which means that the null

hypothesis (Ho) is accepted, indicating no significant relationship between gender and dental caries status. Regarding age group categories, the 12-14 year age group has more individuals with low dental caries status, totalling 49 individuals (28.16%). Likewise, the prevalence of high dental caries status is higher in the 12-14 year age group than in the 6-11 year age group, with 46 individuals (26.44%). The Chi-Square statistical test results produced a p-value of 0.588, suggesting that the null hypothesis (Ho) is accepted, indicating no significant association between age group and dental caries status. An analysis of the father's education reveals that individuals with low and moderate education have a higher prevalence of high dental caries status, with 11 individuals (6.32%) and 10 individuals (6.32%), respectively. Conversely, among those with higher education, individuals without a father figure, and those who do not know, the majority display low dental caries status, totalling 29 individuals (16.67%) and 51 individuals (29.31%), respectively. The results of the Chi-Square statistical test indicated a p-value of 0.222, suggesting that the null hypothesis (Ho) is accepted, which means there is no significant correlation between the father's education and dental caries status. Based on the category of mother's education, individuals with low and high education levels show a higher prevalence of high dental caries status, with 25 individuals (14.37%) and 5 individuals (2.87%), respectively. In contrast, among those with moderate education, individuals without a mother figure, and those who do not know, the majority have low dental caries status, totalling 32 individuals (18.39%) and 36 individuals (20.69%), respectively. The results of the Chi-Square statistical test yielded a p-value of 0.172, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between the mother's education and dental caries status. Regarding dental visits, it shows that in the bad category, the dental caries status is higher in the low category, with 57 individuals (32.76%). In contrast, in the good category, the dental caries status is higher in the high category, with 41 individuals (23.56%). The results of the Chi-Square statistical test yielded a p-value of 0.115, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between dental visits and dental caries status.

Table 4 shows the distribution of oral hygiene status among students at SDN Kapuk 03 Pagi. The highest frequency of oral hygiene status is in the good category, with 115 individuals (66.1%), followed by the poor category with 52 individuals (29.9%), and the moderate category with 7 individuals (4%).

According to Table 5, among males, the highest oral hygiene status is in a good category, with 62 individuals (35.63%), while for females, 53 individuals (30.45%), although males have a higher percentage. The results of the Chi-Square statistical test yielded a p-value of 0.231, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between gender and oral hygiene status. Based on age groups, the 6-11 year age group has the highest number in the good category, with 45 individuals (25.86%), while the 12-14 year age group has a total of 70 individuals (40.23%), although the 12-14 year age group has a higher percentage. The results of the Chi-Square statistical test yielded a p-value of 0.068, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between age group and oral hygiene status. The father's education level indicates that the highest oral hygiene status in each education category falls within the good status. The largest group consists of those without a father figure and those who do not know, totalling 61 individuals (35.06%), followed by the higher education category with 37 individuals (21.26%). The results of the Chi-Square statistical test yielded a p-value of 0.064, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between the father's education and oral hygiene status. The mother's education shows similar results to the father's education. The highest outcomes in each educational category are associated with good oral hygiene status. The largest group consists of individuals without a mother figure and those who do not know, totalling 48 individuals (27.59%), followed by the secondary education level, which includes 35 individuals (20.11%). The results of the Chi-Square statistical test yielded a p-value of 0.509, indicating that the null hypothesis (Ho) is accepted, meaning there is no significant relationship between the mother's education and oral hygiene status. Based on the frequency of visits to the dentist, it is noted that both the poor and good categories have the highest proportions in the good oral hygiene status, with 68 individuals (39.08%) in the poor category and 47 individuals (27.01%) in the good category. The results of the Chi-Square statistical test yielded a p-value of 0.427, indicating that the null hypothesis (Ho) is accepted, meaning there is no significant relationship between dental visits and oral hygiene status. Generally, boys

are often found to pay less attention to their oral hygiene and are lazier about brushing their teeth than girls. Additionally, girls usually avoid consuming sweet foods more than boys do. This is consistent with the findings of Kiswaluyo's research, which shows that caries are higher in boys than girls, although the percentage difference is not very large, with 48.45% in boys and 43.45% in girls [8]. The research by Cahyadi et al. shows a similar finding, indicating that caries status occurs more frequently in boys at 52.8% compared to 47.2% in girls [21]. This aligns with the results of this study, which show that the caries status is higher in boys (25.86%) than girls (20.69%). The Chi-Square test results yielded a p-value of 0.924 ($p > 0.05$), allowing us to conclude that there is no significant relationship between gender and caries status. This is similar to the findings of Jamilah et al., which state no significant relationship exists between gender and dental caries status, with a p-value of 0.291 ($p > 0.05$) using the Chi-Square test. The lack of significance between gender and dental caries status may be due to risk factors contributing to caries, which can be influenced by other factors such as behaviour, tooth brushing habits, and excessive glucose consumption [22].

