

The Relationship of Knowledge, Attitudes, and Oral Healthcare Behaviours of the Oral Hygiene Status of Students (Case Study of Students of Junior High/MTs Pondok Pesantren Putri Ummul Mukminin)

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Abstract: ***Background:** Oral health is often overlooked, but oral health is an unseparated integral part of general health. Some of factors that are influence oral health are knowledge, attitudes/behaviour, and maintenance behaviours. Pesantren is a boarding school dormitory where students are supervised by few dorm caregivers. This causes overlooked condition of individual health care. **Purpose:** This research aims to know relations of knowledge, attitudes, and oral healthcare behaviours of oral hygiene status of students of Junior High/MTs PondokPesantrenPutriUmmulMukminin students. **Method:** This study is an analytical observational study with cross sectional study design. Sampling technique is done with using cluster random sampling. This research conducted on students of class VIII of Junior High/MTs by giving questionnaires that are relate to knowledge, attitudes, and oral healthcare behaviour then examining their oral hygiene using Oral Hygiene Index- Simplified (OHI-S) examination. **Results:** There were 97 respondents. 96 respondents (98,96%) had good knowledge and 1 respondent (1,03%) had average knowledge. 95 respondents (97,93%) had good attitudes in taking care of their oral health and hygiene, while 2 respondents (2,06%) had average attitudes. 76 respondents (78,35%) have done good oral healthcare behaviours, while 21 respondents (21,65%) were in average level of oral healthcare behaviours. In OHI-S examination, 55 respondents (56,70%) were good- categorized, and 42 respondents (43,29%) were average-categorized. Chi-square analysis result between actions and oral hygiene showed p value = 0.0427 (p<0.05). **Conclusion:** There is a significant relation between behaviour and status of oral hygiene. When the behaviour category is average, OHI-S category is alsoaverage.*

Keywords: Knowledge, attitude, behaviour, oral hygiene

1. Introduction

Oral health is often overlooked. Teeth and mouth are entrance for bacteria that can interfere with other organs. Oral health is an unseparated integral part from general health. WHO in 2012 defined oral health as a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing¹. This show how important oral health is, not only to prevent oral disease but also as a motivator of individual confidence. Oral health is not only about teeth, but also relates to gum and supporting bones, soft tissues of mouth, tongue, and lips. According to WHO, 60-90% of school children and nearly 100% of adults have dental cavities, often leading to pain and discomfort. ²Poor oral health is a cause of dental cavities, and tooth loss, specially for permanent teeth. Based on study, only 41% of European have all their permanent teeth, even 13% of respondents admit they only have 9 natural teeth left. ³Based on Deyu Hu⁴'s research cited by Bangramianin China in 2008, 350.000 respondents in age of 5-74 years old have 100% of dental cavities prevalence. This causes oral health problems still become a big problem the world faces. In Indonesia, oral health is the most complained disease with prevalence 61% of citizens, and highest percentage is on age

more than 55 years old (92%), based on SKRT-Surkesnas morbidity study 2010. ⁴Percentage of Indonesian resident that having oral health problems based on Riskesdas in 2013 is 25,9%. This value increased 2,5% compared with Riskesdas in 2007 (23,4%). Provinces with most of oral health problems are Gorontalo, Aceh, North Sulawesi, DI Yogyakarta, West Sulawesi, Center Sulawesi, South Kalimantan, and the highest is in South Sulawesi(36,2%).^{5,6}

Some of factors that influence oral health are knowledge level, attitudes, and actions. Knowledge about oral health gained from complex cognitive process. Attitude is knowledge accompanied by a tendency to act on that knowledge. Behaviour is the level of knowledge that blend in with the attitude and owned by an individual's personal control.⁷

Pesantren is an oldest Islamic educational institution in Indonesia. Pesantren have boarding school system. Boarding school system is the school system with boarding dormitory form. As one of Islamic educational center, pesantren should apply "hygiene is part of faith" as a symbol from daily activities in health problems. But according to Nuqsah's study, to 24 students in a pesantren in Karawang, available tools and materials are essential for personal hygiene. ⁸This is supported by Setyaji's statement, that students in pesantren are using toothbrush alternately, which can possibly ease the migration of bacteria individually.

