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ANALYSIS OF THE RELATIONSHIP BETWEEN EDUCATION AND LEVEL OF ORAL HEALTH KNOWLEDGE IN POSYANDU CADRES

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ABSTRACT

Introduction: The prevalence of dental caries in West Jakarta was 44.24%, and one of the prevention efforts that could be taken was health promotion. Posyandu cadres are health volunteers selected from the community who voluntarily contribute to improving community health. Posyandu cadres are important as oral health educators in the community; as extension workers, Posyandu cadres must have the necessary knowledge, skills, and experience to be trusted as a source of information; one of the factors that influence participation is knowledge. **Aims:** This research examines the relationship between education and oral health knowledge among Posyandu Cadres in Kemanggisan District. **Method:** Analytical observational research was conducted using a cross-sectional design method involving 73 Posyandu cadres. The research was conducted by taking data from the results of questionnaires filled in directly from August – September 2023. **Result:** Of the 73 respondents, 41.1% had high knowledge, and 58.9% had low knowledge. Subjects who had a high level of education had higher odds of having good knowledge (adjusted OR: 147.93; 95% CI: 3.52 - 6218.85, P = 0.009). **Conclusion:** The higher the cadre's education, the better their oral health knowledge will be.

Keywords: education, oral health knowledge, posyandu cadres

INTRODUCTION

RISKESDAS 2018 shows that the most common oral diseases in Indonesia are damaged, cavities or diseased teeth with a prevalence of 45.3%, (Indonesian Ministry of Health, 2018) while in West Jakarta City, it is 44.24%. One way to prevent tooth decay is through primary prevention through health promotion, which posyandu cadres can carry out. Posyandu cadres are members of the community who are willing and able to carry out posyandu activities voluntarily (Fariani & Paramastri, 2015).

Cadres' duties as health instructors to the community can play an important role in implementing oral health promotion (Indonesian Ministry of Health, 2019). As instructors, cadres must have the necessary knowledge, skills, and experience to be trusted as a source of information (Winaryanto et al., 2004). Three factors influence cadre activity: predisposing factors, enabling factors, and influencing factors. The predisposing factors include cadres' knowledge, education, employment status, motivation, attitudes, cultural values, beliefs, and socio-economic conditions. Behavior based on knowledge is known to be more lasting than behavior based on ignorance. According to Notoatmodjo, the factor that has the most influence on knowledge is education (Notoatmodjo, 2003). Individuals with a high level of education tend to have a more critical attitude when receiving information.

Good knowledge will influence positive behaviour regarding oral health, while lack of knowledge can be one of the many factors that arise in oral health

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problems. Oral health knowledge includes an understanding of tooth growth in toddlers, oral diseases, efforts to maintain oral health and oral health in pregnant women. Cadres' knowledge of dental and oral health is important because it is in accordance with the cadre's role, namely as a health instructor, one of which is dental and oral health. Many aspects influence knowledge, including education (Damayanti & Sofyan, 2022),

Education is an effort and process that has the aim of changing a person's attitudes and behaviour through teaching and coaching (Nurkholis, 2013). Cadres' knowledge of oral health will influence their motivation and behaviour when carrying out outreach activities. Research by ;(2016) in Tampak Siring Gianyar District shows that there is a relationship between education and oral health knowledge among teachers with a Spearman correlation test value of 0.0376. Himmawan's research states that there is a significant relationship between education and the level of cadre knowledge regarding the 1000 HPK with a p-value of 0.017. Dharmawati et al,'s research did not involve posyandu cadres as research respondents, while Himmawan's research did not examine knowledge about dental and oral health among cadres (Dharmawati, 2016; Himmawan, 2020).

Based on this background, researchers are interested in seeing the effect of education on knowledge about oral health among posyandu cadres in Kemanggisan District.

METHODS

This research is an observational analytic with a cross-sectional design. The research population was all posyandu cadres in Kemanggisan District. The minimum sample size is 73, and sampling was carried out using consecutive sampling techniques. The inclusion criteria for this study were posyandu cadres who were willing to be respondents and filled out informed consent and a complete questionnaire. In contrast, the exclusion criterion for this study were posyandu cadres who were not present when the research was carried out.