The study by Rattu et al. shows that oral hygiene status, based on the OHI-S assessment, has a higher average score in boys than girls. This is because boys tend to prioritize and have a greater awareness of maintaining dental hygiene [23]. This finding is not consistent with the results of this study, which show that the oral hygiene status is better in boys, at 35.63%, compared to girls, at 30.45%. The Chi-Square test results yielded a p-value of 0.231 ($p > 0.05$), allowing us to conclude that there is no significant relationship between gender and oral hygiene status. The findings of this study do not align with those of Ningsih, which indicate a significant relationship between gender and oral hygiene status, with a p-value of 0.017 ($p < 0.05$) using the Chi-Square test. [24]. This may occur because, regardless of gender, an individual's level of oral hygiene is determined by their personal behaviour. Although girls tend to be perceived as more attentive to their oral hygiene, many boys care about their oral hygiene [25].

Based on the research by Khotimah et al., it is known that respondents aged 6-9 years experience more dental caries compared to respondents aged 10-12 years [26]. This is inconsistent with the findings of Kiswaluyo's research, which indicates that an individual's caries rate increases with age. This occurs because the teeth remain in the mouth longer, thus being exposed to more factors that contribute to caries [8]. This aligns with the results of this study, which indicate that the dental caries status is higher in the age group of 12-18 years, at 26.44%, compared to the age group of 6-11 years, which is 20.11%. The Chi-Square test results yielded a p-value of 0.588 ($p > 0.05$), allowing us to conclude that there is no significant relationship between age and caries status. This is similar to the findings of Khotimah et al., which state that there is no significant relationship between gender and dental caries status, with a p-value of 0.053 ($p > 0.05$). This may occur because a person's age does not influence the occurrence of dental caries. Although the increase in dental caries corresponds with age, if it is not balanced with preventive measures against other factors that can cause dental caries, the likelihood of developing dental caries will still exist [26].

Age affects a person's level of maturity. As a person gets older, their maturity also becomes more developed, and their knowledge increases [27]. The research by Sampakang shows that as individuals age, they become more aware of their dental and oral health. Consequently, the OHI-S index in older respondents is better compared to that of younger individuals [28]. This is consistent with the findings of this study, which indicate that the age group of 12-18 years has a higher rate of good oral hygiene status (40.23%) compared to the 6-11 age group (25.86%). The Chi-Square test results yielded a p-value of 0.068 ($p > 0.05$), allowing us to conclude that there is no significant relationship between age group and oral hygiene status. This may occur because not all children with greater knowledge due to their development necessarily maintain good dental care; conversely, not all children with limited knowledge practice poor dental care [29].

Parents' knowledge is essential in shaping a child's behaviour regarding dental and oral health. This knowledge is acquired both naturally and through structured educational processes. Therefore, generally, the higher a person's level of formal education, the better their knowledge and attitude towards healthy living [30]. The research by Angelica et al. shows that parents with a higher level of education tend to have children with a lower rate of caries compared to children whose parents have a lower level of education [31]. This aligns with this study, which shows that fathers with higher education have a greater percentage of low caries status, at 16.67%, compared to fathers with low and middle education. The findings are the opposite for mothers, where those with low and middle

education have a higher percentage of low caries status than mothers with higher education, who have only 2.3%. This may be due to children's close relationship with their parents, especially their mothers. Mothers with higher education may be busier with work in their daily lives, leading to less attention to their children's dental and oral health [32]. The results of the Chi-Square test yielded a p-value of 0.222 ($p > 0.05$) for fathers' education and a p-value of 0.172 ($p > 0.05$) for mothers' education, leading to the conclusion that there is no significant relationship between the levels of education of fathers and mothers and the dental caries status of children. Good knowledge or education influences children's dental health, and parents' attitudes and awareness also play a crucial role. Parental initiative is especially important in preventing dental diseases in children [33].