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PondokPesantrenUmmulMukminin is one of women's school in Makassar. This pensatren consists of junior high, high school, Madrasah Tsanawiyah, and Madrasah Aliyah. Students of this pesantren came from varied regions of Indonesia, so the population of students areheterogenous. Economical status of students are in middle to upper class— according to one of student's caregiver—marked with high entry fee and living cost as long as students study in the school. Students are only permitted to come home once in a month, alternately based on class stage, so direct supervise from parents about their daughter's oral health is less. Oral health of students are directly supervised by dorm caregivers. Few dorm caregivers are not in balance with amounts of students in the school. This causes oral health of students areoverlooked.

2. Materials and Method

This study is an analytical observational study with cross sectional study design. The location of research is in PondokPesantrenPutriUmmulMukminin, Biringkanaya District, Makassar City, South Sulawesi. This research was held in Maret until April 2016.

Research population is 220 of junior high/MTs students (class VIII) of PondokPesantrenPutriUmmulMukminin Makassar, with minimal sample determination:

$$n = \frac{NZ_{(1-\alpha/2)}^2 P(1-P)}{Nd^2 + Z_{(1-\alpha/2)}^2 P(1-P)}$$

Exp:

n :Samples
 N : Population
 Z(1-α/2) : The value of the standard normal distribution. The amount depending on level of trust (LT). If LT 90% = 1,64, LT 95% = 1,96, and LT 99% =2,57
 P : Incidence proportion. If unknown, suggested value is 0.5
 d: The value of deviation; 0.1
 Minimal amounts of sample needed in this research:

$$n = \frac{(220)(1,96)^2 0,5(1 - 0,5)}{(220)(0,1)^2 + (1,96)^2 0,5(1 - 0,5)}$$

$$n = \frac{211,288}{3,160}$$

$$n = 66,85$$

In conclusion of this formula, minimal samples needed for this research are 67 samples.

Sampling technique used for this research was cluster random sampling. This technique is a sampling technique with grouping system. Population divided into 7 big groups (class VIII junior high consists of 180 students from 6 classes and one class from class VIII MTs with 20 students). Total sample used for this research was 110 samples, with criterias below:

Inclusion Criteria's

- 1) Student of PondokPesantrenPutriUmmulMukmininMakassar;
- 2) Student from class VIII junior high/MTs of PondokPesantrenPutriUmmulMukmininMakassar;

- 3) Willing to be cooperative and examined (by signaturing given informed consent);
- 4) Student whom was inside the location when the research washeld;
- 5) Student in junior high/MTs with age of 12-14 years old when the research was held;

Exclusion Criteria's

- 1) Uncooperative student, and not willing to beexamined;
- 2) Student whom was not inside the location when the research washeld;
- 3) Student whom was not in junior high/MTs in PondokPesantrenPutriUmmulMukmininMakassar

This research is done with measuring knowledge level, attitudes, and maintenance behaviours of oral care of respondents using questionnaire. Knowledge level measured by 20 questions related to knowledge of maintenancing oral health. Each questions were given score 3 if the answer was correct, score 2 if the answer was incorrect, and score 1 if respondents answer "I don't know". Each scores were added and determined by knowledge measurement criterias:

- 1) Poor, if total score0-20
- 2) Average, if total score21-40
- 3) Good, if total score41-60

Attitude level measured by 20 questions related to attitudes of maintenancing oral health. Questions consisted of 10 questions with positive (+) value, and 10 questions with negative (-) value. Criteria assessing scale used was Likert Scale. For questions with positive score, "very agree" answer scored 4, "agree" answer scored 3, "less agree" answer scored 2, and "disagree" answer scored 1. On the contrary, for questions with negative score/value, "very agree" answer scored 1, "agree" answer scored 2, "less agree" answer scored 3, and "disagree" answer scored 4. Each scores were added and determined by criterias below:

- 1) Poor, if total score0-26
- 2) Average, if total score27-53
- 3) Good, if total score54-80