The independent variable is education, while the dependent variable is knowledge, which is measured using a questionnaire consisting of 13 questions regarding four topics: tooth growth in toddlers, efforts to maintain dental health, dental and oral diseases, and dental and oral health in pregnant women. Confounding variables are age, occupation, length of time as a cadre, counselling, and specialization.

The independent variable in this research is the education possessed by posyandu cadres. Education level is the difference in the degree of formal education the respondent completed until the final diploma was obtained. Educational measurement can be categorized into three levels. Low education levels include not/never been to school, not finished/finished elementary school/MI, and finished junior high school/MTS. The secondary education level consists of graduating from high school/MA. A high level of education consists of completing D1/D2/D3 and graduating from college. The measuring scale uses an ordinal scale.

Knowledge is information obtained through one's own experience or the experience of other individuals. The measurement of oral health knowledge can be categorized as high or low. The accumulated score that can be obtained ranges from 0 to 13. The total score will be divided by the number of questions and then converted into a percentage. Knowledge is divided based on the average value (mean) into two levels, namely high (≤ 65.9) and low (> 65.9). A nominal scale is used to measure these results. Knowledge was categorized into good and bad based on the mean value.

Confounding variables in this study are age, occupation, length of time as a

cadre, and counselling. Age is the time span from the birth of the respondent until the time the research was carried out. The measuring scale applied is an interval scale. Work is the main activity carried out by respondents, where respondents earn income as a result, which they continue to carry out until the research takes place. The measuring scale used is the nominal scale. Length of time as a cadre is the duration of the respondent's activities or work period, which is calculated from the first time the respondent became a posyandu cadre until the research took place. The scale used is an interval scale. Counselling is dental and oral health material that has already been obtained or not until research is carried out. The scale used is nominal.

The validity test aims to evaluate whether an instrument is valid in measuring research variables. A questionnaire is declared valid if it can be measured accurately. Validity can be interpreted as the level of accuracy of an instrument as a measuring tool. The reliability test is an indicator that shows whether a measurement instrument can be trusted or not. Reliability testing aims to evaluate the suitability of a measuring instrument and whether the measuring instrument used is reliable and consistent when measurements are carried out repeatedly.

The first validity and reliability test was carried out in July 2023 with a sample of 50 posyandu cadres in the Kemanggisan sub-district. The results of the validity and reliability tests can be seen in Table 1. Of the 23 questions, 16 were invalid, and seven were valid. The results of the reliability test in the Kemanggisan sub-district are said to be reliable, with a value of 0,6797. The validity and reliability test was carried out in August 2023 with a sample of 50 posyandu cadres in the Jatipulo sub-district. The results of the validity and reliability tests can be seen in Table 2. Of the 20 questions, there werenine invalid questions and 11 valid questions. The results of the reliability test in Jatipulo Village are said to be reliable, with a value of 0.6553. This study used a questionnaire consisting of 13 questions, consisting of two questions for the first validity and reliability test and 11 questions for the second validity and reliability test. This questionnaire contains five questions about tooth growth in toddlers, three questions about efforts to maintain dental and oral health, four questions about dental and oral diseases, and one question about dental and oral health in pregnant women.

Data were analyzed using multivariate analysis, namely causal model logistic regression, to see the effect of education on knowledge after being controlled by confounding variables. Ethical clearance was obtained from the Ethical and Research Advisory Committee, Faculty of Dentistry, Universitas Trisakti (653A/S1/KEPK/FKG/9/2023). Informed consent was obtained from all participants.

RESULT

Table 3 shows subject distributions based on socio-demographic characteristics and other variables. The data show all respondents were female. The education level in this study was divided into three groups. Low education level consists of never/never being to school, not finishing elementary school/MI, finishing elementary school/MI, and finishing junior high school/MTS. The secondary education level consists of graduating from high school/MA. The higher education level consists of completing D1/D2/D3/PT. The data show more than half of the research subjects (63%) had a secondary education level.