Parents with higher education are likely to recognize the significance of dental and oral health and possess greater knowledge on maintaining it, allowing them to educate their children. Conversely, parents with a limited understanding of dental and oral health may engage in behaviours that hinder the upkeep of their children's dental health, ultimately impacting the children's oral hygiene [34]. This supports the findings of this study, which show that fathers with higher education have a greater percentage of children with good oral hygiene status, at 21.26%, compared to children with fathers with low or middle education levels. A mother plays a crucial role in educating her child, making a mother's education an important factor, especially in influencing child development. Mothers are vital in promoting dental health practices for their children, and those with lower education levels are at a higher risk of their children developing dental diseases [35]. This is not consistent with the findings of this study, which show that mothers with low to middle education levels have a higher rate of good oral hygiene status in their children compared to mothers with higher education. This discrepancy may be due to the small number of respondents with higher-educated mothers. The results of the Chi-Square test yielded a p-value of 0.064 ($p > 0.05$) for fathers' education and a p-value of 0.509 ($p > 0.05$) for mothers' education, leading to the conclusion that there is no significant relationship between the education levels of fathers and mothers and the oral hygiene status of their children. This is because parental education does not guarantee that children will adopt good daily habits for maintaining their dental and oral health. For children, parental involvement and attention are crucial in enhancing their potential during their developmental stages, especially regarding dental and oral health [33].

According to the recommendations of the American Academy of Pediatric Dentistry (AAPD) and the American Dental Association (ADA), a child should begin visiting the dentist after the eruption of their first permanent tooth. This aims to detect and manage various dental pathologies, particularly dental caries, as dental caries is one of the most relevant oral diseases affecting children [36]. The study by Cahyadi et al. shows that respondents who visited the dentist in the past year have a higher dental caries status than those without caries. This is similar to the findings of this study, which indicate that the low dental caries status is higher among respondents with poor dental visits (32.76%) compared to those with good dental visits (20.69%). The Chi-Square test results yielded a p-value of 0.115 ($p > 0.05$), allowing us to conclude that there is no significant relationship between dental visits and caries status. This is consistent with the findings of Cahyadi et al., which also show that there is no significant relationship between dental visits and dental caries status, with a p-value of 0.903 ($p > 0.05$) obtained using the Chi-Square test [21].

Regular visits to the dentist are a predisposing factor that helps maintain oral hygiene. The study by Sodri Anggreny et al. states that increased awareness of the importance of routine dental visits leads to better oral hygiene [37]. This finding is inconsistent with the results of this study, which indicate that individuals with poor dental visits exhibit a higher rate of good oral hygiene status at 39.08% compared to those with good dental visits at 27.01%. The Chi-Square test results showed a p-value of 0.109 ($p > 0.05$), concluding that there is no significant relationship between dental visits and oral hygiene status. One possible factor influencing this outcome could be the respondents' misunderstanding of the questions related to dental visits.

Conclusion

Overall, the dental caries status of the students at SDN Kapuk 03 Pagi is low, and the oral hygiene status is good. No significant relationship was found between dental caries status and oral hygiene status concerning gender, age group, father's education, mother's education, and dental visits

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Relationship of Sociodemography and Dental Visits With Dental Caries and Oral Hygiene At Kapuk 03 Pagi Public Elementary School in West Jakarta

ABSTRACT

In Indonesia, children still have a high incidence of dental caries; among children aged 5 to 9 years, the rate was 92.6%, and among those aged 10 to 14 years, it was 73.4%. Risk factors contributing to childhood caries include child behaviour and dental care utilization, family dynamics, and environment. The health of teeth and mouths can be achieved with good oral hygiene. Oral hygiene can be influenced by gender, age, parental education, and dental visits. The study aimed to determine the relationship between sociodemography and dental visits with dental caries and oral hygiene at a public elementary school in West Jakarta. This research is a cross-sectional observational analytic using a questionnaire involving 174 respondents and direct examination of the oral cavity to obtain dental caries and oral hygiene. The results show that the p-values for the association between dental caries and gender, age, father's education, mother's education, and dental visits are 0.924, 0.588, 0.222, 0.172, and 0.115, respectively, all of which are greater than the significance level of 0.05. Similarly, the p-values for the association between oral hygiene and gender, age, father's education, mother's education, and dental visits are 0.231, 0.068, 0.064, 0.509, and 0.427, respectively, all exceeding the significance level of 0.05. In conclusion, the dental caries status of students at Kapuk 03 Pagi Public Elementary School is low, and their oral hygiene status is good. There is no correlation between dental caries and oral hygiene with gender, age, father and mother's education, and dental visits.