Behaviours measured by 20 questions related to behaviours of maintenancing oral health. Those questions consisted of 9 questions with positive (+) value/score, and 11 questions with negative (-) value. Criteria assessing scale used was Likert Scale. For questions with positive score, "always" answer scored 4, "oftenly" answer scored 3, "sometimes" answer scored 2, and "never" answer scored 1. On the contrary, for questions with negative score, "always" answerscored1, "oftenly" answer scored 2. "Sometimes" answer scored 3, and "never" answer scored 4. Scores were added and determined by criterias below:

- 1) Poor, if total score0-26
- 2) Average, if total score27-53
- 3) Good, if total score54-80

After that, samples' oral health measured using OHI-S index. OHI-S index is an index used to measure dental surfaces that are covered by plaque or calculus. For OHI-S examination, Greene and Vermillion (1960) stated that index teeth used are 4 posterior teeth and 2 anterior teeth. Examination is only used to 6 permanent teeth:

- 1) Right centralisincisivus labial surface of upper jaw

- 2) Left central incisor labial surface of lower jaw
 - 3) Right and left first molar buccal surface of upper jaw
 - 4) Right and left first molar lingual surface of lower jaw
- OHI-S index measured by measuring debris and plaque index on subject.

- a) Debris Index-Simplified (DI-S) Score/criteria
 - 1) 0 : No debris/stain
 - 2) 1 : Tender debris covered no more than 1/3 of teeth surface/extrinsic stains without debris
 - 3) 2 : Tender debris covered more than 1/3 but less than 2/3 of teeth surface
 - 4) 3 : Tender debris covered more than 2/3 of teeth surface
- b) Calculus Index-Simplified (CI-S) Score/criteria
 - 1) 0: No calculus
 - 2) 1: Calculus supragingiva covered no more than 1/3 of teeth surface
 - 3) 2 : Calculus supragingiva covered more than 1/3 but less than 2/3 of teeth surface/few of calculus subgingiva
 - 4) 3 : Calculus supragingiva covered more than 2/3 of teeth surface/lot of calculus subgingiva

After measuring debris index and plaque index on subjects, to know hygiene status of oral, debris index and calculus are added based on formula:

$$OHI-S = Debris\ Index-Simplified + Calculus\ Index-Simplified$$

Oral hygiene level based on OHI-S clinically categorized below: ¹⁰Good = Total score 0,0-1,2

Average = Total score 1,3-3,0 Poor = Total score 3,1-6,0

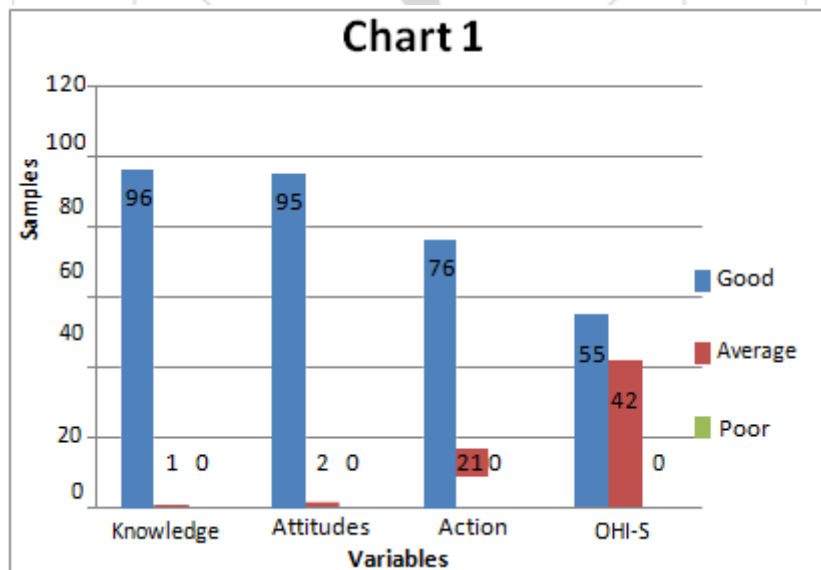
Data results gained then analyzed with using Chi-Square analysis to obtain relations between variables.