The majority age of research subjects (83.6%) were less than 60 years old. Jobs in this study were divided into two groups, namely, working and not working. The working group consists of private employees, entrepreneurs, workers/

drivers/household helpers. The non-working group consists of respondents who do not work (housewives). Table 3 shows that eight people are in the working group, while 65 people (89%) are in the non-working group.

Based on Table 3, the average length of time as a posyandu cadre is 12.47 years. In this study, there were variations in the length of time being a cadre, where the oldest was 35 years while the newest was one year. In the Kemanggisan Subdistrict, 44 respondents had never received counselling regarding dental and oral health. Counselling for posyandu cadres is carried out by community health centre officers, namely dental and oral therapists, once or twice a year. The last time dental and oral counselling was given was six months before the research was carried out. Cadres who have received oral health education were 39.7%, and those who were interested in becoming oral healthcare were 43.8%. The oral health knowledge questionnaire in this study was divided into 4 topics, namely tooth growth in toddlers (questions 1, 2, 3, 4, and 5); maintaining oral health (questions 6, 7, and 8); oral diseases (questions 9, 10, 11 and 12); and question 13 regarding the oral health of pregnant women. The results of respondents' questionnaire answers can be seen in Table 2.

Questions on the topic of knowledge regarding efforts to maintain dental and oral health are in questions 6, 7, and 8. The results show that the majority of posyandu cadres already know about how to maintain dental and oral health. Questions on the topic of knowledge of dental and oral diseases in questions 9, 10, 1, and 12, on average, show that posyandu cadres already know about dental and oral diseases. Questions on the topic of dental and oral health for pregnant women, question 13 (70% wrong answer), most posyandu cadres do not know what pregnant women should do when experiencing morning sickness (vomiting). Posyandu cadres in this study already know the topic about maintaining oral health and oral diseases; posyandu cadres in this study do not know much about tooth growth in toddlers, question 4 (wrong answer 79%), and oral health in pregnant women question 13 (wrong answer 70%). Oral health knowledge in this study is categorized based on the average score (mean), namely 65.9. Knowledge is high if the score is >65.9, while knowledge is low if the score is ≤ 65.9.

The number of respondents who got a score of more than 65.9 with a high level was 43 people, while the number of respondents who got a score of less than 65.9 with a low level was 30 people. Table 5 shows the complete results of the bivariate analysis. There is a relationship between good knowledge and level of education, length of time as a cadre, and already received oral health education. Next, variables that had a p-value <0.25 were included in the multivariate analysis. The variables education, length of time as a cadre, already received oral health education, and interest in becoming oral healthcare were included in the initial modelling. Because the variable of interest in becoming oral healthcare shows a p-value>0.05, this variable is then removed from the model.

The final model consists of education, length of time as a cadre, and already received oral health education. There was no difference in the level of knowledge between subjects with a medium education level compared to those with a low education level (P = 0.078). However, subjects who had a high level of education had higher odds of having good knowledge (adjusted OR: 147.93; 95% CI: 3.52 - 6218.85, P = 0.009). Apart from that, subjects who are cadres ≥20 years old and subjects who have received oral health education also have higher odds of having good knowledge (Table 6).

DISCUSSION

Community Resources Health Efforts (UKBM) is a mechanism to

empower communities in the health sector. UKBM was formed based on the needs felt by the community and managed by, from, for, and with the community by involving the health sector, cross-sectors, and other relevant stakeholders in the guidance and development of health programs that actively involve the community. UKBM, as written in Article 4, paragraph 2 of Minister of Health Regulation No. 8 of 2019, prioritizes promotive and preventive approaches. UKBM includes various facilities such as Posyandu (Integrated Service Post), Polindes (Village Maternity Center), and Alert Village. The success of UKBM is very dependent on the active role of the community as implementers and recipients of health services (Indonesian Ministry of Health, 2019).