Keyword: age; caries; dental visits; gender; oral hygiene

Introduction

Dental and oral health is a major indicator of overall health. Dental and oral health is the condition of the oral cavity, including the teeth and supporting tissue structures, which is free from pain and disease that could affect a person's ability to perform various functions [1]. Maintaining good dental and oral hygiene is crucial since it's a way to improve health. The main problem that still occurs in the oral cavity is dental caries [2]. Based on the Indonesia Basic Health Research (RISKESDAS) 2018, dental caries reached 88.8%. The prevalence of caries in Indonesian children is still a high number, based on the age group of children 5-9 years, it reaches 92.6%, and for ages 10-14 years, it reaches 73.4% [3].

Dental caries is a disease that affects the hard tissue of the teeth, including enamel, dentin, and cementum. It is primarily brought on by four factors: the host, the microorganisms, the substrate, and time [4]. School-age children, particularly elementary school children, tend to be more susceptible to dental caries as they still exhibit behaviours that are not beneficial to good dental

health, such as fondness for sweet foods [5],[6]. The risk factors that play a role in caries in children include child-related factors such as behaviour and the utilization of dental and oral health services, as well as family and environmental influences. If dental caries are left untreated, it might eventually affect the child's ability to grow and develop [7].

According to research by Kiswaluyo, the prevalence of caries rises with age in children. This is likely caused by the longer the teeth are in the oral cavity, the more frequently they are exposed to factors that cause dental caries. Based on gender, boys are more likely to have dental caries than girls. This is because gender differences might affect how children behave when maintaining oral hygiene and their desired aesthetic needs [8]. Positive dental and oral health behaviours in children are mostly influenced by the parents, particularly their mother. Parental participation in maintaining children's dental and oral health can be implemented by paying attention to children's behaviour regarding dental and oral health and children's dietary habits [9]. Mothers' knowledge, attitudes, and behaviour significantly influence children's knowledge [10]. Parents taking their children to the dentist also positively impact the child's early introduction to dental care and monitor the development of the child's oral health. However, according to Abdat's research, 49% of mothers will only take their child to the dentist when they experience pain [11].

Dental and oral health can be achieved through good dental and oral hygiene. The mouth can be categorized as good oral hygiene if it is free of plaque and calculus. Plaque is a soft deposit resulting from the accumulation and metabolism of bacteria attached to the tooth surface. At the same time, calculus is a hard deposit originating from the mineralization process of plaque. The level of dental and oral hygiene can be measured using the Oral Hygiene Index Simplified (OHI-S), which is obtained by adding up the Debris Index (DI) and Calculus Index (CI) [12], [13].

Research conducted by Oyedele shows a strong correlation between children's age and gender and their oral hygiene status. Oral hygiene status in the good category is higher at ages 8-12 than at ages over 12. Based on gender, it was discovered that the good oral hygiene category was higher in girls than boys [14]. According to Mbawalla's research, the father's lower level of education was associated with a higher frequency of poor oral hygiene [15]. The findings of Mallineni's study showed that children who regularly visited the dentist had fewer dental problems so these children also had better oral hygiene [16]. Therefore, this research was conducted to determine the relationship between sociodemographics and visit frequency to the dentist with dental caries and oral hygiene among children in grades IV, V and VI at SDN Kapuk 03 Pagi

Materials and Methods

This study employs an observational analytic design with a cross-sectional approach, conducted in November 2023 at SDN Kapuk 03 Pagi, West Jakarta. This research population is all grade 4-6 students in SDN Kapuk 03 Pagi school. This study uses the total sampling technique to obtain the sample size. There were 174 students involved in the sample, and each student must have approval from their respective parents through informed consent.

The data collected in this study included dental caries status, oral hygiene status, age, gender, father's education, mother's education, and dental visits in the last 12 months. Two data collection methods were used: first, a direct examination of the oral cavity to determine oral hygiene and dental caries status; second, students filled out questionnaires to provide sociodemographic information and the frequency of dental visits. Dental caries and oral hygiene examinations are carried out on each child in each class using Personal Protective Equipment (PPE), dental mirror, and flashlight. DMF-T and def-t index were used to examine dental caries, which will then be categorized into low (score ≤ 3) and high (score > 3) [17]. Oral hygiene examination is examined using the Oral Hygiene Index Simplified (OHI-S), which is obtained by adding up the Debris Index (DI) and Calculus Index (CI). Following that, the score will be divided into three categories: good (0.0-1.2), moderate (1.3-3.0), and poor (3.1-6.0) [18].