3. Results

Results of research which was held on students class VIII junior high/MTs Pondok Pesantren Putri Ummul Mukminin Makassar: there were 97 students as research respondents. Students with age of 12 are 2 students, age of 13 are 55 students, and age of 14 are 40 students.

Knowledge level, attitudes, and behaviours measured through questionnaire when the research was held. Well-categorized knowledge level was found in 96 samples (98,96%), and 1 sample (1,03%) had average knowledge level. Well-categorized attitude level was found in 95 samples (97,93%), while 2 samples (2,06%) were average-categorized. Well-categorized behaviour was found in 76 samples (78,35%) while 21 samples (21,65%) were average-categorized. There was no poor-categorized found in knowledge level, attitude, and behaviour. In OHI-S examination, there was 55 samples (56,7%) that were well-categorized, while 42 samples (42,3%) were average-categorized. (Chart 1)

Chart 1. Level of knowledge, attitudes, and behaviours of maintaining oral health, and OHI-S status of students of class VIII Junior High/MTs Pondok Pesantren Putri Ummul Mukminin.



Crosstabs result between knowledge level and oral hygiene status showed that the highest percentage (56,70%) is found on respondents with good knowledge level about oral hygiene and also good oral hygiene status. Analysis result using chi-square method showed p value = 0,25, so there is no relation between knowledge level and oral hygiene (P>0,05). (Table 1).

Crosstabs result between attitudes of maintenancing oral hygiene and oral hygiene status showed that the highest percentage (54,64%) is found on respondents with good attitudes to maintenance their oral hygiene and also with good oral hygiene status. Analysis result using Chi-Square method showed that P value=0,212, so there is no relation between attitudes of maintenancing oral hygiene and oral hygiene status (P>0,05). (Table2).

Crosstabs result between behaviours of maintenancing oral hygiene and oral hygiene status showed that the highest percentage (40,20%) is found on respondents with good behaviour on maintenancing their oral hygiene and also with good status of oral hygiene. Analysis result using Chi-Square method showed that P value = 0,042, so there is relation between behaviourspfmaintenancing oral hygiene and oral hygiene status (P<0,05). (Table 3).

Table 1: Relation between level of knowledge and oral hygiene status of students in PondokPesantrenPutriUmmulMukminin

Knowledge Level	Oral Hygiene Status						Total		P
	Good		Average		Poor		N	%	
	N	%	N	%	N	%			
Good	55	56,7	41	42,27	0	0	96	98,97	0,25
Average	0	0	1	1,03	0	0	1	1,03	
Poor	0	0	0	0	0	0	0	0	
Total	55	56,7	42	43,3	0	0	97	100	

Table 2: Relation between attitudes of maintenancing oral health and oral hygiene status of students in PondokPesantrenPutriUmmulMukminin

Attitude of Maintenancing Oral Health	Oral Hygiene Status						Total		P
	Good		Average		Poor		N	%	
	N	%	N	%	N	%			
Good	53	54,64	42	43,3	0	0	95	97,93	0,212
Average	2	2,06	0	0	0	0	2	2,06	
Poor	0	0	0	0	0	0	0	0	
Total	55	56,7	42	43,3	0	0	97	100	

Table 3: Relation between behaviours to maintenance oral health and oral hygiene status of students in PondokPesantrenPutriUmmulMukminin

Behaviours to Maintenance Oral Health	Oral Hygiene Status						Total		P
	Good		Average		Poor		N	%	
	N	%	N	%	N	%			
Good	39	40,2	37	38,14	0	0	76	78,4	0,042
Average	16	16,49	5	5,15	0	0	21	21,6	
Poor	0	0	0	0	0	0	0	0	
Total	55	56,7	42	43,3	0	0	97	100	