The community has an important role in the sustainability of the posyandu, one of which is the posyandu cadre. Posyandu cadres are community members who live in the surrounding area and have the will and ability to become community mobilizers. Cadres are a group of individuals who have been educated and trained and have the skills needed to carry out a program with the aim of achieving the expected results (Mujiyati & Syahniati, 2021).

The role of cadres is one of the factors determining the success of health services in the community, so the Health Service collaborates with the implementing agency to provide training for each cadre at sub-district and village levels. This training aims to increase cadres' knowledge, including in dental and oral health (Siregar, 2021). In the context of posyandu activities, the duties of posyandu cadres are to register, weigh, and record maternal and child services in the Maternal and Child Health Book (KIA) and use the KIA book in conducting counselling (Wirata et al., 2019).

In this study, all 73 respondents were female. This is in line with research conducted by Neno, Mau, and Rua, which shows that 100% of posyandu cadres are female (Neno et al., 2021). According to Herlinawati and Pujiati (2019), one requirement for prospective cadres is that women have the availability of time to carry out the assigned cadre duties, where activities posyandu are carried out on working days and hours. The average age of posyandu cadres in Kemanggisan District is 51.20 years.

Table 1. Results of reliability and validity test

No	Questions	Correlation coefficient	P
1.	How do you maintain proper dental health and oral health?	1	<0.05 (not valid)
2.	How many times is the right time to brush your teeth a day?	1	<0.05 (not valid)
3.	When is the right time to brush your teeth?	0.0063	<0.05 (valid)
4.	What is the minimum time needed to brush your teeth?	0.2872	<0.05 (not valid)
5.	What are the requirements for good toothbrush bristles?	0.2932	<0.05 (not valid)
6.	When does a toothbrush need to be replaced?	0.2320	<0.05 (not valid)
7.	What size toothpaste should you use when brushing your teeth?	0.2178	<0.05 (not valid)
8.	What ingredients should be in toothpaste?	0.1653	<0.05 (not valid)

No	Questions	Correlation coefficient	P
9.	If food residues are left between your teeth, how do you clean them?	0.0628	<0.05 (not valid)
10.	How to clean tartar?	0.2079	<0.05 (not valid)
11.	The correct brushing movement is?	0.0618	<0.05 (not valid)
12.	How do you brush the back teeth or molars on the chewing surface?	0.1226	<0.05 (not valid)
13.	How do you brush the front or front surface of your teeth?	0.0512	<0.05 (valid)
14.	What causes bleeding gums?	0.0113	<0.05 (valid)
15.	What does bleeding gums mean?	0.5688	<0.05 (valid)
16.	What is a sign of healthy gums?	0.0063	<0.05 (valid)
17.	What effect does retention of sweet foods have on teeth?	0.9093	<0.05 (not valid)
18.	What causes cavities?	0.0105	<0,05 (valid)
19.	Where does the process of cavities begin?	0,0147	<0.05 (valid)
20.	What are examples of foods that can damage teeth?	0.8954	<0.05 (not valid)
21.	If a tooth has a cavity, what treatment should be done?	0.6055	<0.05 (not valid)
22.	What is meant by damage to the hard tissue of the teeth?	0.1282	<0.05 (not valid)
23.	How often do you check your oral and dental health at the dentist?	1	<0.05 (not valid)
	Reliability test (*Cronbach's alpha*)	0,6797	

Table 2. Results of reliability and validity test on Jatipulo sub-district

No	Questions	Correlation coefficient	P
1.	When do baby teeth start to grow in toddlers?	0.0580	<0.05 (valid)
2.	How many milk teeth do toddlers have?	0.0015	<0.05 (valid)
3.	What can be used to clean the gums in a baby's mouth?	0.8566	<0.05 (not valid)
4.	When do children's permanent teeth start to grow?	0.0104	<0.05 (valid)
5.	Are the first permanent teeth to grow first in children?	0.0020	<0.05 (valid)
6.	What will happen if your child gets used to drinking milk while sleeping all night?	0.0235	<0.05 (valid)