Students fill out the questionnaire with their age, gender, parents' last education level, and dental visits in the previous 12 months. Subsequently, the questionnaires will be collected and then summarized. The age is categorized into groups: 6-11 years old (middle childhood) and 12-14 years old (early adolescence) [19]. The father's and mother's education was categorized as low, moderate, or high. It is categorized by low education if they have no education, didn't complete elementary school, have completed elementary school or equivalent, or have completed junior high school or equivalent. It

is categorized by the moderate education category if they have completed high school or equivalent. It is categorized by high education if they have completed a university degree (diploma, bachelor's degree, master's degree, doctoral degree) [20]. The last category consists of those unaware of their parent's education level and those who no longer have parents. Dental visits during the last 12 months were divided into good and evil. If they have visited the dentist once, thrice, four times, or more in the past year, they are categorized as good. If they have never visited the dentist in the past year, have never received dental treatment, or are unsure or unable to recall, they are classified as bad [21].

After all the data has been collected and summarized, it will be processed through editing, coding, and tabulating processes, which entail entering the data in tabular form before proceeding with data analysis. Univariate analysis was carried out with the final data in tabular form. Using the Chi-Square test, bivariate analysis was carried out to determine the relationship between the independent variable and the dependent variable.

Results and Discussion

Table 1.
Frequency distribution of respondents based on gender, age, father's education, mother's education, and dental visits

Variable	Frequency	Percentage (%)
Gender		
Male	96	55,2
Female	78	44,8
Age (years)		
6-11	79	45,4
12-14	95	54,6
Father's education		
Low	19	10,9
Moderate	15	8,6
High	53	30,5
No adults at home & don't know	87	50
Mother's education		
Low	46	26,4
Moderate	48	27,6
High	9	5,2
No adults at home & don't know	71	40,8
Dental visits in the last 12 months		
Bad	97	55,5
Good	77	44,3

Table 2.
Distribution of respondents based on dental caries status

Dental caries status	Frequency	Percentage (%)
Low	93	53,4
High	81	46,6

Table 3. Results of the statistical correlation test between gender, age, father's education, mother's education, and dental visits with dental caries status

Variable	Dental caries status				*p-value*
	Low		High		
	N	%	N	%	
Gender					0.924
Male	51	29,31	45	25,86	
Female	42	24,14	36	20,69	
Age (years)					0.588
6-11	44	25,29	35	20,11	
12-14	49	28,16	46	26,44	
Father's education					0.222
Low	8	4,59	11	6,32	
Moderate	5	2,87	10	5,75	
High	29	16,67	24	13,80	
No adults at home & don't know	51	29,31	36	20,69	
Mother's education					0.172
Low	21	12,07	25	14,37	
Moderate	32	18,39	16	9,19	
High	4	2,30	5	2,87	
No adults at home & don't know	36	20,69	35	20,11	
Dental visits					0.115
Bad	57	32,76	40	22,99	
Good	36	20,69	41	23,56	

Table 4.
Distribution of respondents based on oral hygiene status

Oral hygiene status	Frequency	Percentage (%)
Good	115	66,1
Moderate	7	4
Poor	52	29,9

Table 5.
Results of the statistical correlation test between gender, age, father's education, mother's education, and dental visits with oral hygiene status

Variable	Oral hygiene status						*p-value*
	Good		Moderate		Poor		
	N	%	N	%	N	%	
Gender							0.231
Male	62	35,63	32	18,39	2	1,14	
Female	53	30,45	20	11,49	5	2,87	
Age (years)							0.068
6-11	45	25,86	30	17,24	4	2,29	
12-14	70	40,23	22	12,64	3	1,72	
Father's education							0.064
Low	10	5,74	9	5,17	0	0	
Moderate	7	4,02	6	3,44	2	1,14	
High	37	21,26	16	9,19	0	0	
No adults at home & don't know	61	35,06	21	12,06	5	2,87	
Mother's education							0.509
Low	27	15,52	16	9,19	3	1,72	
Moderate	35	20,11	13	7,47	0	0	
High	5	2,87	3	1,72	1	0,57	
No adults at home & don't know	48	27,59	20	11,49	3	1,72	
Dental visits							0.427
Bad	68	39,08	40	14,94	3	1,72	
Good	47	27,01	41	14,94	4	2,29	