4. Discussion

Based on research about relation between knowledge and oral hygiene, obtained analysis result using chi-square

analysis showed that P value=0,25 (P>0,05). This means good level of knowledge of respondents is not in step with oral hygiene of respondents with average category. This result is also not in step with Basumi's study on people in Guntung Ujung village. The study stated that level of knowledge influenced oral hygiene status. In the study, the best oral hygiene index was found in high school educational stage, and the worst was found in respondents who were never got into school. ¹¹Study that was held by Imam Purnomo and Sri Lestari on students of SMK YapendaWiradesa stated that there was significant relation between knowledge and dental health status of students of SMK YapendaWiradesa. In the study, 208 respondents from class I, II, and III (without age of range), good categorized knowledge level was found in 84,6% of respondents. ¹²Other study by LilikRosdewati was aimed to review the development efforts of school dental health unit (SDHU/Usaha Kesehatan Gigi Sekolah (UKGS)) in advanced study (junior high and high school) stated that knowledge factor had no significant relation with oral health. According to this research, this happened because unsuccessful implementation of SDHU program. ¹³Beside that, a research by Yohanes gave result 74 respondents had good-categorized knowledge and OHI-S from 160 total respondents, so the research stated that child with good knowledge about oral health had chance 2,2 times bigger to have good oral health. ¹⁴Good level of knowledge of respondents is not very motivating to do behaviours to maintenance oral health that oral health status tend to be poor. This may caused by less of awareness to take care of oral hygiene, supported by uncontrolled cariogenic diet from dorm caregivers. Beside that, this also caused by researcher's examination technique that is done subjectively, so OHI-S examination was not influenced level of knowledge of respondents.

Based on result about relation between attitude of maintenancing oral health and oral hygiene status, obtained analysis result using chi-square analysis showed that P value=0,212 (p>0,05). This showed that there is no significant relation between attitudes and oral hygiene status of students of junior high/MTs PondokPesantrenPutriUmmulMukminin Makassar.

Good-categorized attitudes of respondents are not in step with oral hygiene status that is in average category. This result is not in step with result of study by Tjahja I and Lely S. This study stated that oral hygiene had relation with knowledge and attitudes of respondents in West Java Health Centres. This study is done to respondents with range of age 12 years old untik>45 years old, with total respondents of 240 respondents. ¹⁵In accordance with the research, research by Purwoko to elementary school students in working area of Sawit I Healthcare Centre in Surakarta, stated that there was statistically significant relation between attitudes about maintenancing oral health and OHI-S. This research is done in 17 elementary schools in the area, and it gained 33 respondents, with amounts of 20 respondents with average-categorized OHI-S, but there was no clear details about amounts of respondents with good attitudes. The study showed an inverse relationship with attitudes, the greater the value of attitudes, the smaller the value of OHI-S. ¹⁶This may be caused by physical and

psychological changes in respondents, and also possibility of theory of attitudes that can not applied daily, specially about oral hygiene of students of Pondok Pesantren Putri Ummul Mukminin.

Based on result about relation between behaviours to maintenance oral health and oral hygiene status, obtained analysis result using chi-square analysis showed that P value = 0,042 ($p < 0,05$). This showed that there is significant relation between behaviours and oral hygiene status of students of Pondok Pesantren Putri Ummul Mukminin Makassar. Respondents' average-categorized behaviours in step with oral hygiene status that is also in average category. This is in step with research by Wildan Yusuf. The study stated that there was relation between behaviours to maintenance oral health and oral hygiene status in Blang Bintang Aceh Besar Healthcare Centre. In this study, from 97 respondents, there were 76 respondents who had very good oral health behaviour. This is caused by full awareness of respondents about oral health, which affects their oral hygiene status. Beside that, respondents' behaviour determines their routine in taking care of their oral hygiene. The positive behaviour of respondents in maintaining their oral health, the better the oral health status is.

5. Conclusion and Suggestions

There is no significant relation between knowledge and attitudes and oral hygiene status of students of Junior High/MTs Pondok Pesantren Putri Ummul Mukminin Makassar. This showed that good-categorized knowledge and attitudes are not always followed by good-categorized oral health status.

There is significant relation between behaviour and oral hygiene status. This means average-categorized respondents' behaviour are in step with their oral health status.

As suggestions, to dorm caregivers to be more aware and care about personal health of students, to furtherly urge students to take care of their personal hygiene, specially their oral hygiene. To healthcare institutions to give more health educations about oral hygiene, to give equal health service in health centres and to form and give Little Dentist training in every school, specially in Pondok Pesantren Putri Ummul Mukminin.

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