No	Questions	Correlation coefficient	P
7.	What bad habits can cause a child's teeth to become crooked?	0.4507	<0.05 (not valid)
8.	What are the criteria for a good toothbrush?	0.0999	<0.05 (not valid)
9.	How long does it take to replace a toothbrush?	0.000	<0.05 (valid)
10.	When is the right time to brush your teeth?	0.0893	<0.05 (not valid)
11.	How do you brush the front teeth or front surface?	0.0024	<0.05 (valid)
12.	How long does it take to brush your teeth?	0.1408	<0.05 (not valid)
13.	What tools are recommended for cleaning the spaces between teeth / between teeth?	0.0037	<0.05 (valid)
14.	What causes cavities?	0.3739	<0.05 (not valid)
15.	What is the name of the layer of teeth that is first damaged when a cavity occurs?	0.7119	<0.05 (not valid)
16.	What is a sign of healthy gums?	0.0058	<0.05 (valid)
17.	What is meant by gingivitis?	0.0535	<0.05 (valid)
18.	What should pregnant women do when experiencing morning sickness (vomiting)?	0.0003	<0.05 (valid)
19.	What difficulties will occur if missing teeth are not replaced immediately?	0.2869	<0.05 (not valid)
20.	What should be done to maintain the cleanliness of removable dentures?	0.8566	<0.05 (not valid)
	Reliability test (*Cronbach's alpha*)	0.6553	

Table 3. Socio-demographic characteristics

Variables	**N (%)**
Gender	
Female	73 (100)
Male	0 (0)
Level of education	
Low	13 (17.8)
Middle	46 (63.0)
High	14 (19.2)
Age (year). mean (SD)	51.2 (10.2)
<60 year	61 (83.6)
≥60 year	12 (16.4)
Job	
Working	8 (11.0)

Variables	N (%)
Not working	65 (89.0)
Length of time as a cadre	
1-10 year	41 (56.2)
11-20 year	16 (21.9)
≥20 year	16 (21.9)
Have received oral health education	
No	44 (60.3)
Yes	29 (39.7)
Interested in becoming an oral health cadre	
Yes	32 (43.8)
No	41 (56.2)

Table 4. Distribution of Questionnaire Questions

No	Questions	True	False
1	When do baby teeth start to grow in toddlers?	57(78%)	16(22%)
2	How many milk teeth do toddlers have?	36(49%)	37(51%)
3	When do children's permanent teeth start to grow?	46(63%)	27(37%)
4	Are the first permanent teeth to grow first in children?	15(21%)	58(79%)
5	What will happen if your child gets used to drinking milk while sleeping all night?	51(70%)	22(30%)
6	How long does it take to replace a toothbrush?	62(85%)	11(15%)
7	How do you brush the front or front surface of your teeth?	47(64%)	26(36%)
8	What tools are recommended for cleaning the spaces between teeth/between teeth?	47(64%)	26(36%)
9	What is one sign of healthy gums?	70(96%)	3(4%)
10	What is meant by gingivitis?	65(89%)	8(11%)
11	What causes cavities?	51(70%)	22(30%)
12	Where does the process of cavities begin?	56(77%)	17(23%)
13	What should pregnant women do when experiencing morning sickness (vomiting)?	22(30%)	51(70%)

Table 5. Bivariate Analysis

Variable	n (%)		Unadjusted OR	95% CI	P
	Low	High			
Level of education					
Low	10 (33.3)	3 (7.0)	Ref	Ref	Ref
Middle	19 (63.3)	27 (62.8)	4.74	1.15 - 19.55	0.031
High	1 (3.4)	13 (30.2)	43.33	3.90 - 481.81	0.002
Age					
<60 year	25 (83.3)	36 (83.7)	Ref	Ref	Ref
≥60 year	5 (16.7)	7 (16.3)	0.97	0.28 - 3.41	0.965
Job					
Working	2 (6.7)	6 (13.9)	2.27	0.42 - 12.10	0.337