Based on Table 1, it can be seen that the frequency of males is higher, with 96 individuals (55.2%), while females account for 78 individuals (44.8%). In terms of age groups, the frequency of the 12-14 year age group is higher, with 95 individuals (54.6%), while the 6-11 year age group has 79 individuals (45.4%). Regarding the father's education, the highest frequency is observed among respondents who do not know, totalling 87 individuals (50%), while the lowest frequency is at the moderate education level, with only 15 individuals (8.6%). Regarding mother's education, the highest frequency is among respondents who do not know, comprising 71 individuals (40.8%), while the lowest frequency is at the higher education level, with just 9 individuals (5.2%). Additionally, based on dental visits in the last 12 months, the frequency of the bad category is higher, with 97 individuals (55.7%), whereas the good category includes 77 individuals (44.3%).

Table 2 shows the distribution of dental caries status among students at SDN Kapuk 03 Pagi. The frequency of low dental caries status is higher, with 93 individuals (53.4%), while the frequency of high dental caries status is 81 individuals (46.6%).

Table 3 shows that concerning gender, among males, the low dental caries status category is higher, with 51 individuals (29.31%). Similarly, in the high dental caries status category, there are more males than females, with 45 individuals (25.86%). The results of the Chi-Square statistical test show a p-value of 0.924, which means that the null

hypothesis (Ho) is accepted, indicating no significant relationship between gender and dental caries status. Regarding age group categories, the 12-14 year age group has more individuals with low dental caries status, totalling 49 individuals (28.16%). Likewise, the prevalence of high dental caries status is higher in the 12-14 year age group than in the 6-11 year age group, with 46 individuals (26.44%). The Chi-Square statistical test results produced a p-value of 0.588, suggesting that the null hypothesis (Ho) is accepted, indicating no significant association between age group and dental caries status. An analysis of the father's education reveals that individuals with low and moderate education have a higher prevalence of high dental caries status, with 11 individuals (6.32%) and 10 individuals (6.32%), respectively. Conversely, among those with higher education, individuals without a father figure, and those who do not know, the majority display low dental caries status, totalling 29 individuals (16.67%) and 51 individuals (29.31%), respectively. The results of the Chi-Square statistical test indicated a p-value of 0.222, suggesting that the null hypothesis (Ho) is accepted, which means there is no significant correlation between the father's education and dental caries status. Based on the category of mother's education, individuals with low and high education levels show a higher prevalence of high dental caries status, with 25 individuals (14.37%) and 5 individuals (2.87%), respectively. In contrast, among those with moderate education, individuals without a mother figure, and those who do not know, the majority have low dental caries status, totalling 32 individuals (18.39%) and 36 individuals (20.69%), respectively. The results of the Chi-Square statistical test yielded a p-value of 0.172, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between the mother's education and dental caries status. Regarding dental visits, it shows that in the bad category, the dental caries status is higher in the low category, with 57 individuals (32.76%). In contrast, in the good category, the dental caries status is higher in the high category, with 41 individuals (23.56%). The results of the Chi-Square statistical test yielded a p-value of 0.115, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between dental visits and dental caries status.

Table 4 shows the distribution of oral hygiene status among students at SDN Kapuk 03 Pagi. The highest frequency of oral hygiene status is in the good category, with 115 individuals (66.1%), followed by the poor category with 52 individuals (29.9%), and the moderate category with 7 individuals (4%).

According to Table 5, among males, the highest oral hygiene status is in a good category, with 62 individuals (35.63%), while for females, 53 individuals (30.45%), although males have a higher percentage. The results of the Chi-Square statistical test yielded a p-value of 0.231, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between gender and oral hygiene status. Based on age groups, the 6-11 year age group has the highest number in the good category, with 45 individuals (25.86%), while the 12-14 year age group has a total of 70 individuals (40.23%), although the 12-14 year age group has a higher percentage. The results of the Chi-Square statistical test yielded a p-value of 0.068, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between age group and oral hygiene status. The father's education level indicates that the highest oral hygiene status in each education category falls within the good status. The largest group consists of those without a father figure and those who do not know, totalling 61 individuals (35.06%), followed by the higher education category with 37 individuals (21.26%). The results of the Chi-Square statistical test yielded a p-value of 0.064, indicating that the null hypothesis (Ho) is accepted, which means there is no significant relationship between the father's education and oral hygiene status. The mother's education shows similar results to the father's education. The highest outcomes in each educational category are associated with good oral hygiene status. The largest group consists of individuals without a mother figure and those who do not know, totalling 48 individuals (27.59%), followed by the secondary education level, which includes 35 individuals (20.11%). The results of the Chi-Square statistical test yielded a p-value of 0.509, indicating that the null hypothesis (Ho) is accepted, meaning there is no significant relationship between the mother's education and oral hygiene status. Based on the frequency of visits to the dentist, it is noted that both the poor and good categories have the highest proportions in the good oral hygiene status, with 68 individuals (39.08%) in the poor category and 47 individuals (27.01%) in the good category. The results of the Chi-Square statistical test yielded a p-value of 0.427, indicating that the null hypothesis (Ho) is accepted, meaning there is no significant relationship between dental visits and oral hygiene status. Generally, boys