Variable	n (%)		Unadjusted OR	95% CI	P
	Low	High			
Not working	28 (93.3)	37 (86.1)	Ref	Ref	Ref
Length of time as a cadre					
1-10 year	22 (73.3)	19 (44.2)	Ref	Ref	Ref
11-20 year	6 (20.0)	10 (23.3)	1.93	0.59 - 6.30	0.276
≥20 year	2 (6.7)	14 (32.5)	8.10	1.63 - 40.29	0.011
Have received oral health education					
No	29 (96.7)	15 (34.9)	Ref	Ref	Ref
Yes	1 (3.3)	28 (65.1)	54.13	6.70 - 437.57	0.038
Interested in becoming an oral health cadre					
Yes	20 (66.7)	21 (48.8)	2.10	0.80 - 5.51	0.134
No	10 (33.3)	22 (51.2)	Ref	Ref	Ref

Table 6. Multivariate Analysis

	First model			Final Model		
	Adjusted OR	95% CI	P	Adjusted OR	95% CI	P
Education						
Low	Ref	Ref	Ref	Ref	Ref	Ref
Middle	13.02	0.84 - 202.76	0.067	11.75	0.76 - 181.98	0.078
High	139.14	3.38 - 5727.17	0.009	147.93	3.52 - 6218.85	0.009
Length of time as a cadre						
1-10 year	Ref	Ref	Ref	Ref	Ref	Ref
11-20 year	3.40	0.52 - 22.14	0.200	4.04	0.68 - 24.02	0.125
≥20 year	17.22	1.84 - 161.37	0.013	18.49	1.95 - 175.09	0.011
Received oral health education						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	103.37	8.77 - 1217.59	<0.001	102.01	8.98 - 1158.29	0.008
Interested in becoming oral health cadre						
Yes	1.64	0.32 - 8.25	0.551			
No	Ref	Ref	Ref			

Based on an interview with the head of the posyandu cadre in Kemanggisan District, recruitment of posyandu cadres is usually carried out when there are cadres who have retired or moved their residence so that the majority of respondents are cadres who have been

with the Kemanggisan District for a long time.

The work experience or length of time as a posyandu cadre in this study was an average of 12.47 years with a range of length of work of 1 - 35 years. There are 13 posyandus in Kemanggisan District; each posyandu has a different recruitment time for posyandu cadres; based on information from the head of each posyandu, cadre recruitment in Kemanggisan District ranged from 1 - 5 years ago. In this study, most of the participants had a high school education level. This is in line with research by Azizah et al. (2021) that the majority of respondents have an average level of secondary education, namely SMA. Kemanggisan District does not have provisions regarding education to become a posyandu cadre.

In this study, 65 respondents did not work, while eight respondents worked. This is not in line with research conducted by Bur, Septianty, and Yusriani; of the total respondents, namely 14 cadres, 10 respondents had other jobs, namely self-employed, while four respondents did not have another job (Bur et al., 2022). Kelurahan Kemanggisan does not have a requirement for whether a posyandu cadre must be unemployed or working. Suppose there is someone who wants to become a posyandu cadre but has another job apart from being a cadre, according to the head of the posyandu cadre in Kemanggisan District. In that case, that person is allowed to register if that person can allocate their time to posyandu activities. Based on information from the cadre head, most of the posyandu cadres in Kemanggisan District are housewives who have free time and can divide their time into posyandu activities. In general, the leader of the PKK Kemanggisan sub-district plays a role in recruiting cadres in his area.

In this study, only 29 out of 73 respondents received oral health education from Puskesmas officers, while those who had not received oral health education were 44 respondents. In Kemanggisan District, the last time oral health education was given was six months ago before the research was carried out and not all posyandu cadres attended that program. Oral health education is carried out only at one posyandu out of 13 posyandu and is carried out after the posyandu activities. If a posyandu cadre at the local posyandu cannot attend the posyandu activities, then that person does not receive counselling from the local Puskesmas officers.

Based on the questionnaire results, posyandu cadres do not know much about tooth growth in toddlers (question 4) or oral health in pregnant women (question 13). Posyandu cadres in Kemanggisan Village do not yet know about the first permanent teeth to grow, namely the first molars (first molars); 15 respondents answered correctly (21%), and 58 respondents answered incorrectly (79%). This is in line with research conducted by Octiara and Felmi (2023), where the level of knowledge of mothers and prospective mothers regarding the growth of permanent teeth was in the good category, namely 18 respondents out of 100 respondents answered correctly (18%), the sufficient category is 34 respondents (34%), and 48 respondents (48%) answered incorrectly.

Posyandu cadres in Kemanggisan Village do not yet know what pregnant women should do when experiencing morning sickness (vomiting) related to dental and oral health. Only 22 people (30%) answered correctly, while 51 others answered incorrectly (70%). Pregnant women are recommended to brush their teeth one hour after vomiting to avoid caries due to vomiting during pregnancy because pregnant women have a high potential for experiencing dental and oral health problems due to frequent vomiting during pregnancy. 40,51 Research conducted by Kaunang, Wowor, and Arisanty is not in line, namely that 29 respondents (58%) out of 50 respondents already knew that gargling after vomiting can reduce the risk of tooth decay by

neutralizing the acid in the mouth. In contrast, 21 respondents (42%) did not know about gargling after vomiting.(Arisanty, 2013, Rohmah and Yulian, 2023)

Based on information from the head of the posyandu cadres, there has been no oral health education on these topics. Generally, the education received was about maintaining oral hygiene in toddlers, such as how to clean the oral cavity and gums using gauze.

Multivariate analysis shows that education influences oral health knowledge. Respondents with a high level of education have high odds of having good knowledge (adjusted OR: 147.93; 95% CI: 3.52 - 6218.85, P = 0.009). This is in line with research conducted by Damayanti and Sofyan, which found a relationship between education and knowledge, where the close relationship between variables was in the medium category with a correlation coefficient value of 0.413. The higher the level of education, the higher the knowledge a person has because there is an influence on a person's perspective in receiving the information obtained. Education is the largest component of the level of knowledge because individuals with higher education tend to provide a more rational response to the knowledge gained and are able to think critically about the benefits one person can provide to the development of others in achieving goals (Damayanti and Sofyan, 2022) .

There is no relationship between age and knowledge. This is in line with Dharmawati (2016) and Wirata et al.'s (2019) research that there is no significant relationship between age and knowledge, which has a p-value of 0.618. According to Verner and Davison, there are physical factors that can hinder the learning process in adults, resulting in a decline over time in the power to think and work (Dharmawati, 2016).

Apart from that, there is the influence of being a cadre with knowledge for a long time. Respondents who have been cadres for more than 20 years have high odds of having good knowledge (adjusted OR: 18.49; 95% CI: 1.95-175.09, P=0.011). This is in line with research conducted by Sepang, Gunawan, and Pateda; there is a significant relationship between the length of work and the level of knowledge of Manado Health Center health workers (Sesrianty, 2018), Length of work can influence knowledge because continuous use can increase a person's brain's performance and ability to store information (memory) (Sari, 2016; Sitepu et al., 2024);

Having received oral health education also affected education (adjusted OR: 102.01; 95% CI: 8.98-1158.29, P=0.008). This phenomenon is comparable to research conducted by Markus, Yudiernawati, and Sutriningsih, which found that counselling influenced mothers' knowledge at Posyandu Dermo Malang (Sari, 2016). Research by Hidayat, Nura'eny, and Wahyuni stated that posyandu cadres increased their knowledge after counselling was carried out, and they had a good relationship. This knowledge is meaningful to kesgilut knowledge with a strong level of correlation (Hidayat, 2019). Providing counseling is one of the actions by providing information aimed at increasing one’s knowledge (Giena et al., 2020).

A limitation of this research is recall bias, namely the respondent's ability to remember information related to questions in the questionnaire. To prevent this bias, a cohort or case-control research design can be used in future research.

CONCLUSIONS

Based on this research, the higher the cadres' education, the better their knowledge will be. The results of this research can be given to the PKK team leader when recruiting posyandu cadres; they need to consider their level of education.

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