are often found to pay less attention to their oral hygiene and are lazier about brushing their teeth than girls. Additionally, girls usually avoid consuming sweet foods more than boys do. This is consistent with the findings of Kiswaluyo's research, which shows that caries are higher in boys than girls, although the percentage difference is not very large, with 48.45% in boys and 43.45% in girls [8]. The research by Cahyadi et al. shows a similar finding, indicating that caries status occurs more frequently in boys at 52.8% compared to 47.2% in girls [21]. This aligns with the results of this study, which show that the caries status is higher in boys (25.86%) than girls (20.69%). The Chi-Square test results yielded a p-value of 0.924 ($p > 0.05$), allowing us to conclude that there is no significant relationship between gender and caries status. This is similar to the findings of Jamilah et al., which state no significant relationship exists between gender and dental caries status, with a p-value of 0.291 ($p > 0.05$) using the Chi-Square test. The lack of significance between gender and dental caries status may be due to risk factors contributing to caries, which can be influenced by other factors such as behaviour, tooth brushing habits, and excessive glucose consumption [22].

The study by Rattu et al. shows that oral hygiene status, based on the OHI-S assessment, has a higher average score in boys than girls. This is because boys tend to prioritize and have a greater awareness of maintaining dental hygiene [23]. This finding is not consistent with the results of this study, which show that the oral hygiene status is better in boys, at 35.63%, compared to girls, at 30.45%. The Chi-Square test results yielded a p-value of 0.231 ($p > 0.05$), allowing us to conclude that there is no significant relationship between gender and oral hygiene status. The findings of this study do not align with those of Ningsih, which indicate a significant relationship between gender and oral hygiene status, with a p-value of 0.017 ($p < 0.05$) using the Chi-Square test. [24]. This may occur because, regardless of gender, an individual's level of oral hygiene is determined by their personal behaviour. Although girls tend to be perceived as more attentive to their oral hygiene, many boys care about their oral hygiene [25].

Based on the research by Khotimah et al., it is known that respondents aged 6-9 years experience more dental caries compared to respondents aged 10-12 years [26]. This is inconsistent with the findings of Kiswaluyo's research, which indicates that an individual's caries rate increases with age. This occurs because the teeth remain in the mouth longer, thus being exposed to more factors that contribute to caries [8]. This aligns with the results of this study, which indicate that the dental caries status is higher in the age group of 12-18 years, at 26.44%, compared to the age group of 6-11 years, which is 20.11%. The Chi-Square test results yielded a p-value of 0.588 ($p > 0.05$), allowing us to conclude that there is no significant relationship between age and caries status. This is similar to the findings of Khotimah et al., which state that there is no significant relationship between gender and dental caries status, with a p-value of 0.053 ($p > 0.05$). This may occur because a person's age does not influence the occurrence of dental caries. Although the increase in dental caries corresponds with age, if it is not balanced with preventive measures against other factors that can cause dental caries, the likelihood of developing dental caries will still exist [26].

Age affects a person's level of maturity. As a person gets older, their maturity also becomes more developed, and their knowledge increases [27]. The research by Sampakang shows that as individuals age, they become more aware of their dental and oral health. Consequently, the OHI-S index in older respondents is better compared to that of younger individuals [28]. This is consistent with the findings of this study, which indicate that the age group of 12-18 years has a higher rate of good oral hygiene status (40.38%) compared to the 6-11 age group (25.86%). The Chi-Square test results yielded a p-value of 0.068 ($p > 0.05$), allowing us to conclude that there is no significant relationship between age group and oral hygiene status. This may occur because not all children with greater knowledge due to their development necessarily maintain good dental care; conversely, not all children with limited knowledge practice poor dental care [29].

Parents' knowledge is essential in shaping a child's behaviour regarding dental and oral health. This knowledge is acquired both naturally and through structured educational processes. Therefore, generally, the higher a person's level of formal education, the better their knowledge and attitude towards healthy living [30]. The research by Angelica et al. shows that parents with a higher level of education tend to have children with a lower rate of caries compared to children whose parents have a lower level of education [31]. This aligns with this study, which shows that fathers with higher education have a greater percentage of low caries status, at 16.67%, compared to fathers with low and middle education. The findings are the opposite for mothers, where those with low and middle

education have a higher percentage of low caries status than mothers with higher education, who have only 2.3%. This may be due to children's close relationship with their parents, especially their mothers. Mothers with higher education may be busier with work in their daily lives, leading to less attention to their children's dental and oral health [32]. The results of the Chi-Square test yielded a p-value of 0.222 ($p > 0.05$) for fathers' education and a p-value of 0.172 ($p > 0.05$) for mothers' education, leading to the conclusion that there is no significant relationship between the levels of education of fathers and mothers and the dental caries status of children. Good knowledge or education influences children's dental health, and parents' attitudes and awareness also play a crucial role. Parental initiative is especially important in preventing dental diseases in children [33].

Parents with higher education are likely to recognize the significance of dental and oral health and possess greater knowledge on maintaining it, allowing them to educate their children. Conversely, parents with a limited understanding of dental and oral health may engage in behaviours that hinder the upkeep of their children's dental health, ultimately impacting the children's oral hygiene [34]. This supports the findings of this study, which show that fathers with higher education have a greater percentage of children with good oral hygiene status, at 21.26%, compared to children with fathers with low or middle education levels. A mother plays a crucial role in educating her child, making a mother's education an important factor, especially in influencing child development. Mothers are vital in promoting dental health practices for their children, and those with lower education levels are at a higher risk of their children developing dental diseases [35]. This is not consistent with the findings of this study, which show that mothers with low to middle education levels have a higher rate of good oral hygiene status in their children compared to mothers with higher education. This discrepancy may be due to the small number of respondents with higher-educated mothers. The results of the Chi-Square test yielded a p-value of 0.064 ($p > 0.05$) for fathers' education and a p-value of 0.519 ($p > 0.05$) for mothers' education, leading to the conclusion that there is no significant relationship between the education levels of fathers and mothers and the oral hygiene status of their children. This is because parental education does not guarantee that children will adopt good daily habits for maintaining their dental and oral health. For children, parental involvement and attention are crucial in enhancing their potential during their developmental stages, especially regarding dental and oral health [33].

According to the recommendations of the American Academy of Pediatric Dentistry (AAPD) and the American Dental Association (ADA), a child should begin visiting the dentist after the eruption of their first permanent tooth. This aims to detect and manage various dental pathologies, particularly dental caries, as dental caries is one of the most relevant oral diseases affecting children [36]. The study by Cahyadi et al. shows that respondents who visited the dentist in the past year have a higher dental caries status than those without caries. This is similar to the findings of this study, which indicate that the low dental caries status is higher among respondents with poor dental visits (32.76%) compared to those with good dental visits (20.69%). The Chi-Square test results yielded a p-value of 0.115 ($p > 0.05$), allowing us to conclude that there is no significant relationship between dental visits and caries status. This is consistent with the findings of Cahyadi et al., which also show that there is no significant relationship between dental visits and dental caries status, with a p-value of 0.903 ($p > 0.05$) obtained using the Chi-Square test [21].

Regular visits to the dentist are a predisposing factor that helps maintain oral hygiene. The study by Sodri Anggreny et al. states that increased awareness of the importance of routine dental visits leads to better oral hygiene [37]. This finding is inconsistent with the results of this study, which indicate that individuals with poor dental visits exhibit a higher rate of good oral hygiene status at 39.08% compared to those with good dental visits at 27.01%. The Chi-Square test results showed a p-value of 0.109 ($p > 0.05$), concluding that there is no significant relationship between dental visits and oral hygiene status. One possible factor influencing this outcome could be the respondents' misunderstanding of the questions related to dental visits.

Conclusion

Overall, the dental caries status of the students at SDN Kapuk 03 Pagi is low, and the oral hygiene status is good. No significant relationship was found between dental caries status and oral hygiene status concerning gender, age group, father's education, mother's education, and dental visits

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